



## ISM Temporary Revision Edition 13

Reference	TR.ISM.2019-3
Issue Date	28 May 2019
Effective Date	01 Sep 2019

### General Overview

This Temporary Revision (TR) 2019-3 to the IOSA Standards Manual (ISM) Edition 13 introduces:

- 1) a method for auditing the effectiveness of implementation for selected standards. For this purpose,
  - a. a new Recommended Practice is added; and
  - b. applicable standards are revised to introduce the Assessment Tools.

This TR is being issued as a continuation of TR 2019-1, which was issued for the introduction of the Assessment Tools for ISM Edition 12.

### Effective Date of the Temporary Revision

The following ISARPs become effective on **01 Sep 2019**:

ORG 1.7.1, ORG 3.1.2, ORG 3.3.13, ORG 3.5.4, FLT 1.12.2, DSP 1.12.2, MNT 1.12.2, CAB 1.11.2, GRH 1.11.2, CGO 1.11.2.

The **Guidance Material** and **Auditor Actions** of the above ISARPs remain **unchanged** and as published in ISM Ed 13. The complete ISARP text, Auditor Actions and Guidance Material have been added for convenience.

### Approval Page

Step	Name	Date
Reviewed by:	Serkan Simitcioglu Head, IOSA	May 2019
Recommended by:	Catalin Cotrut Director, Audit Programs	May 2019
Approved by:	Gilberto López Meyer Senior Vice President, Safety and Flight Operations	May 2019



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- ORG 1.7.1** The Operator should demonstrate that systems, processes and procedures specified by the ISARPs identified with the **[Eff]** symbol are achieving the designated Desired Outcome.

**Note:** *Conformity with this ORG recommended practice is possible only when the Operator demonstrates effectiveness of implementation for all ISARPs designated with the **[Eff]** symbol.*

**ORG 3.1.2** The Operator shall have a safety risk assessment and mitigation program that includes processes implemented and integrated throughout the organization to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in operations.



**[SMS] [Eff] (GM) ►**

**Note:** *Conformity with this ORG standard is possible only when the Operator is in conformity with all repeats of this ORG standard in other ISM sections. Refer to the IAH for information that identifies such repeats.*

### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its operational risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions  
Safety data used for the identification of hazards

#### **Effectiveness Criteria**

- (i) All relevant hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.



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- (iv) Risk register(s) across the organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to reduce the risk to a level of “as low as reasonably practical”.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.
- (x) The program takes into consideration any area of the organization where there is a potential for hazards that could affect aircraft operations.
- (xi) The program has some form of central coordination to ensure all existing or potential hazards that have been identified as relevant are subjected to risk assessment and, if applicable, mitigation.

### Auditor Actions

- Identified/Assessed** organizational safety risk assessment/mitigation program (focus: hazards analyzed to identify/define risk; risk assessed to determine appropriate action; action implemented/monitored to mitigate risk).
- Identified/Assessed** cross-discipline process for risk assessment/mitigation (focus: all operational disciplines participate in process).
- Interviewed** SMS manager and/or designated management representative(s).
- Examined** selected records/documents that illustrate organizational integration (focus: coordinated involvement of all operational disciplines in risk assessment/mitigation program).
- Examined** selected examples of risk assessment/risk mitigation action(s).
- Coordinated** to verify implementation of safety risk assessment/mitigation in all operational areas.

### Guidance

Refer to the IRM for the definition of Safety Risk Assessment (SRA).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

To be completely effective, a risk assessment and mitigation program would typically be implemented in a manner that:

- Is active in all areas of the organization where there is a potential for hazards that could affect aircraft operations;
- Has some form of central coordination to ensure all existing or potential hazards that have been identified are subjected to risk assessment and, if applicable, mitigation.

The safety risks associated with an identified existing or potential hazard are assessed in the context of the potentially damaging consequences related to the hazard. Safety risks are generally expressed in two components:



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- Likelihood of an occurrence;
- Severity of the consequence of an occurrence.

Typically, matrices that quantify safety risk acceptance levels are developed to ensure standardization and consistency in the risk assessment process. Separate matrices with different risk acceptance criteria are sometimes utilized to address long-term versus short-term operations.

A risk register is often employed for the purpose of documenting risk assessment information and monitoring risk mitigation (control) actions.

Expanded guidance may be found in the ICAO SMM, Document 9859.

**ORG 3.3.13** If the Operator conducts flights with aircraft of a maximum certified takeoff mass in excess of 27,000 kg (59,525 lb), the Operator shall have a flight data analysis (FDA) program applicable to such aircraft that is non-punitive and contains adequate safeguards to protect data sources. The FDA program shall include either:

- (i) A systematic download and analysis of electronically recorded aircraft flight data, or
- (ii) A systematic acquisition, correlation and analysis of flight information derived from a combination of some or all of the following sources:
  - (a) Aircraft flight data recorder (FDR) readouts;
  - (b) Confidential flight and cabin crew operational safety reports;
  - (c) Flight and cabin crew interviews;
  - (d) Quality assurance findings;
  - (e) Flight and cabin crew evaluation reports;
  - (f) Aircraft engineering and maintenance reports.



**[PCO] [SMS] [Eff] (GM)**

**Note:** Item ii) is a Parallel Conformity Option (PCO) for item i); in effect until 31 August 2021.

**Note:** Effective 1 September 2021, ORG 3.3.13 will be eliminated and replaced by the standards located in ORG sub-section 3.7.

### **Assessment Tool**

#### **Desired Outcome**

Hazards arising from aircraft operations are systematically identified for all aircraft types based on the analysis of electronically recorded flight data which results in a statistical reliability level of at least 90%. Identified hazards are analyzed for corresponding risks and actions are taken in a timely manner to address any issues resulting from the FDA program.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Means for collecting data  
Type and completeness of data



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### Effectiveness Criteria

- (i) FDA program is based on electronically downloaded flight data.
- (ii) All aircraft above 27t within the operator's fleet are analyzed.
- (iii) FDA staff are specifically trained and qualified for their duties.
- (iv) Analysis of data is performed without undue delay and on a regular basis.
- (v) Relevant hazards and risks are acted upon with actions / measures.
- (vi) Relevant hazards are fed into the overall hazard identification and risk assessment program.
- (vii) All relevant data is summarized and provided to crews on a regular basis.
- (viii) Corrective or remedial actions are taken in a constructive and non-punitive manner.
- (ix) Corrective or remedial actions are continuously monitored for effectiveness.

### Auditor Actions

#### Option 1

- Identified/Assessed** flight data analysis (FDA) program (focus: download/analysis of recorded flight data; defined criteria for non-discipline; identification of existing/potential flight safety hazards; production of recommendations to mitigate risk).
- Interviewed** responsible manager(s).
- Interviewed** FDA analyst(s).
- Observed** FDA resources and activities.
- Examined** selected FDA program data/reports (focus: analysis of data; identification of flight safety hazards; recommendations to mitigate risk).

#### Option 2

- Identified/Assessed** flight data analysis (FDA) program (focus: acquisition/ correlation/ analysis of flight information; defined criteria for non-discipline; identification of existing/potential flight safety hazards; production of recommendations to mitigate risk).
- Interviewed** responsible manager(s).
- Interviewed** FDA analyst(s).
- Observed** FDA resources and activities.
- Examined** selected FDA program data and reports (focus: analysis of information; identification of flight safety hazards; recommendations to mitigate risk).
- Crosschecked** to verify sources of FDA information in applicable operational areas.

### Guidance

Refer to the IRM for the definitions of Flight Data Analysis (FDA) Program and Parallel Conformity Option (PCO).

Refer to the ISM Introduction for an expanded description of Parallel Conformity Option.



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Flight data analysis is considered a reactive and proactive hazard identification activity in an SMS.

A primary purpose of an FDA program is hazard identification, which is an element of the Safety Risk Management component of the SMS framework.

The systematic download and analysis of recorded flight data has been used by international airlines for many years to identify hazards, evaluate the operational environment, validate operating criteria and establish training effectiveness.

Refer to the guidance associated with ORG 3.7.1 for information that addresses a non-punitive environment (Just Culture).

As a minimum, an acceptable program for the analysis of recorded aircraft flight data includes the following elements:

- A manager and staff of flight operations experts, commensurate with the size of the operation, to provide verification and analysis of the data collected from the aircraft fleet under the operator's program;
- Aircraft designated within the operator's fleet that provide downloadable flight data from onboard recording systems, such as the flight data recorder (FDR) or quick access recorder (QAR);
- A system for downloading and transferring recorded data from the aircraft to a data analysis system;
- A data analysis system that transforms raw digital data into a usable form of information that can then be verified, processed, categorized and analyzed by flight operations experts for flight safety purposes;
- A process for applying the output from flight data analysis to the management of risk and assessment of flight operations performance;
- A process for management of the data, to include security and retention.

All or certain of the elements could be outsourced to an external party; however, the operator would retain overall responsibility for the maintenance of the program.

The most comprehensive approach to flight data analysis would be a program that includes not only systematic download and analysis of electronically recorded aircraft flight data (as described above), but also acquisition, correlation and analysis of flight information derived from other sources (as described below).

Where appropriate, there might be a formal agreement with applicable labor organizations to ensure a mutually acceptable and structured approach to the investigation of significant safety events identified through the FDA program.

Further guidance may be found in the ICAO Safety Management Manual (Doc 9859).

### **Parallel Conformity Option**

If an operator does not have a process for the regular download and analysis of recorded flight data, then as an alternative the operator may have a systematic process for acquiring and correlating flight information from other sources that can be analyzed to identify hazards or potential hazards to flight.

Useful information can be derived from external sources to supplement flight data derived internally.

Other such sources include:

- Regulatory authorities;



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- Investigative bodies;
- Safety organizations;
- Manufacturers;
- Other operators.

Flight information is analyzed collectively to identify hazards, system weaknesses, process breakdowns, regulatory violations and other trends or conditions that could potentially lead to accidents or serious incidents. The process includes a method of risk analysis and prioritization to enable the development and implementation of effective corrective or preventive action.

**ORG 3.5.4A** The Operator shall have a process to monitor the performance of other operators that transport its passengers under a commercial aviation agreement. Such monitoring process shall ensure the operational safety and security needs of the Operator are being fulfilled and be applicable to other operators under the following commercial aviation agreements:

- (i) Wet lease, ACMI lease and damp lease agreements;
- (ii) Code share agreements;
- (iii) Capacity purchase agreements.



**[Eff] (GM)**

**Note:** The specifications of this standard shall be applicable to the Operator if it has transported its passengers on another operator under any of the specified commercial aviation agreements during the most recent IOSA registration period.

**Note:** IOSA registration is acceptable as part of the Operator's monitoring process when such registration is included in or combined with a risk assessment of the other operator(s).

**Note:** Effective 1 September 2020, ORG 3.5.4A will be eliminated and replaced by ORG 3.5.4B.

### **Assessment Tool**

#### **Desired Outcome**

The Operator actively monitors the safety performance of other operators. The monitoring is commensurate to the scope of operations to be monitored. It is continuous and based on accurate and up-to-date information to ensure its requirements are fulfilled.

#### **Suitability Criteria (Suitable to the size, complexity and nature of operations)**

Type and length of contract / operation, routes, destinations

Monitoring elements such as audits, surveys, occurrence reporting, investigations and studies

Frequency of monitoring intervals

Infrastructure, software and resources used to manage and record monitoring process



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- (i) Procurement standards are defined with specific requirements for wet lease, code share and CPA operators.
- (ii) An assessment of an operator is made prior to first utilization.
- (iii) Specific procedures and standards for active monitoring / assessment are in place.
- (iv) Substandard performance of an operator is addressed and actions are taken.

### Auditor Actions

- Identified/Assessed** process for monitoring safety/security performance of external operators that transport passengers of the Operator.
- Interviewed** responsible managers.
- Examined** plan/methods for monitoring applicable other operators (focus: includes all operators that transport the operator's passengers under a commercial aviation agreement).
- Examined** selected monitoring reports of other operators (focus: monitoring process ensures the other operator is fulfilling applicable safety/security requirements).

### Guidance

Refer to the IRM for the definitions of ACMI Lease Agreement, Capacity Purchase Agreement (CPA), Code Share Agreement, Damp Lease Agreement, IOSA Registration Period and Wet Lease Agreement.

The intent of this standard is that monitoring is required by an operator when it has entered into an agreement to transport its passengers on flights conducted by an external operator.

Aircraft lease agreements typically cover ACMI lease, wet lease and damp lease.

For aircraft lease, code share, capacity purchase or another type of agreement in excess of three months, it is recommended for operators that conduct passenger flights to have such agreement(s) with IOSA-registered operators.

Performance monitoring of an operator typically includes an assessment of the following factors:

- Accident/incident rate;
- Financial condition, company ownership, relevant economic environment;
- Management, company stability, turnover of key personnel, labor action, other potentially disruptive aspects;
- Age of fleet, aircraft on order, aircraft being returned/retired;
- Operational capabilities (i.e. international operations compared to domestic operations only, indicators of established infrastructure, approved maintenance organizations, flight simulators, other key operational capabilities);
- Company history, level of sophistication;
- Interface and/or cooperation with the other operator (i.e. familiarity with its personnel, sharing of data, regular meetings/conferences, other forms of communication or cooperation).

Methods of monitoring the performance of another operator might include any of the following:

- Requesting relevant certifications;
- Conducting inspections and/or audits;
- Accepting third-party audits;





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- Flight monitoring;
- Assessing other relevant safety indicators.
- IOSA registration indicates that an operator has undergone a third-party operational audit and is in conformity with internationally recognized standards.

**FLT 1.12.2** The Operator shall have a safety risk assessment and mitigation program in the flight operations organization that specifies processes to ensure:

- Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- Safety risks are assessed to determine the requirement for risk mitigation action(s);
- When required, risk mitigation actions are developed and implemented in flight operations.



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### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its flight operational risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria (Suitable to the size, complexity and nature of operations)**

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions  
Safety data used for the identification of hazards

#### **Effectiveness Criteria**

- All relevant flight operations hazards are analyzed for corresponding safety risks.
- Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- Risk register(s) within the flight operations organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.



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- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.

### Auditor Actions

- Identified/Assessed** safety hazard identification program in flight operations (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of flight operations in cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible manager(s) in flight operations.
- Interviewed** person(s) that perform flight operations data collection/analysis to identify hazards to aircraft operations.
- Examined** selected examples of hazards identified through flight operations data collection/analysis.

### Guidance

Refer to the IRM for the definition of Rescue and Fire Fighting Services (RFFS).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

Hazards relevant to the conduct of aircraft operations are potentially associated with:

- Weather (e.g. adverse, extreme and space);
- Geophysical events (e.g. volcanic ash, earthquakes, tsunamis);
- Operations in airspace affected by armed conflict;
- ATM congestion;
- Mechanical failure;
- Geography (e.g. adverse terrain, large bodies of water, polar);
- Airport constraints (e.g. isolated, runway closure, RFFS capability);
- Alternate airport selection, specification and availability at the estimated time of use;
- Preflight fuel planning and in-flight fuel management;
- Critical fuel scenarios;
- EDTO;
- Performance-based compliance to prescriptive regulations;
- The capabilities of an individual aircraft (e.g. cargo smoke detection and fire suppression systems, open MEL items);
- Criminal, dangerous, and/or unauthorized activities directed at manned aircraft or in the vicinity of manned aircraft operations (e.g. laser pointing, unauthorized UAS/RPAS operations);
- Any other condition(s) that would pose a safety risk to aircraft operations (e.g. radiation).

Refer to Guidance associated with ORG 3.1.2 located in ISM Section 1.



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**DSP 1.12.2** The Operator shall have a safety risk assessment and mitigation program in the organization responsible for the operational control of flights that specifies processes to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in operational control.



**[SMS] [Eff] (GM) ◀**

### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its operational control risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions  
Safety data used for the identification of hazards

#### **Effectiveness Criteria**

- (i) All relevant operational control hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- (iv) Risk register(s) within the operational control organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.



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### Auditor Actions

- Identified/Assessed** safety hazard identification program in operational control system (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of operational control in cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible operational control manager(s).
- Interviewed** person(s) that perform operational control data collection/analysis to identify hazards to aircraft operations.
- Examined** selected examples of hazards identified through operational control data collection/analysis.

### Guidance

Refer to the IRM for the definitions of EDTO (Extended Diversion Time Operations) and Rescue and Fire Fighting Services (RFFS).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

Hazards relevant to the conduct of aircraft operations are potentially associated with:

- Weather (e.g. adverse, extreme and space);
- Geophysical events (e.g. volcanic ash, earthquakes, tsunamis);
- Operations in airspace affected by armed conflict;
- ATM congestion;
- Mechanical failure;
- Geography (e.g. adverse terrain, large bodies of water, polar);
- Airport constraints (e.g. isolated, runway closure, rescue and RFFS capability);
- Alternate airport selection, specification and availability at the estimated time of use;
- Preflight fuel planning and in-flight fuel management;
- Critical fuel scenarios;
- EDTO;
- Performance-based compliance to prescriptive regulations;
- The capabilities of an individual aircraft (e.g. cargo smoke detection, fire suppression systems, open MEL items);
- Criminal and/or unauthorized activities directed at manned aircraft or in the vicinity of manned aircraft operations (e.g. laser pointing, unauthorized UAS/RPAS operations);
- Any other condition(s) that would pose a safety risk to aircraft operations (e.g. radiation).

The specifications of this provision may be satisfied by the safety risk assessment and mitigation program in the flight operations organization if such program includes the operational control system.

Risk assessment and mitigation specific to an operational activity (e.g. alternate airport selection, fuel planning and/or EDTO) is a risk management process that is central to the performance-based methods used for development of operational variations in accordance with applicable provisions in subsection 4.6.

Refer to Guidance associated with ORG 3.1.2 located in ISM Section 1.



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**MNT 1.12.2** The Operator shall have a safety risk assessment and mitigation program in maintenance operations that specifies processes to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in maintenance operations.



**[SMS] [Eff] (GM) ◀**

### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its maintenance risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions  
Safety data used for the identification of hazards

#### **Effectiveness Criteria**

- (i) All relevant maintenance hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- (iv) Risk register(s) within the maintenance organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.



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### Auditor Actions

- Identified/Assessed** safety hazard identification program in MNT operations (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of MNT operations in the organization-wide, cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible manager(s) in MNT operations.
- Interviewed** person(s) that perform analysis of MNT operational data for the purpose of identifying hazards to aircraft operations.
- Examined** examples of hazards to aircraft operations that have been identified through data collection and analysis in MNT operations.

### Guidance

Refer to the IRM for the definition of Safety Risk Assessment (SRA).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

The operator typically applies its safety risk assessment and mitigation program to the full scope of maintenance operations associated with maintaining its aircraft, which includes line and base maintenance.

Hazards relevant to the conduct of maintenance operations are potentially associated with:

- Weather (e.g. temperature, precipitation);
- Work environment (e.g. lighting, temperature, noise/vibration, ventilation, hazardous/toxic substances, cleanliness, floor condition, body position, physical facility layout changes);
- Infrastructure (e.g. inadequate, uncontrolled or lack of equipment/tools);
- Automation limitations (e.g. poor assumptions based on misunderstanding of automation functionality);
- Foreign Object Debris (FOD);
- Personnel (e.g. not enough, lack or ineffective training, lack of skills, shift work, inadequate shift patterns);
- Aircraft and parts (e.g. different configurations, lack or difficulty of access);
- Technical data (e.g. uncontrolled, not up to date, inadequate layout of Task Cards, lack of understanding or difficulty in using electronic documentation or IT system);
- Inadequate communication (e.g. language differences, comprehension);
- Changes in processes, procedures, IT platforms, organizational, tooling and equipment.



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**CAB 1.11.2** The Operator shall have a safety risk assessment and mitigation program in the cabin operations organization that specifies processes to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in cabin operations.



**[SMS] [Eff] (GM) ◀**

### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its cabin operations risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions  
Safety data used for the identification of hazards

#### **Effectiveness Criteria**

- (i) All relevant cabin operations hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- (iv) Risk register(s) within the cabin operations organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.



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### Auditor Actions

- Identified/Assessed** safety hazard identification program in cabin operations (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of cabin operations in the organization-wide, cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible manager(s) in cabin operations.
- Interviewed** person(s) that perform analysis of cabin operational data for the purpose of identifying hazards.
- Examined** examples of hazards to aircraft operations that have been identified through data collection and analysis in cabin operations.

### Guidance

Refer to the IRM for the definition of Safety Risk Assessment (SRA).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

Potential hazards typically associated within cabin operations include, but are not limited to:

- Inadvertent slide deployment;
- Smoke/fire/fumes;
- Turbulence;
- Unruly passengers;
- Cabin crew injury/incapacitation;
- Carriage of lithium batteries in the cabin;
- Inflight product and services;
- Service of hot food and beverages.

Refer to Guidance associated with ORG 3.1.2 located in ISM Section 1.

**GRH 1.11.2** The Operator shall have a safety risk assessment and mitigation program for ground handling operations that specifies processes to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in ground handling operations.



**[SMS] [Eff] (GM) ◀**

### Assessment Tool

#### Desired Outcome

The Operator maintains an overview of its ground handling operations risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.





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### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions.  
Safety data used for the identification of hazards

### **Effectiveness Criteria**

- (i) All relevant ground handling operations hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- (iv) Risk register(s) within the ground handling operations organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.

### **Auditor Actions**

- Identified/Assessed** safety hazard identification program in GRH operations (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of GRH operations in cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible manager(s) in ground handling operations
- Interviewed** person(s) that perform GRH operations data collection/analysis to identify hazards to aircraft operations
- Examined** selected examples of hazards identified through GRH operations data collection/analysis.

### **Guidance**

Refer to the IRM for the definitions of Ground Support Equipment (GSE) and Safety Risk Assessment (SRA).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.



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Hazards relevant to the conduct of ground operations are potentially associated with:

- Aircraft loading/unloading operations (e.g. unsafe airside driving, unsupervised ground operations activities at the airside, lack of PPE, ineffective baggage reconciliation process).
- Aircraft special loads (e.g. for dangerous goods, live animals, perishables, valuables, time/temperature-sensitive products: lack of or incomplete NOTOC, lack of or inadequate security controls).
- Aircraft servicing (e.g. for water/toilet service, catering: lack of guide man, lack of proper periodic water testing, lack of proper inspection before/after service).
- Passenger embarkation/disembarkation (e.g. Passengers walking on the ramp).
- Fueling operations (e.g. fueling with passengers on board the aircraft).
- De-/anti-icing operations (e.g. lack of effective pre-departure checks, glycol/water mixture not effectively checked or tested, incorrect de-/anti-icing procedures).
- Aircraft towing and pushback (e.g. lack of wing walkers, improper connection/disconnection of tow-bars, improper ground-to-cockpit communication).
- Adverse weather conditions (e.g. low visibility, high wind, extreme temperatures, volcanic ash).
- ULD Management. (e.g. unsafe ULD loading/buildup/storage).
- Management of Ground Support Equipment (GSE) (e.g. lack of daily equipment checks, lack of proper identification of out-of-service GSE).

Refer to Guidance associated with ORG 3.1.2 located in ISM Section 1.

**CGO 1.11.2** If the Operator transports revenue cargo, the Operator shall have a safety risk assessment and mitigation program for cargo operations organization that specifies processes to ensure:

- (i) Hazards are analyzed to determine corresponding safety risks to aircraft operations;
- (ii) Safety risks are assessed to determine the requirement for risk mitigation action(s);
- (iii) When required, risk mitigation actions are developed and implemented in cargo operations.



**[SMS] [Eff] (GM) ◀**

### **Assessment Tool**

#### **Desired Outcome**

The Operator maintains an overview of its cargo operations risks and through implementation of mitigation actions, as applicable, ensures risks are at an acceptable level.

#### **Suitability Criteria** (Suitable to the size, complexity and nature of operations)

Number and type of analyzed hazards and corresponding risks  
Means used for recording risks and mitigation (control) actions.  
Safety data used for the identification of hazards



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### Effectiveness Criteria

- (i) All relevant cargo operations hazards are analyzed for corresponding safety risks.
- (ii) Safety risks are expressed in at least the following components:
  - Likelihood of an occurrence;
  - Severity of the consequence of an occurrence.Likelihood and severity have clear criteria assigned.
- (iii) A matrix quantifies safety risk tolerability to ensure standardization and consistency in the risk assessment process which is based on clear criteria.
- (iv) Risk register(s) within the cargo operations organization capture risk assessment information, risk mitigation (control) and monitoring actions.
- (v) The risk mitigation (control) actions include time lines, allocation of responsibilities and risk control strategies such as hazard elimination, risk avoidance, risk acceptance, risk mitigation.
- (vi) Mitigation (control) actions are implemented to a level of as low as reasonably practical.
- (vii) Identified risks and mitigation actions are regularly reviewed for accuracy and relevance.
- (viii) Effectiveness of risk mitigation (control) actions are monitored at least yearly to include auditing in accordance with ORG 3.4.1.
- (ix) Personnel performing risk assessments are appropriately trained in accordance with ORG 1.6.5.

### Auditor Actions

- Identified/Assessed** safety hazard identification program in cargo operations (focus: program identifies hazards to aircraft operations; describes/defines method(s) of safety data collection/analysis).
- Identified/Assessed** role of cargo operations in cross-discipline safety hazard identification program (focus: participation with other operational disciplines).
- Interviewed** responsible manager(s) in cargo operations.
- Interviewed** person(s) that perform cargo operations data collection/analysis to identify hazard to aircraft operations.
- Examined** selected examples of hazards identified through cargo operations data collection/analysis.

### Guidance

Refer to the IRM for the definition of Safety Risk Assessment (SRA).

Risk assessment and mitigation is an element of the Safety Risk Management component of the SMS framework.

The potential for hazards is typically associated with the following aspects of cargo handling operations:

- Acceptance and handling of dangerous goods and other special cargo shipments (e.g. lithium batteries);
- Application of security controls;
- Protection from acts of unlawful interference;
- Build-up, handling and serviceability of ULDs;



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- Operation and serviceability of cargo handling equipment;
- Adequacy of facilities.

Refer to Guidance associated with ORG 3.1.2 located in ISM Section 1.