Safety Management Manual

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Safety Manager Claudio Franceschini	Accountable Manager Gianguido Baldo	Authority Approval (if revision concerns chapters 4 or 5)

Highlight of revision

Revision number	Modified Section	Description of the Modification
01	Ch 5.2-5.4	Revised of the Safety Management Organisation
01	Appendix 1	Revised form to MOR
02		Added new paragraph "Elements of the Safety Management Manual Subject to Approval"
02	Ch 1	EFB Definition added
02	Ch 2	EFB Acronym added
02	Ch 8.11	Electronic Flight Bag Added
02	Appendix 5	Change the Appendix from safety study to Hazard log template
02	Appendix 9	Sheet n.1 n.2 n 3 added to hazard identification, undesirable events and safety database added
02	Ch 8.2.2.5	Undesirable events connected to a template in Appendix 9 and Bow Tie implemented as unique method for hazard identification
02	Ch 8.2.2.6	Hazard Recording connected to a template shown in Appendix 5
02	Ch 8.2.2.7	Undesirable events connected to a template in Appendix 9 sheet n.1
02	Ch 8.2.2.8	Hazard identification connected to a template in Appendix 9 sheet n.3
02	Ch 8.2.5.2	Responsibilities addressed to the manager in charge and SRB hazard identification process implemented
03	Ch 5.1	Accountable Manager Responsibilities
03	Ch 5.2-5.4	Revised of the Safety Management Organisation
03	Ch 8.4	BowTie implemented as unique method for hazard identification
03	Ch 8.2.2.6	BowTie implemented as unique method for hazard identification
03	Ch 8.2.2.7	BowTie implemented as unique method for hazard identification
03	Ch 8.2.8	BowTie implemented as unique method for hazard identification
03	Ch 8.2.3	BowTie implemented as unique method for hazard identification
03	Ch 8.2.5.2	BowTie implemented as unique method for hazard identification
03	Appendix 5	Cancelled due to new Implemented Bow Tie Methodology
03	Appendix 8	Cancelled due to new Implemented Bow Tie Methodology
03	Appendix 9	Bow Tie Methodology Implemented

Revision number	Modified Section	Description of the Modification
04	Ch. 8.11	Inserted New aircraft in the EFB fleet
04	Ch. 11.1	Recurrent safety training on CBT
05	Ch. 5.4	New Head of Training added to the SRB
05	Ch. 8.6	Modified the occurrence reporting system
05	Appendix 11	List of the mandatory occurrence report

Elements of the Safety Management Manual Subject to Approval

EU –REG REF.	SUBJECT	OM Section	ENAC protocol of approval
ORO.GEN.130 (a)(2)	Changes related to an AOC holder, (any of the elements of the operator's management system)	SMM Chapter 5.1	ENAC-AOV-24/10/2014-0112323-P
ORO.GEN.200(a)(1)	Management System lines of responsibility and accountability throughout the operator, including a direct safety accountability of the accountable manage	SMM chapter 5	ENAC-AOV-24/10/2014-0112323-P
ORO.GEN.200(a)(2)	Management System overall philosophies and principles of the operator with regard to safety, referred to as the safety policy	SMM chapter 4	ENAC-AOV-24/10/2014-0112323-P

Chapter 1 - Definitions

(a) Accident Precursor

Event(s) which, without appropriate mitigation, can result in Undesirable Events, incidents and accidents.

(b) Audit

A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements are complied with.

(c) Hazard

A condition, object, activity or event with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function.

(d) Inspection

An independent documented conformity evaluation by observation and judgement accompanied as appropriate by measurement, testing or gauging, in order to verify compliance with applicable requirements (incl. procedures, work instruction standards, etc.).

(e) Likelihood

Likelihood is used in this manual as a synonym of probability. It is a measure of how likely something is to happen. Probability / likelihood varies between 0 and 1 and can be assessed using terminology such as 'very low, low, medium, high and very high'. Note: In the ICAO Doc 9859 AN/474 Safety Management Manual, Third Edition, safety risk probability is defined as the likelihood or frequency that a safety consequence or outcome might occur.

(f) Management of Change

A documented process to identify external and internal changes that may have an adverse (or positive) effect on safety. This process uses the existing hazard identification, risk assessment and mitigation processes.

(g) Mitigation Barrier

Risk control mitigating the outcome (severity) of an incident or of an accident.

(h) Prevention Barrier

Risk control aimed at preventing Undesirable Events and Undesirable Operational States.

(i) Recovery Barrier

Risk control aimed at impeding that Undesirable Operational States result in an accident or, in other words, that incident scenarios escalate into an accident.

(j) Risk

The combination of occurrence likelihood and severity.

(k) Risk Analysis, Assessment and Mitigation

A risk management process ensures analysis (in terms of likelihood and severity of occurrence), assessment (in terms of tolerability) and control (in terms of mitigation) of risks to an acceptable level.

(l) Risk Tolerability Matrix

A matrix (or table) combining Risk Likelihood and Risk Severity.

(m) Safety

The state in which risks associated with aviation activities are reduced and controlled to an acceptable level (ICAO Annex 19, expected to be published in 2013). The publication of Annex 19 is likely to lead to a revision of the ICAO Doc 9859 AN/474, Safety Management Manual, Third Edition, where safety is defined as the state in which the risk of harm to persons or property damage is reduced to and maintained at or below an acceptable level through a continuing process of hazard identification and risk management.

(n) Safety Assurance

Safety assurance is the process of assuring safety. In the ICAO Doc 9859 AN/474 Safety Management Manual, Third Edition, Safety Assurance encompasses the processes of Safety Performance Monitoring and Measurement, Management of Change, and Continuous Improvement of the SMS. Note: The EU regulation on Air Operations, Part ORO.GEN 'Management System' and relevant AMCs and GM do not use the terms Safety Assurance, but addresses the three Safety Assurance processes separately. This approach has been adopted in this Manual.

(o) Safety Management System (SMS)

A systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures (ICAO Doc 9859 AN/474 Safety Management Manual, Third Edition).

(p) Safety Performance

Safety achievement as defined by the safety performance targets and measured by safety performance indicators.

(q) Safety Performance Indicator (SPI)

A data-based safety parameter used for monitoring and assessing performance (ICAO Doc 9859 AN/474 Safety Management Manual, Third Edition).

(r) Safety Performance Monitoring

The process by which the operator’s safety performance is monitored and assessed against the operator’s safety policy and safety objectives.

(s) Safety Performance Objective (SPO) or Target (SPT)

The planned or intended objective for safety performance indicator(s) over a given period. Objectives and targets are considered synonymous in this SMM.

(t) Safety Risk Value or Risk Index Value

Values in the cells of a Risk Matrix allowing differentiation of risk level for the purpose of risk analysis, assessment and mitigation.

(u) Undesirable Event (UE)

Event leading to a stage in the escalation of an accident scenario (Undesirable Operational State) where the accident can be avoided only through successful recovery measure(s) or by chance.

(v) Undesirable Operational State (UOS)

The stage in an accident scenario where the scenario has escalated so far that the accident can be avoided only through successful recovery measure(s) or by chance.

(w) Electronic Flight Bag (EFB)

Electronic Flight Bags (EFBs) are small, customizable information-management devices that aid pilots and aircraft operators in conducting flights more efficiently and safely

Chapter 2 - Acronyms

ALARP	As Low as Reasonably Practicable
AM	Accountable Manager
AMC	Acceptable Means of Compliance
ASR	Air Safety Report
AU	Audit
CMM	Compliance Monitoring Manager
EASA	European Aviation Safety Agency
EFB	Electronic Flight Bag
EHEST	European Helicopter Safety Team
ERP	Emergency Response Planning or Plan
ESSI	European Strategic Safety Initiative
FDM	Flight Data Monitoring
GM	Guidance Material
ICAO	International Civil Aviation Organization
IHST	International Helicopter Safety Team
MOC	Management of Change
SAG	Safety Action Group
SM	Safety Manager
SM ICG	Safety Management International Cooperation Group
SMM	Safety Management Manual
SMS	Safety Management System
SOP	Standard Operating Procedure
SPI	Safety Performance Indicator
SPO/SPT	Safety Performance Objective/Target (synonymous terms)
SRB	Safety Review Board
SRM	Safety Risk Management
SURV	Survey

Chapter 3 – Scope of the Safety Management Manual

The ITALFLY's Safety Management Manual (SMM) is a reference document describing how safety is managed in the Company. The SMM is the key instrument for communicating the ITALFLY's approach to safety to all its personnel.

The SMM documents all aspects of safety management, including the safety policy, objectives, procedures and individual safety responsibilities.

The contents of the SMM include all of the following:

(1) Scope of the SMS;

(2) Safety policy and objectives;

(3) Safety accountability of the accountable manager;

(4) Safety responsibilities of key safety personnel;

(5) Documentation control procedures;

(6) Hazard identification and risk management schemes;

(7) Safety action planning;

(8) Safety performance monitoring;

(9) Incident investigation and reporting;

(10) Emergency response planning (Separate Manual);

(11) Management of change (including organisational changes with regard to safety responsibilities);

(12) Safety promotion.

This SMM will be communicated to the National Aviation Authority and may also be communicated to customers and other parties to demonstrate the willingness and capability of the operator. The SMM will also be distributed throughout ITALFLY to ensure that all employees are fully aware of the system thereby ensuring:

- That safety is a central component in our management system;
- That safety is accounted for in all decisions and actions taken by all in the Company;
- That the needs, requirements and expectations of customers and other parties are fulfilled.

Chapter 4 – Safety Policy and Objectives

By means of the Safety Policy, ITALFLY states its intention to maintain and, where practicable, improve safety levels in all its activities and to minimise its contribution to the risk of an aircraft accident as far as is reasonably practicable.

The Safety Policy:

- is endorsed by the Accountable Manager;
- reflects the organisational commitments regarding safety and its proactive and systematic management;
- is communicated, with visible endorsement, throughout the operator; and
- includes safety reporting principles.

The Safety Policy includes a commitment:

- to improve towards the highest safety standards;
- to comply with all applicable legislation, meet all applicable standards and consider best practices;
- to provide appropriate resources;
- to enforce safety as a primary responsibility of all managers; and
- not to blame someone for reporting something which would not have been otherwise detected.

In addition to these general objectives enshrined in the Safety Policy, detailed safety management objectives are addressed in the Section Safety Performance Monitoring and Measurement.

Senior management will:

- continually promote the safety policy to all personnel and demonstrate their commitment to it;
- provide necessary human and financial resources for its implementation; and
- establish safety objectives and performance standards.

Safety Policy

Safety is one of our core business functions. We are committed to developing, implementing, maintaining and constantly improving strategies and processes to ensure that all our aviation activities take place under a balanced allocation of organizational resources, aimed at achieving the highest level of safety performance and meeting national and international standards, while delivering our services.

All levels of management and all employees are accountable for the delivery of this highest level of safety performance, starting with the Accountable Manager.

Our commitment is to:

• **Support** the management of safety through the provision of all appropriate resources, that will result in an organizational culture that fosters safe practices, encourages effective safety reporting and communication, and actively manages safety with the same attention to results as the attention to the results of the other management systems of the organization;

• **Enforce** the management of safety as a primary responsibility of all managers, employees and students;

• **Clearly** define for all staff, managers and employees alike, their accountabilities and responsibilities for the delivery of the organization's safety performance and the performance of our safety management system;

• **Establish and operate** hazard identification and risk management processes, including a hazard reporting system, in order to eliminate or mitigate the safety risks of the consequences of hazards resulting from our operations or activities to a point which is **A**s **L**ow **A**s **R**easonably **P**racticable;

• **Ensure** that no action will be taken against any employee who discloses a safety concern through the hazard reporting system, unless such disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures;

• **Comply** with and, wherever possible, exceed, legislative and regulatory requirements and standards;

• **Ensure** that sufficient skilled and trained human resources are available to implement safety strategies and processes;

• **Ensur**e that all staff are provided with adequate and appropriate aviation safety information and training, are competent in safety matters, and are allocated only tasks commensurate with their skills;

• **Establish and measure** our safety performance against realistic safety performance indicators and safety performance targets;

• **Continually improve** our safety performance through management processes that ensure that relevant safety action is taken and is effective; and

• **Ensure** externally supplied systems and services to support our operations are delivered meeting our safety performance standards.

Accountable Manager

TRENTO 10/10/2013

Gianguido Baldo

Protection of the Reporters – Just Culture

ITALFLY is committed to operate according to the highest safety standards.

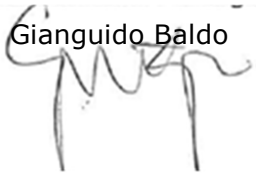
To achieve this goal, it is imperative to have uninhibited reporting of all accidents, incidents, events, hazards, risks and other information that may compromise the safe conduct of our operations. To this end, every staff member is warmly encouraged to, and responsible for, reporting any safety-related information.

Reporting is free of any form of reprisal. The main purpose of reporting is risk control and accident and incident prevention, not the attribution of blame. No action will be taken against any staff member who discloses a safety concern through the reporting system, unless such disclosure reveals, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or wilful disregard of regulations or procedures.

Our method for collecting, recording and disseminating safety information guarantees the protection to the extent permissible by law, of the identity of those who report safety information.

Accountable Manager

Gianguido Baldo



Chapter 5 – Safety Accountability and Responsibilities

5.1 Safety accountability of the Accountable Manager

The Accountable Manager bears the safety accountability which means that he, or she, is ultimately responsible and accountable for safety in the Company.

He endorses the Safety Policy (including a statement on the protection of the reporters); provides the human and material resources necessary for operating the SMS and achieving the safety objectives; nominates the Safety Manager, the Compliance Monitoring Manager, the Safety Review Board.

The Accountable Manager chairs the Safety Review Board, endorses the safety objectives and the Compliance Monitoring Report.

When any of the elements of the operator's management system shall require prior approval by the competent authority, the Accountable Manager shall provide the relevant documentation to the competent authority and obtain prior approval for the operation.

5.2 Safety Responsibilities of Key Safety Personnel

Our safety management organisation includes the Accountable Manager (AM), a Safety Manager (SM), a Compliance Monitoring Manager (CMM) and a Safety Review Board (SRB)

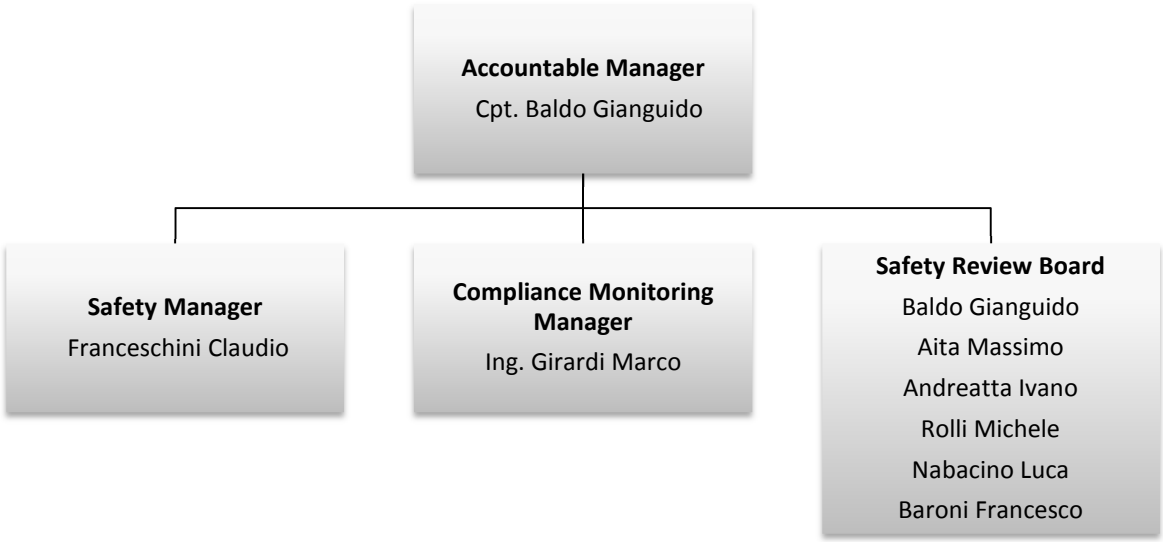


Figure 1 – Safety Management Organisation

5.3 Safety Manager

The Safety Manager acts as the focal point and is responsible for the development, administration and maintenance of the SMS.

The functions of the Safety Manager are to facilitate hazard identification, risk analysis and management; monitor the implementation of actions taken to mitigate risks as listed in the safety action plan; provide periodic reports on safety performance; ensure maintenance of safety management documentation; ensure that there is safety management training available and that it meets acceptable standards; provide advice on safety matters; and ensure initiation and follow-up of internal occurrence/accident investigations.

The Safety Manager is the focal point for collecting and analysing hazards and maintaining a register of hazards, risks, and risk controls (mitigations).

Regardless of the organisational set-up, the Safety Manager remains the focal point as regards the development, administration and maintenance of the SMS.

Note: It is intended that hazard identification, risk assessment, risk mitigation and risk control become an integral part of day-to-day business. Day-to-day supervision of the operations and therefore safety is the responsibility of the 'managers'. The Safety Manager is responsible for the supervision and facilitation of the processes to support 'managers' in developing processes, procedures and work instructions for the staff under their supervision to perform their activities in a safe manner.

5.4 Safety Review Board (SRB)

The Safety Review Board is high level committee that considers matters of strategic safety in support of the Accountable Manager.

The Safety Review Board is chaired by the Accountable Manager and is composed of heads of functional areas.

Members of the ITALFLY's Safety Review Board are: Cpt. Baldo Gianguido (AM), Cpt. Aita Massimo (CFI/H, FOPH, CTPH, HT APR), Andreatta Ivano (CAMO/H), Rolli Michele (CAMO/A), Nabacino Luca (CTKI/OCC/FSTD Technical Manager) and Baroni Francesco (HT).

The Safety Review Board monitors the safety performance against the safety policy and safety objectives; monitors that any safety action is taken in a timely manner; and that the SMS is effective.

The Safety Review Board ensures that appropriate resources are allocated to achieve the established safety performance.

The Safety Manager or any other relevant person may attend, as appropriate, Safety Review Board meetings. The Safety Manager may communicate to the Accountable Manager all information, as necessary, to allow decision making based on safety data.

5.5 Safety Action Group (SAG)

A Safety Action Group may be established as a standing group or as an ad-hoc group to assist or act on behalf of the Safety Review Board.

More than one Safety Action Group may be established depending on the scope of the task and specific expertise required.

The Safety Action Group should report to and take strategic direction from the Safety Review Board and should be comprised of managers, supervisors and personnel from operational areas.

The Safety Action Group monitors operational safety; resolves identified risks; assesses the impact on safety of operational changes; and ensures that safety actions are implemented within agreed timescales.

5.6 Manager(s)

The term 'manager(s)', also called 'head(s) of operational areas' in this manual, is used as per ORO.GEN.210 Personnel Requirements (b), which states that a person or group of persons shall be nominated by the organisation, with the responsibility of ensuring that the organisation remains in compliance with the applicable requirements (regulations, standards, ITALFLY's procedures, etc.). Such persons shall be ultimately responsible to the Accountable Manager.

The manager(s) are responsible for ensuring compliance with all applicable requirements, including those regarding the management of safety.

Note: Managers are an important driving force of effective safety management. Managers make sure that safety aspects are considered and properly dealt with in all activities within their remit.

5.7 Personnel

(c) ITALFLY shall have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements, including the SMS requirements.

(d) ITALFLY shall maintain appropriate experience, qualification and training records to show compliance with the above requirement (c).

(e) ITALFLY shall ensure that all personnel are aware of the rules and procedures relevant to the exercise of their duties.

In the context of the SMS, the personnel in charge of operational tasks have the following responsibilities:

- Ensure both their own and the safety of other personnel in the vicinity of the working environment.

- Interrupt or discontinue their work if their safety or that of others is at risk.
- Perform their tasks in compliance with regulations and Company procedures.
- Practice and promote ITALFLY's safety policy.
- Notify hazards and safety-related events and report any relevant information to the Safety Manager.
- Take note of the lessons learned from incidents and accidents, be mindful of the risks, and take all appropriate measures to protect themselves and the others from these risks in their daily activity.
- Participate in safety briefings, meetings and events.
- Participate, if applicable, in safety analyses.
- Know their role in ITALFLY's Emergency Response Plan.

Every staff member in the Company has a role to play in the successful implementation of the SMS. This is not only the 'task of a few' or an 'affair of specialists', in particular, it is the responsibility of everyone in the Company to identify and report hazards. All members of staff are to inform the Safety Manager and their Line Manager of any situation deemed to be hazardous to flight safety and to their own safety or the safety of others both within or out of the Company.

All personnel are to be trained in the SMS and know their roles and responsibilities. Refer to the Section Training and Communication on Safety of this SMM.

5.8 Compliance Monitoring Manager

The Compliance Monitoring Manager shall ensure that ITALFLY's activities are monitored for compliance with the applicable regulatory requirements, including those regarding the SMS, and additional Company requirements and procedures, and that these activities are being carried out properly under the supervision of the relevant managers.

The Compliance Monitoring Manager is responsible for ensuring that the compliance monitoring programme is properly implemented, maintained and continually reviewed and improved.

The Compliance Monitoring Manager has direct access to the Accountable Manager.

The independence of the compliance monitoring function shall be established by ensuring that audits and inspections are carried out by personnel not responsible for the function, procedure or products being audited.

Chapter 6 – QCompliance Monitoring Organisation and Programme

The implementation and use of a compliance monitoring function allows an operator to monitor compliance with all relevant requirements, including those of the SMS. In doing so, they should as a minimum, and where appropriate, monitor compliance with the Company procedures that were designed to ensure safe operating activity.

The compliance monitoring programme covers, as a minimum and where appropriate, the scope of approved operations of the operator; manuals, logs, and records; training standards; management system procedures and manuals.

6.1 Audits and Inspections

The Compliance Monitoring Manager may perform all audits and inspections (definitions in GM4 ORO.GEN.200(a)(6) and in the Definitions Section of this Manual) or appoint one or more auditors by selecting personnel either from within or external to the organisation. Regardless of the selected option, ITALFLY shall ensure that the independence of the audit function is not compromised.

Auditors shall have the relevant knowledge, background and appropriate experience related to the activities of the operator, including knowledge and experience in compliance monitoring. ITALFLY's auditors demonstrate diplomacy, independence, ethics, and possess good verbal and written communication skills.

In the situation where the Company uses external personnel to perform compliance audits or inspections:

- any such audits or inspections are performed under the responsibility of the Compliance Monitoring Manager; and
- ITALFLY retains the responsibility to ensure that the external personnel fulfils all requirements, which include regulation and the Company's standards, procedures, etc.

ITALFLY retains the overall responsibility for the effectiveness of the compliance monitoring function and, in particular, for the effective implementation and follow-up of all corrective actions.

6.2 Organisational Set-up

See ITALFLY's Compliance Manual.

6.3 Compliance Monitoring Documentation

The Company shall have in place relevant documentation that addresses the SMS function as part of the ITALFLY's overall management structure. The SMS documents for the compliance monitoring programme shall reflect the following:

- A schedule of the monitoring programme;

- audit procedures;
- reporting procedures;
- follow-up and corrective action procedures; and
- a recording system.

See ITALFLY's Compliance Manual for more details.

6.4 Compliance Monitoring Training

ITALFLY shall ensure that all personnel engaged in managing the compliance monitoring function understand the objectives as laid down in the ITALFLY's management system documentation.

ITALFLY shall ensure that those personnel responsible for managing the compliance monitoring function, the Compliance Monitoring Manager and his/her team, receive appropriate training for this task. This training shall cover the requirements of compliance monitoring, manuals and procedures related to the task, audit techniques, reporting and recording.

See ITALFLY's Compliance Manual for more details.

Chapter 7 – Documentation Control Procedure

7.1 Document Control, Revision and Configuration Management

The Safety Manager in charge shall ensure that:

- revisions are communicated to all staff concerned and modifications are identified,
- related internal documents and procedures are updated accordingly,
- obsolete/invalidated versions are clearly marked accordingly,
- modified versions are clearly marked, changes are identified and a current version number is incorporated,
- document changes are recorded and kept for traceability purposes.

Revision and configuration management are part of the change management process (see the Section 'The Management of Change' in this SMM):

- Proper revision and management processes ensure that obsolete/invalidated versions, which could create safety risks, cease to be used,
- Proposed amendments are risk assessed, and their likely effect on safety established, prior to a revision being introduced.

7.2 Control and Revision of the Safety Management Manual

Steps	Consist of	Person(s) in charge
Submitting a request for a change	- Identify need to change the SMM - Submit a change request to the Safety Manager	All staff
Assess, validate or reject the request for change	- Check relevance - Evaluate related risks - Verify the requested change against: 1. Applicable regulations, standards and norms 2. Other ITALFLY's documents - Validate or reject the change	Safety Manager
Amend the SMM	- Make the relevant changes in the SMM - Trace the modifications - Update the version number, date of issue and list of effective pages	Safety Manager
Record and distribute the revision	- Record/archive the new version - Distribute and publicise the new version, and - Recall the former version	Safety Manager

7.3 Record-Keeping

An effective system of record-keeping ensures that all records are accessible whenever needed within a reasonable time. These records should be organised in such a way that ensures traceability and accessibility throughout the required retention period.

In order to ensure easy and fast access to information, including access by national authorities, ITALFLY's records are:

- adequately referenced (author, title, issue date, revision number and date, list of effective pages),
- archived/kept as records for a minimum period of 5 years (see the table below),
- and disposed in a controlled manner after this defined period of retention.

Records	Person(s) in Charge	Recording/ Archiving means	Record Keeping period
Safety Objectives and Indicators	Safety Manager	Company IT System (must include backup)	5 years
Safety Review Board reports	Accountable Manager	IT	5 years
Event Reports	Safety Manager	Paper and IT	Permanent
Audit Reports including the follow-up of corrective actions	Safety Manager	Paper and IT	5 years
Hazard and Risk Registers	Safety Manager	IT	Permanent
Risk mitigations	Safety Manager	IT	Permanent
Safety Trainings Register	Safety Manager or Training manager	IT	Permanent

Records are to be kept in a paper format, in an electronic format or a combination of both.

Storage of records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period. The retention period starts when the record has been created or last amended.

Paper systems should be on a robust material which can withstand normal handling and filing. Computer based systems should have at least one backup system which should be updated within 24 hours of any new entry. Computer based systems must include appropriate safeguards against the possibility of access by unauthorised personnel to prevent tampering with the data.

All computer hardware used for data backup must be located in a different location from that containing the original working data and in an environment that ensures they remain in good condition. When hardware or software-changes take place, special care is to be taken to ensure that all necessary data continues to be accessible throughout at least the full period specified in the relevant implementing rule(s). In the absence of such indication, all records should be kept for a minimum period of 5 years.

Chapter 8 – Safety Risk Management

Safety Risk Management combines the following processes and components:

- Hazard identification, Risk assessment and mitigation processes
- Internal safety investigation
- Safety performance monitoring and measurement
- The management of change
- Continuous improvement
- The Emergency Response Plan (ERP)

A formal risk management process shall be developed and maintained to ensures that analysis, in terms of likelihood and severity of occurrence; assessment, in terms of tolerability; and control, in terms of mitigation of risks to an acceptable level.

8.1 Safety Risk Assessment

8.1.1 Scope of Safety Risk Assessment

The SMS only addresses the assessment of aviation safety risks. This does not mean that financial, legal, or economic aspects do not need to be considered in the risk assessment process. The organisation should be able to identify all significant influences that may impact aviation safety, in particular when determining contributing factors for the analysis of consequences of a hazard, and deciding on risk mitigation measures.

8.1.2 Elements that Influence the Safety Risk Assessment

COMMUNICATION AND CONSULTATION

Good communication within the organisation and, where relevant, with external parties (such as customers, partners, or contractors) should help ensure access to all relevant information, and assist in ensuring buy-in from all those that may be affected by the risk assessment conclusions and recommendations. Communication and consultation should take place at all relevant stages of the process.

REGULATORY REQUIREMENTS – RISKS ADDRESSED BY REGULATIONS

Regulations are generally developed to control common safety risks that stem from specific or general hazards through prescriptive, technical standards in the areas of technology, training, or task performance. Such hazards controlled by regulations do not need to be further addressed in the organisation's risk assessment unless evidence exists that the regulatory provision is not sufficient. If the regulation is not specific, has several options, or directly calls for a risk assessment, the hazard obviously should be assessed, and the appropriate provision implemented.

ORGANISATION'S RESOURCES

Available resources are relevant with respect to both capacity and competence:

(i) for the risk assessment process itself (see next page); and
(ii) for the activity being assessed, (aircraft, equipment, personnel, finances, etc.).

The organisation's current resources in terms of equipment and personnel are normally considered in the risk assessment. One outcome of a risk assessment may be that the operator does not possess the right equipment or personnel for the activity.

8.1.3 Risk Acceptance Criteria and the ALARP Concept

Risk acceptance criteria are established on the basis of a Safety Policy and Safety Performance Objectives. Furthermore, management responsibility for the acceptability of safety risks is defined as part of the SMS.

Safety risk acceptance criteria address the following:

- third parties;
- passengers, operational personnel ad students
- crew members;
- the natural environment.

ITALFLY employs the 'As Low As Reasonably Practicable' (ALARP) risk acceptance criterion. This ALARP criterion is not exclusively based on fixed risk level targets but is a systematic and documented process to reduce safety risks below the maximum allowed by regulations or standards or when the risk is otherwise considered unacceptable. ALARP means that the safety risk is being managed to as low a level as reasonably practicable whilst at all times staying below the maximum allowed risk.

8.2 Risk Assessment Process Steps

8.2.1 Preparation

PLANNING

The Safety Risk Assessment should be initiated in time for the results to be available before any decisions regarding the activity concerned have to be made.

SYSTEM DESCRIPTION

The activity to be analysed should be described in terms of systems and processes.

WORKING GROUP

The person responsible for performing the risk assessment shall determine the need for a dedicated working group comprised of suitable subject matter experts and personnel involved in ITALFLY activities.

SELECTION OF METHOD AND DATA BASIS - Guidelines

- The Safety Manager decides whether, and what other methods and sources are used to determine hazard causes, likelihood and consequences.
- Progressively extend and personalise the data base.
- The Safety Manager decides whether to use additional data sources.
- Company data base shall contain:
  - information resulting from the investigation of internal occurrences and accidents,
  - reported deviations and proposals for improvement,
  - experience collected from the monitoring of normal operations.
- Company database may be augmented with similar data exchanged with other operators.
- Whenever possible, the process of risk assessment should build upon experience derived from risk assessments carried out previously.

8.2.2 Hazard Identification

8.2.2.1 Hazard Classification

Hazards could come from different sources, including:

- Natural and environmental: weather, earthquake, wind and sand, sea water, rocks, cliffs, ice structures, rough waters, volcano lava and dusts, etc.
- Economic: competition, production pressure, cost pressure, etc.
- Unsafe conditions: use of unofficial documentation or documents not up to date, poor resources.
- Unsafe acts: errors, violations, negligence, sabotage, excessive/uncontrolled performance variations.
- Physiological: diseases, hypoxia, perceptual illusions, fatigue, sleep deprivation, jet lag, medication, alcohol, intoxication, digestion troubles, etc.
- Technological: design or maintenance related, hazardous material, pollution, explosions, etc.
- Operational or mission specific: obstacles, cables, demanding landing sites (moving platforms/off airfield sites), degraded visual cuing (brown-out and white-out), demanding/overbearing customers (VIPs), etc.

8.2.2.2 Hazard identification Sources

Hazards are identified from different internal and external sources:

Internal sources

- Safety assessment of systems and operations
- Air Safety Reports
- Voluntary reports, spontaneous identification

- SOR (Safety Occurrence Report)
- Inspections and audits

External sources

- Accident and incident reports;
- Technical publications from manufacturers;
- Safety Information Bulletins, safety alerts and other safety publications from EASA, the European Commission, the National Aviation Authorities, ICAO, Eurocontrol or other authorities Worldwide
- Websites such as SKYbrary;
- Safety publications by national or international associations and safety initiatives such as EHEST and IHST, the Helicopter Association International (HAI), the Royal Aeronautical Society (RAeS), the Flight Safety Foundation (FSF), etc.;
- Safety publications by industry, research organisations and academia;
- Professional journals, conference proceedings, safety campaigns, helicopter safety days;
- Benchmarks between operators, data aggregated at sector level or by the manufacturers, etc.;

8.2.2.3 Hazard Consequences Identification Sources

Hazards are distinguished from hazard consequences.

Consequences can be described based on the hazard information specifying the place, time, extent, nature, etc. of the event as required. Hazard identification also provides a systematic overview of all possible consequences.

For each hazard, the following question should be asked: What were or could have been the possible hazard consequences?

Where information on the consequence of a hazard has been identified for a specific type of activity it should be available directly from data sources (e.g. from reported accidents and occurrences or from results of analysis already documented) such available information should be considered.

It is also worth noting that the absence of past incidents/accidents does not mean absence of risk. It is important, therefore, to identify the underlying hazards and to assess the risks. One effective way of doing this is to group similar events to try and identify the underlying hazards.

Aids to the identification of possible consequences include the following:

- Risk assessments
- Occurrence and accident reports

- Audits/non-compliance reports
- Internal reviews
- Monitoring results including flight data monitoring information;
- Brainstorming
- Threat assessments
- Standard checklists (origin should be identified if used and the lists assessed and revised as required to suit the purpose).

8.2.2.4 Hazard Identification Process

Hazards are identified through the application of a hazard identification processes.

The hazard identification process is the formal means of collecting, recording, analysing, acting on and generating feedback about hazards and the associated risks that affect the safety of ITALFLY's operational activities.

The hazards identification process features several components:

ITALFLY adopt the **proactive approach** consisting of analysing the conduct of operations to identify potential hazards and assess the associated risks and then to mitigate risks factors before they result in an accident or incident. This approach should trigger the following questions:

- What accidents or incidents could happen and why?
- For what reasons could these occur?
- Do we feel enough protected? Any action we should take now to prevent these from occurring?

The proactive approaches are very effective tools for the management of safety, they should build upon the basis of solid reactive processes.

8.2.2.5 Hazard, Risks and Risk Controls

ITALFLY is encouraged to use the safety risk control modelling approach.

The purpose of this approach is to consider all the "Undesirable Events" as an intermediate step between hazards and risks, and incidents and accidents. The list of the "Undesirable Events" is included in the Risk Management of the company, implemented with the BowTie method.

Hazards can, in isolation or in combination, lead to UEs.

UEs trigger a stage in the escalation of an accident scenario, called the Undesirable Operational State (UOS), where the scenario has escalated to the point that the accident can only be avoided through successful recovery measure(s) or by chance.

Risk Controls aimed at preventing UEs and UOS are prevention barriers. Controls that prevent a UOS resulting in an accident are identified as recovery barriers, while controls that mitigate the effect of an incident or accident are called mitigation barriers.

This approach can be illustrated as the 'Bow Tie' (figure 3).

The Bow Tie model is an intuitive illustration of accidents seen as 'loss of control' of the situation. The bowl represents the safe envelop within which operations should be kept, while the position of the UEs represent the departure into either accident or incident scenarios. The model also illustrates the importance of monitoring and managing the risk controls in place and the need to introduce or adapt risk controls when necessary.

This risk control approach can also be represented in the form of a 'Bow Tie' diagram:

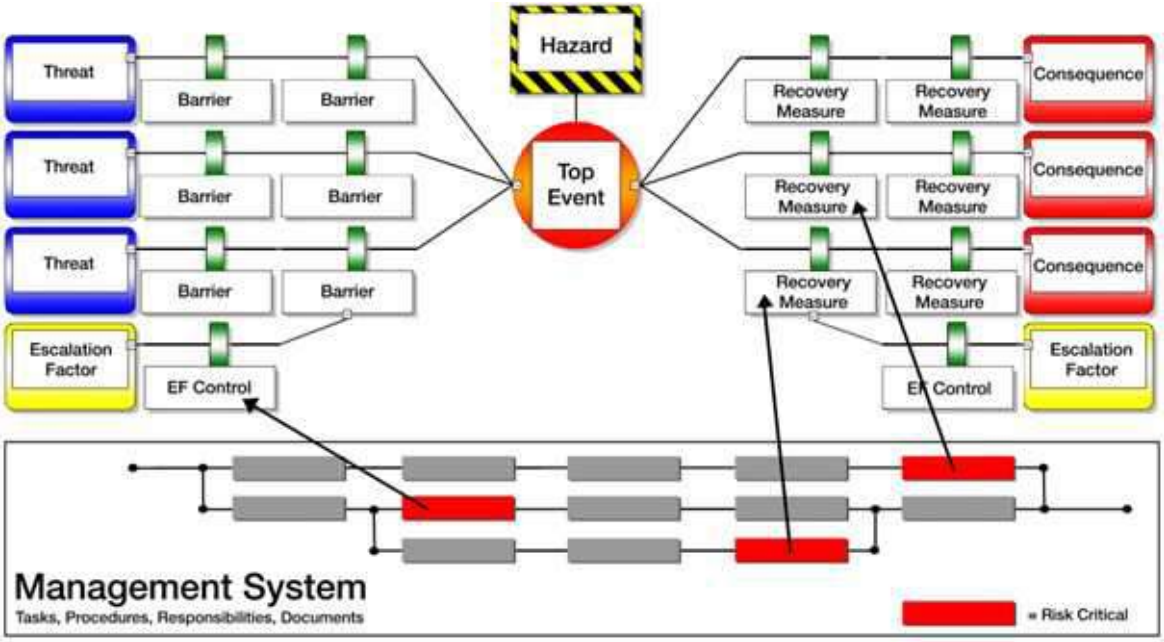


Figure 3 – The 'Bow-Tie' Safety Risk Control Model

8.2.2.6 Hazard Recording

Safety Manager shall maintain a register (or log) of hazards. The record of all the Hazard is included into the BowTie diagrams of the Company's Risk Assessment.

8.2.2.7 Identification of Undesirable Events and of their Consequences

The "Undesirable Events" will be recorded in the Risk Assessment's file of the company.

8.2.2.8 Mapping Hazards to Undesirable Events

The "Undesirable Events" will be recorded in the BowTie Risk Assessment's file of the company.

8.2.3 Risk Assessment, Description and Evaluation

Risk combines two dimensions: likelihood of hazard consequences and their severity. Both dimensions have to be assessed in the BowTie diagrams of the Company.

8.2.3.1 Analysis of Likelihood

Assessment of likelihood is based on the following two way process:

- hazard consequences are analysed to establish possible causes, contributing factors and existing barriers
- causes, contributing factors and barriers are then further analysed to determine likelihood of an occurrence.

In the causal analysis of consequence, human and organisational factors are considered for their possible contributing effects. We normally consider direct causes ('unsafe acts'), workplace factors and organisational factors ('error provoking or latent conditions').

The effects of existing likelihood-reducing factors and barriers (See the Section Safety Model) that influence the chain of events are considered and documented, taking into account the following:

- certification requirements;
- maintenance procedures;
- existing normal and abnormal procedures;
- technical measures/equipment;
- training;
- other human and organisational factors.

The following table is what ITALFLY use for determining likelihood:

RISK LIKELIHOOD	MEANING	VALUE
FREQUENT	**Likely to occur many times.** Has already occurred in the Company (Freq. > 3 times per year – indicative). Has occurred frequently in the history of the aviation industry.	**5**
OCCASIONAL	**Likely to occur sometimes.** Has already occurred in the Company (Freq. < 3 times per year – indicative). Has occurred infrequently in the history of the aviation industry.	**4**
REMOTE	**Unlikely to occur, but possible.** Has already occurred in the Company at least once or. Has seldom occurred in the history of the aviation industry.	**3**
IMPROBABLE	**Very unlikely to occur.** Not known to have occurred in the Company but has already occurred at least once in the history of the aviation industry.	**2**
EXTREMELY IMPROBABLE	**Almost inconceivable that the event will occur.** It has never occurred in the history of the aviation industry.	**1**

Below are the methods that ITALFLY use for causal and likelihood analysis:

- bow-tie diagrams;
- brainstorming.

8.2.3.2 Analysis of Severity

The severity of all hazard consequences is analysed. The analysis considers both short-term and long-term consequences, such as effects on the natural and work environment.

Consequences are grouped such as loss or damage of life/health, environment, material values/assets, functions and reputation.

The determination of severity is normally of a descriptive (qualitative/ordinal terms) nature, except when relevant calculations (quantitative) can or should be applied. A qualitative analysis describes the chains of events that could follow from the hazard and its possible consequences. Quantitative analysis is used to calculate the extent of damage that could be caused.

Below is the table that ITALFLY uses for determining severity:

SEVERITY OF OCCURRENCE	MEANING				VALUE
	PERSONNEL	ENVIRONMENT	MATERIAL VALUES & ASSETS	REPUTATION	
CATASTROPHIC	Multiple fatalities	Massive effects (pollution, destruction, etc.)	Catastrophic financial loss Damage > 1 M€	International impact	**E**
HAZARDOUS	Fatality	Effects difficult to repair	Severe financial loss with long term effects Damage < 1 M€	National impact	**D**
MAJOR	Serious injuries	Noteworthy local effects	Substantial financial loss Damage < 250K€	Considerable impact	**C**
MINOR	Light injuries	Little impact	Financial loss with little impact Damage < 50K€	Limited impact	**B**
NEGLIGIBLE	Superficial or no injuries	Negligible or no effects	Financial loss with negligible impact Damage < 10K€	Light or no impact	**A**

In the analysis of severity of each consequence, human and organisational factors are primarily considered for their possible contributing effects.

The effects of existing recovery controls and barriers that influence the consequence itself or the consequence chain should be considered, as applicable:

- certification requirements (e.g. fire protection);
- existing abnormal and emergency procedures;
- secondary safety measures (e.g. crashworthiness, personal protective equipment);
- technical measures/equipment;
- training;
- human and organisational factors;
- emergency preparedness.

Risk levels may vary over time depending on the nature of the operation(s) (machines and equipment, procedures and documentation, flight environment, personnel qualification, duration of the tasks, etc.). Comprehensive and up-to-date data such as risk assessments and risk descriptions helps in the task of performing good and effective risk assessments.

Risk must be re-assessed, in particular when a change is introduced. See the Section 'The Management of Change' in Chapter 8.9 of this SMM.

8.2.3.3 Risk Description

The risk description forms the basis for risk evaluation and mitigation. Based on the results of the likelihood and severity analysis, the risk is described as a combination of the likelihood of occurrence and the associated severity.

Depending on the analysis method and the risk acceptance criteria, the description is either qualitative and/or quantitative. The level of detail depends on the level of detail in the likelihood and severity analysis.

One method that can be used for risk description is a risk matrix combining risk likelihood and risk severity. See the next Section.

If a hazard has more than one consequence, the risk may be expressed as a combination of the likelihood and severity for each of the consequences.

Uncertainties in the risk description are to be identified and documented. If the analysis is based on critical assumptions or other conditions that could affect the assessment, these are to be identified and documented (if necessary in the form of a sensitivity analysis).

RISK DESCRIPTION AND ANALYSIS AT UNDESIRABLE EVENTS LEVEL

ITALFLY will primarily use this approach: hazards can lead to Undesirable Events (UEs), which can deteriorate into incidents and accidents. Hazards can contribute to several UEs and are generally related to several Hazards (many-to-many mapping), which all have an associated risk level. The level of risk associated to an UE is, however, not the average of the risk levels associated to the hazards that contribute to the risk. This is why UE's are also subject to a separate risk rating.

Risk rated UEs are then used as an input to Safety Cases.

8.2.3.4 Risk Evaluation

The results of the risk analysis is compared to the criteria for acceptable risk.

This comparison is documented using a format that can be used by decision makers.

RISK LIKELIHOOD	**RISK SEVERITY**				
	NEGLIGIBLE (A)	MINOR (B)	MAJOR (C)	HAZARDOUS (D)	CATASTROPHIC (E)
FREQUENT (5)	**5 A**	**5 B**	**5 C**	**5 D**	**5 E**
OCCASIONAL (4)	**4 A**	**4 B**	**4 C**	**4 D**	**4 E**
REMOTE (3)	**3 A**	**3 B**	**3 C**	**3 D**	**3 E**
IMPROBABLE (2)	**2 A**	**2 B**	**2 C**	**2 D**	**2 E**
EXTREMELY IMPROBABLE (1)	**1 A**	**1 B**	**1 C**	**1 D**	**1 E**

The red-coloured values indicate unacceptable risk levels, the yellow-coded values are tolerable risk levels and the green-coded values establish acceptable risk levels.

Each risk level calls for a particular action and the levels of management who have the authority to make decisions regarding the tolerability of safety risks need to be specified.

Unacceptable Risk Level: the red zone in the matrix: risk is too high to continue operating.

Action required: Prohibit/suspend the operation. Operation may be resumed only when risk level is returned to tolerable or acceptable.

Management levels who have the authority to make decisions regarding risk tolerability:

- For the risk evaluation validation: The assumptions made for the determination of the risk level and its tolerability are to be validated by the Safety Manager.
- For the authorisation of operations: Management level which has the authority to authorise operations at this level of risk: not applicable: operations cannot be authorised.

Tolerable Risk Level: the yellow zone in the matrix: the risk level can be tolerated for the operation, providing that appropriate mitigation measures are in place.

Action required: Introduce appropriate mitigation measures.

Management levels who have the authority to make decisions regarding risk tolerability:

- For the risk evaluation validation: The assumptions made for the determination of the risk level and its tolerability are to be validated by the Safety Manager.
- For the authorisation of operations: Management who have the authority to authorise operations at this level of risk: the Accountable Manager.

Acceptable Risk Level: the green zone in the matrix below: risk is tolerable and can be accepted for the operation.

Action required: Monitor. Risk is considered sufficiently controlled and no additional risk mitigation measures are required. However, in line with the ALARP concept, actions may still be taken to further reduce the risk level if feasible and reasonable. Additionally, any assumptions used to make an assessment must be monitored to ensure they remain valid.

Management levels who have the authority to make decisions regarding risk tolerability:

- For the risk evaluation validation: The assumptions made for the determination of the risk level and its tolerability are to be validated by the Safety Manager.
- For the authorisation of operations: Levels of management who have the authority to authorise operations at this level of risk: not applicable: no special authorisation is required: the authorisation of activities featuring 'acceptable risks' fall within the regular operational control for operations.

8.2.4 Risk Control

8.2.4.1 Identification of Risk Control (Mitigation) Measures

The risk evaluation forms the basis for deciding on risk control (mitigating) measures and in assessing the effectiveness of these measures.

Risk control measures identify the consequences associated with both an unacceptable risk and tolerable risk and where further risk reduction measures are feasible and reasonable.

Identification of possible mitigation is based on the risk description and evaluation, considering in particular any uncertainties identified and critical assumptions made.

Controls that may eliminate the consequence of a hazard, likelihood-reducing measures and severity-reducing measures are identified. The measures should address the human factors (e.g. training and competence), equipment or organisational factors (e.g. procedures).

In the Company, the personnel contribute to the definition of risk control measures in particular where they concern personal equipment (goggles, helmets and other flight equipment), by their acceptance and use.

8.2.4.2 Risk Control Priorities

Risk control measures are implemented based on the following priorities:

1. eliminate the consequences of the hazard;
2. reduce the likelihood of occurrence;
3. reduce the severity.

8.2.4.3 Risk Control Types

Examples of risk controls include:

- passive technical controls (e.g. system redundancy, firewall);
- active technical controls (e.g. automatic fire extinguishing system).

8.2.4.4 Risk Control Effect Assessment

The risk mitigating effect of the controls are assessed with respect to:

- functionality: Does the measure influence the ability to perform the activity?
- robustness: Will the measure be effective under varying conditions and over time?
- possible other effects such as introduction of new risks.

When identifying risk control measures, any new risks that may arise from the implementation of such measures ('substitution risks') should be identified.

Risk is re-assessed considering the effects of the proposed risk control effects, as illustrated in the table below:

Risks Assessed	Initial Risk Level	Risk Control	Resulting Risk Level
Risk 1			
Risk 2			
Risk 3			

The measures are not necessarily sufficient to bring the risk level back to an acceptable or tolerable level in a first round: if the risk acceptance criteria require further risk reduction, the comparison (iterative process) describes the optimisation process. So new risk controls are added, or existing risk controls are modified, until the risk is as low as reasonably practicable (ALARP).

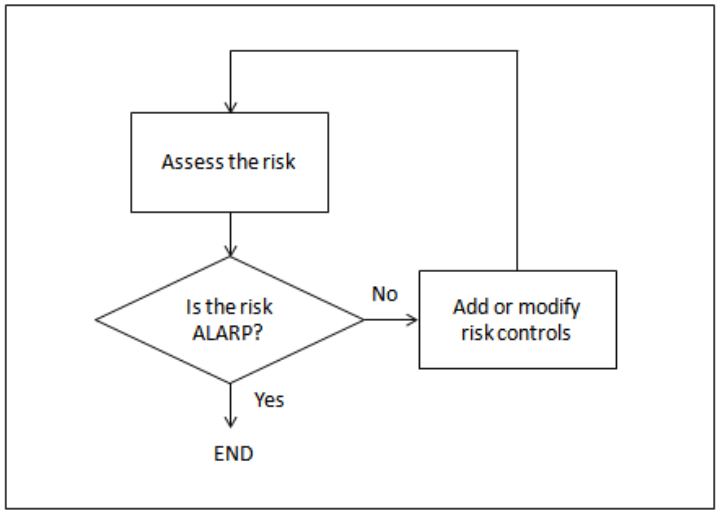


Figure 4 – Iterative Risk Reduction Process

The ALARP concept combines the technical feasibility of further reducing the safety risk and the cost; demonstrating that the safety risk is ALARP means that any further risk reduction is either impracticable or grossly outweighed by the cost.

8.2.4.5 Cost Benefit Analysis

The contemplated mitigation measures should be subjected to a Cost Benefit Analysis, which helps determine the most appropriate measures. The mitigation considered appropriate should achieve the safety benefits desired and should be economically acceptable.

		BENEFITS		
C O S T S		High	Average	Low
	Low	1	2	3
	Average	2	3	4
	High	3	4	5

Figure 5 – A Simple Costs Benefits Analysis Matrix

Source: D. Huntzinger, Eurocopter

Acceptance criteria with regards to the costs of implementing mitigation measures and the expected benefits, these are to be endorsed by the Accountable Manager.

8.2.5 Conclusion and Documentation

Any risk assessment should be documented and contain unambiguous, precise and robust conclusions to enable decision makers to arrive at appropriate control reduction decisions (see the Section Implementation of Risk Control Measures).

Documentation includes references to other documents (when applicable) and points out any need for further work.

8.2.5.1 Scope

The risk assessment documentation includes or references, as required, descriptions of the following:

- the purpose of the risk assessment;
- the activity/issue analysed;
- involvement of personnel and other operators with whom we interact;
- context/framework for the activity/issue;
- the assessment of who is affected by the activity/issue and how;
- data used;

- the analysis method;
- the hazard(s);
- the contributing factors and consequences
- uncertainties and assumptions made for the assessment;
- the likelihood and severity;
- the risk mitigation measures;
- the risk evaluation;
- the conclusions.

8.2.5.2 Register of Hazards, Risk Assessments and Risk Controls

The Safety Manager shall maintain a register (or log) of hazards, and of the corresponding risk assessments and mitigations. This risk register records hazards per activity and indicates how these have been addressed in the past and are currently being addressed.

Any future risk assessment may then draw upon the information already available.

The information is both communicated and made available to all in the Company with special attention to the managers in charge, depending on the nature of the risks.

Hazard identifications must be performed periodically by the safety review board and each Hazard Identification will be implemented by the Safety Manager into the Risk Assessment's Company's file (Bow Tie XP).

The Risk Assessment is saved into the company's server and is constantly updated when new risks are recognized.

8.3 Changes that Could Invalidate the Conclusions of a Risk Assessment

Changes that could invalidate the conclusion of a risk assessment could be:

- significant changes in the preconditions and context;
- new knowledge of risks involved (experience from accidents and occurrences, reporting of safety concerns, research, better risk analysis methods, internal inspections, audits and reviews, hazard reporting);
- significant changes in the underlying data used for the assessment;
- significant organisational changes that could affect the assessment; and
- several smaller changes that together might constitute a significant change.

Depending on the type of activity affected and the nature of the changes, the Safety Manager may decide to reassess the risk.

8.4 Implementation of Risk Control Measures

Implementation of the risk control (mitigation) measures may, depending on the nature of these measures, give rise to an implementation plan identifying who is in charge, the resources needed, the deadline, and the stages of implementation. The implementation plan is periodically reviewed until completion or revision.

8.5 Monitoring, Review and Improvement

The risk assessment process is monitored for the purpose of:

- analysing and learning from events, changes and trends;
- detecting changes in the internal and external context including changes to the risk itself;
- ensuring that the risk mitigation measures remain effective; and
- identifying emerging risks.

Monitoring and review can be performed through periodic reviews, inspections and audits, risk assessments and the risk management process itself, with the aim to strive for a continuous reduction in the risk level.

8.6 Occurrence Reporting and Internal Safety Investigations

According to the Regulation in force, EU regulation 376/2014, some of the events occurring during maintenance, flight or ground operations shall be reported to ENAC and, if relevant, to the aircraft/engine/equipments Type Certificate Holder.

If an event that falls in the list occurs, see Appendix 11, the involved Italfly representative (the Commander during flight or ground operations or maintenance staff during maintenance) shall immediately report to his/her reference Post Holder (Flight Operations or CAMO as applicable).

The Post Holder will then prepare a draft of the Mandatory Occurrence Report summarizing the informations available so far, circulate it to the other PH, Safety Manager and CMM.

Safety Manager or the other managers-Post Holders, accredited to the ENAC database collector, are then responsible:

i) to submit the Report to ENAC and TCH within 72 hours after becoming aware of the occurrence, and

ii) to keep it on file.

Involved Italfly staff, when the situation allows, will produce a detailed written report of the occurrence, providing all facts that may help to investigate the event and will forward it to the referencePost Holder.

Post Holders and CMM are in charge to investigate the event in deep in order to identify root causes and prevent re-occurrence. The investigation is led by the appropriate PH, depending upon the nature of the event, with the assistance of other Post Holders and CMM.

After this investigation, but within 30 days after the notification, the Manager-Post Holder involved must send to the Authority: the preliminary result with the determined corrective or preventive action to improve the aviation safety; the timescale to implement this actions and the process to monitor the effectiveness.

Within 3 months after the notifications Italfly must send the final result of the analysis, to ENAC.

All events which for their nature are classified as Accident or Serious Incident must be also reported to the ANSV, within 60 minutes after the occurrence. Italfly shall communicate to the ANSV all the occurrences with the appropriate form: "Modello Base per la comunicazione di incidenti/inconvenienti gravi", refer to paragraph 11.2.4 of the Operations Manual.

The Commission has promulgated the EU Regulation 1018/2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported; the annex I, II and V of the regulation cover the occurrences related to the Italfly's operations, all the applicable cases are reported in the Appendix 11 of the Safety Management Manual.

8.6.1 Occurrence Reporting Scheme

The overall purpose of the scheme is to make best use of reported information to improve the level of safety performance and not to attribute blame.

The scope of this scheme also includes occurrences not reportable to the authorities.

The objectives of the occurrence reporting scheme are to:

- enable an assessment to be made of the safety implications of each relevant incident and accident, including previous occurrences of a similar nature, so that any necessary action can be initiated; and
- ensure that knowledge of relevant incidents and accidents is disseminated, so that other persons and operators may learn from them.

The scheme is an essential part of the overall monitoring function and it is complementary to the normal day-to-day procedures and 'control' systems and is not intended to duplicate or supersede any of them. The scheme is a tool to identify and analyse those instances where procedures appear to have failed or where there was a failure to apply the procedures.

All occurrence reports judged reportable by the person submitting the report should be retained as the significance of such reports may only become obvious at a later date.

ITALFLY's approach is described as follows.

Every occurrence identified through occurrence reports, voluntary reports or other sources provides the opportunity to draw safety lessons. Learning from experience is only possible if all events are reported and analysed and their causes and factors (technical, operational, or environmental) are determined and analysed.

On a daily basis, occurrences (down to simple malfunctions) may affect any process. Some of these occurrences are defined as accident precursors. Accident precursors are occurrences which, without appropriate mitigation, can result in Undesirable Events or accidents.

The Safety Manager is to record, analyse and monitor these occurrences. Occurrences are recorded in a database and the database is analysed to identify trends and define recommendations to correct possible deviations and avoid accidents (proactive approach).

An occurrence is classified as "technical" when its cause is mainly technical: for instance an in-flight engine failure or any other equipment failure.

An occurrence is classified as "operational" when it is mainly due to one or several "unsafe acts" (unintentional error or voluntary deviation from a procedure) or by one or more "unsafe conditions" (deficiencies in the Company's organisation) or by a combination of these.

An occurrence is classified as "environmental" when it is mainly due to uncontrollable environment factors, such as weather, volcanic ash, earthquake, etc.

It should be recognised, however, that occurrences can feature more than one of these components.

Several safety occurrence report forms are used in the Company.

Occurrences may also be reported verbally, by email or on a simple sheet of paper to the Safety Manager.

Reports may be treated as confidential and/or anonymous at the reporter's request.

Reporting occurrences is essential for improving safety and is strongly encouraged. In return, the Company guarantees that the reporter(s) will not be punished for reporting safety concerns except in the case of illegal act, gross negligence, or a deliberate disregard for regulations and applicable procedures. See the Section Safety Policy and Objectives of this SMM.

Each occurrence report is analysed, processed and recorded in the file "Database Incidents.xls" by the Safety Manager.

The analysis should focus on assessing the potential impact on flight safety. In addition, it should also include the safety of personnel and of third parties. The analysis can also be expanded to assessing the impact on material, the environment, and the Company's reputation.

8.6.2 Internal Safety Investigations

The scope of internal safety investigations should extend beyond the scope of occurrences required to be reported to the competent authority.

Investigations consist of collecting and analysing events, determining causal and contributing factors, drawing up conclusions and making safety recommendations as applicable.

Investigations are carried out in particular in the case of:

- accidents and incidents,
- discovery of new hazards and risks,
- recurrent safety risks.

Moreover, the Safety Manager may at any time decide to launch an investigation procedure on an opportune basis. The investigation procedure is detailed in the table shown on the next page.

Investigation procedure

Stage	Remarks
Decision to launch an investigation	• Put together an investigating team.
Activity Planning	• Define and breakdown the activities. • Define the investigation needs.
Data Collection	• Collect evidence about the event. The following relevant sources can be used: o Physical examination; o Documentation and files; o Interviews with the persons involved; o Observation of actions; o Simulations; o Expert consultancy; o Safety database.
Scenario Identification	• Identify/reconstruct the scenario.
Scenario analysis	• Analyse the facts, determine the causes and identify the associated hazards. • Integrate all investigation elements.
Risk Assessment	• Determine risk level and assess risk acceptability.
Risk Control/Mitigation Analysis	• Identify and assess risk controls/mitigations.
Correction/Prevention	• Determine corrective/preventive action.
Safety Communication	• Communicate the investigation results to all those concerned.
Completion of the investigation	• Close and archive the file.

8.7 Safety Performance Monitoring and Measurement

Safety performance monitoring and measurement is the process by which the ITALFLY's safety performance is verified in comparison to the overall safety policy and objectives.

Safety performance is defined as the level of safety achievement against the Safety Performance Objectives (SPOs), using specific Safety Performance Indicators (SPIs). Safety performance reflects the ability of the Company to effectively manage risks.

8.7.1 Stepwise Approach to Safety Performance Measurement

At different levels of maturity of the SMS, the amount of quality safety data available and the issues and actions that are most important for improving safety performance and actions will differ. The Company has, therefore, adopted a step-wise approach to safety performance measurement, based on three levels of SMS maturity:

LEVEL 1 OF SMS IMPLEMENTATION: PRESENT AND SUITABLE

At the first level, the SMS will have achieved compliance with the applicable requirements. SPIs should focus on the activities required to maintain basic compliance with the SMS regulatory framework. These can be of a quantitative (numerical) or qualitative (non-numerical) nature:

Quantitative indicators:

- the number of safety reviews performed;
- the number of staff who received training in SMS;
- the number of internal audits performed versus number of audits planned;

Qualitative indicators:

- feedback received from staff on the safety policy;
- feedback received from staff on new procedures implemented in the area of internal occurrence reporting or hazard identification.

Once the SMS is in place and compliance with requirements has been achieved, new level 2 indicators will need to be introduced to achieve improvement of safety performance.

LEVEL 2 OF SMS IMPLEMENTATION: OPERATING AND EFFECTIVE

At this level, the Company will start to define more specific SPIs on the basis of safety data collected through the hazard identification and internal occurrence reporting processes (see Chapter 8.6 in this SMM).

More specific, objective and reliable leading performance indicators and precursor event indicators are introduced to identify any weaknesses and areas where improvement is required. These can include:

- the number of risk assessments performed following organisational changes;
- the percentage of standard operating procedures that have been subject to hazard identification;
- average lead time for completing corrective actions following internal audit;
- number of additional procedural controls implemented;
- Etc.

At this level of SMS maturity, the Company will be getting a better picture of the risks affecting the operations and the solidity of the risk controls in place.

LEVEL 3 OF SMS IMPLEMENTATION: BEST PRACTICE

Level 3 is the level where the Company will have achieved continuous learning and improvement for all parts of the SMS.

At this maturity level, effective hazard identification and risk assessment processes are established that will allow it to derive a more sophisticated mix of safety performance indicators.

SPIs are focused around local issues identified from the safety data already collected, and from key safety areas identified by the regulator or identified at an aggregate level from within the industry sector.

SPIs allow the risk levels related to occurrences to be monitored, the solidity of any barriers and relationship to any accidents.

Risk mitigation actions focus on those issues that present the greatest risks or offer the greatest potential for improvement.

Quantitative indicators:

- number of high risk occurrences (coded amber and red);
- mean value of risk ratings (over a reference period, e.g. 1 year);
- sum of risk ratings (over a reference period, e.g. 1 year);
- solidity of risk controls (defences) (rated from 0 to 5; over a reference period, e.g. 1 year).

Following the implementation of risk mitigation actions, risks are monitored to ensure that risk controls are effective and are indicative of how these controls could be improved.

8.7.2 Fixing Safety Performance Objectives

The process for determining quantitative safety performance objectives for a given period consists of:

1. Measuring the baseline against which safety improvements are to be assessed;
2. Fixing reasonable, yet ambitious targets; and
3. Monitoring target achievement over time and reviewing targets as necessary.

The Safety Manager shall ensure that both the SPO's and the SPI's are pertinent and documented.

8.7.3 Process

The Safety Manager shall ensure that the process for safety performance measurement is established and implemented.

SPO's are monitored over time by the Safety Manager and reviewed by the Safety Review Board or by the Accountable Manager with the Safety Manager.

SPIs are also reviewed following the implementation of a change. See Chapter 8.9 'The Management of Change' of this SMM.

A report is provided annually to the Safety Review Board and the Accountable Manager.

The process of safety performance monitoring and measurement shall include the following:

SAFETY REPORTING

The Safety Manager collects and centralises the ITALFLY's safety reports and monitors the type and number of reported events over time. Additionally, he/ she addresses the status of compliance with the applicable requirements.

SAFETY STUDIES

The Safety Manager shall, whenever appropriate, initiate safety studies addressing subjects of safety relevant to the Company.

Safety studies are aimed at gathering additional information on selected topics which has been identified by safety reports or other means. Safety studies are by their nature larger in scope than the analysis of specific hazards. Safety surveys, for example, belong in this category.

Safety studies can address a variety of subjects such as compliance with Standard Operating Procedures, mission preparation and risk assessment of specific operations such as dealing with deteriorating weather, resisting customer pressure, etc.

Safety studies can make use of information published in technical publications from manufacturers, OEMs, the regulatory authorities, Helicopter Associations and national, European or international Helicopter Safety Initiatives such as EHEST and IHST. This can include a review of journal articles, accident and incident reports, conference proceedings, press releases and other safety information often available on internet.

Safety Studies are logged in the file Hazard Indentification.

SAFETY REVIEWS

A safety review should be performed at least once each year by the Safety Manager and Accountable Manager

The aim of the major safety review is to assess:

- safety performance against the safety indicators and objectives,
- the effectiveness of Safety Management System, including through an assessment of the effect of the corrective and/or preventive actions,
- procedures and policies.

Possible negative trends and deficiencies may be identified, as well as actions taken to correct these deficiencies by targeting their causes. Corrective actions are to be recorded. A Model of a Corrective Action Follow-up File is provided in Appendix 7.

SAFETY AUDITS

Safety audits focus on the integrity of the management system and periodically assess the status of safety risk controls.

The Company addresses all audit findings through appropriate corrective actions in an effort to restore and/or improve the effectiveness of the SMS and safety performance. A Model of a Corrective Action Form further to an audit is provided in Appendix 6.

Internal Audits

The Safety Manager shall have responsibility for the internal Safety Audits but may be assisted by Compliance Manager.

External Audits

The SMS is audited by the National Aviation Authority and may also be subject to audit by a customer where approved by the Accountable Manager.

SAFETY SURVEYS

Safety surveys are dedicated qualitative or quantitative (statistical) studies targeting specific safety subjects.

Safety surveys allow particular elements or procedures of a given operation to be evaluated, such as problem areas in daily operations, perceptions, opinions, satisfaction levels and areas of dissent or confusion. Safety surveys can also be used to gather comments and suggestions.

Safety surveys facilitate consultation with various parties such as operational personnel and customers on selected topics.

Safety surveys can make use of questionnaires in either paper or web format.

8.8 Emergency Response Planning

The Safety Manager co-ordinates and maintains an Emergency Response Plan that should ensure orderly and efficient transition from normal to emergency operations, and the subsequent return to normal operations.

The Company Emergency Response Plan is described in a separate document.

8.9 The Management of Change

The Company shall manage safety risks related to a change. The management of change is a documented process to identify external and internal change that may have an adverse effect on safety. It makes use of existing hazard identification, risk assessment and mitigation processes.

Changes include organisational changes with regard to safety responsibilities.

The following is a non-exhaustive list of examples of changes that should be considered:

- New regulations,

- Managerial reorganisation,
- Relocation,
- Outsourcing,
- Mergers,
- Change of market structure, development of new markets, etc.,
- Change in economic and financial pressure,
- New operations and/or missions,
- New aircraft type or variant,
- New maintenance procedures, equipment or tools,
- Hiring new personnel,
- New training provider,

Changes may have various positive or negative safety impacts. Any change that may have an adverse effect on safety shall be identified and managed through the Company's existing processes for hazard identification, risk assessment and mitigation.

A Change Management Form is provided in Appendix 8.

The register of "Hazards" / "Hazards and Undesirable Events" (Risk assessment's BowTie file) will be updated for each internal or external change to be analysed

Different changes can be grouped in a common Safety Impact Assessment, especially if they are introduced together or if they are inter-related.

ITALFLY's change impact assessment procedure is described as follows:

Change Impact Assessment Procedure

1. Identify the nature and scope of the change(s).
2. Perform an initial Impact Assessment study covering:
    - The Company's operational procedures (Operations Manual, Standardisation Manual, Maintenance Training Organisation Exposition (MTOE), etc.),
    - Work organisation (staffing, composition of the teams, scheduling, additional training, etc.),
    - Infrastructure (relocation, parking base, etc.),
    - Maintenance of equipment or the aircraft.
3. Perform a Safety Risk Analysis (See the Risk Management section):
    - Identify hazards related to implementing the proposed change and their possible consequences,

- Identify existing risk controls and define, as appropriate, additional mitigation measures.

4. Identify key personnel who will assist in implementing the change and the mitigation measures required and involve them in the change management process.
5. Define an implementation plan.
6. Assess related financial costs.
7. Communicate the proposed change to the staff and involve them in the project in an effort to garner their support.
8. Implement the actions as defined in the plan.
9. Check the overall effects through the established Safety Performance Monitoring and Measurement process.

8.10 Continuous Improvement

The Company shall continuously seek to improve its SMS and safety performance.

Improvement of Safety Performance

The Safety Manager shall provide a report on safety performance (risk levels, incident and accident figures, etc.) annually to the Accountable Manager. The report should include a comparison with the levels achieved in previous years. This report can be merged with the one mentioned in the previous paragraph.

Continuous improvement of safety performance should be achieved through:

- proactive and reactive evaluations of facilities, equipment, documentation and procedures through safety audits and surveys;
- proactive evaluation of each individuals performance to verify the fulfilment of their safety responsibilities; and
- a reactive evaluation in order to verify the effectiveness of the system for control and mitigation of risk.

Improvement of the SMS

Continuous improvement of the SMS is achieved through:

- Assessment of how the SMS is functioning;
- Identification and analysis of possible issues/challenges associated with the running of the SMS;
- Implementing changes aimed at improving the SMS;
- Monitoring and reviewing the effects of any changes.

Continuous improvement can also be achieved when the SMS is functioning well, performance of the SMS can always be improved.

Measures that can improve the SMS include:

- Leaner procedures;
- Improved safety reviews, studies and audits;
- Improved reporting and analysis tools;
- Improved hazards identification and risk assessment processes and improved awareness of risks in the Company;
- Improved relations with the subcontractors, suppliers and customers regarding safety;
- Improved communication processes, including feedback from the personnel.

Continuous improvement of the SMS may target any component of the SMS, in other words any subject addressed in this SMM which has the objective of increasing the effectiveness of the system over time.

The Safety Manager performs a review of the SMS (how effectively goals and objectives were met) and he/she provides a report on the SMS (how effectively the SMS works, the stage of implementation, results of audits and review of actions, any issues/challenges and proposals for improvement) annually to the Accountable Manager.

8.11 Electronic Flight Bag

Italfly has implemented the EFB (Electronic Flight Bag) system, allowed form EASA with the AMC 20-25, for the following airplanes:

- ✓ I-AFOI (RA390)
- ✓ I-MFAB (HS125)
- ✓ I-FVAB (C525-M2)

This system allows to Italfly's crews to consult the Jeppesen Chart directly on the iPad, with the Jeppesen's "Mobile Flight Deck" application, provided from the company.

Each aircraft's crew has 2 iPads (1 for each member), and each member can consult the Jeppesen Charts.

The iPads Air are certificated from EASA, this certification allows the use during the planning and the flight (AMC 20-25, 6.2 Operational Assessment).

The entire system is controlled and monitored with the AirWatch (Mobile Device Management) software that allows to manage and control all the aspects of the iPads:

- Battery level;
- Applications installed;
- Contents;
- Update status;

- Problems report;

AirWatch allows to block or unlock some functions of the devices registered. The devices are allowed only in cockpit.

The MDM software is managed from the head office of Italfly and ensures the full control of the devices.

These improvements allows to Italfly's crews to reduce the quantity of paper on board, and also eliminates the probability of errors during the updates of Jeppesen Chart in the paper version.

It will be the target of Italfly to analyze the risks linked to the EFB and risk assessment should:

(a) evaluate the risks associated with the use of an EFB and to define the appropriate

mitigation;

(b) identify potential losses of function or malfunction (detected and undetected erroneous

output) and associated failure scenarios;

(c) analyse the operational consequences of these failure scenarios;

(d) establish mitigating measures; and

(e) ensure that the EFB system (hardware and software) achieves at least the same level of accessibility, usability, and reliability as the means of presentation it replaces.

Chapter 9 – Contracted Activities

ITALFLY may contract certain activities to external organisations for the provision of services.

The ultimate responsibility for contracted activities, i.e. for the product or service provided by external organisations always remains with the Company.

A written agreement signed between the Company and the contracted organisation shall clearly define the contracted activities and the applicable requirements.

Activities performed by sub-contractors may have an impact on safety, therefore, the contracted safety related activities need to be addressed through the ITALFLY's Safety Management and Compliance Monitoring programme.

As part of the SMS, a risk analysis is to be carried out on any newly contracted activity as part of the Change Management process. If corrective and/or preventive actions need to be implemented, they are to be submitted in writing to the sub-contractors or suppliers. Effective application of these measures needs to be checked and monitored under the supervision of the Safety Manager.

As part of the Compliance Monitoring Programme, the Company ensures that the contracted organisation has the necessary authorisations or approvals where required, and has the resources and competence to undertake the task. Compliance with applicable regulations, Company requirements and procedures are to be checked and monitored under the supervision of the Compliance Manager.

Chapter 10 – Safety Promotion

Safety Promotion is a process aimed at promoting a culture of safety by ensuring that all personnel in an organisation are aware that, at their level and in their day-to-day activity, they are key players in safety and that everyone, therefore, contributes to an effective SMS.

Managers are important actors of the ITALFLY's Safety Management System. In all the activities they manage, they demonstrate commitment to safety and take care of safety aspects. They lead by example and have an essential role to play for safety promotion.

Training and effective communication on safety are two important processes supporting safety promotion. See Chapter 11 of this SMM.

Chapter 11 – Training and Communication on Safety

Safety training is an integral part of the ITALFLY's training programme, which is documented elsewhere. *(REF. ITALFLY TRAINING MANUAL)*

11.1 Training

All personnel receive safety training as appropriate for their safety responsibilities and adequate records of all safety training provided are to be kept.

All personnel receive training to maintain their competences. This includes notification of any changes to applicable regulations and rules, Company procedures, and safety-relevant technical matters.

There is a link between training and safety risk management as training and competence development is one of the means through which identified risks can be reduced. Other types of risk controls concern equipment or organisational factors (e.g. procedures), which in turn can also be addressed in training.

ITALFLY safety training programme consist of self-study via a media (newsletters, flight safety magazines, power point, etc.), an initial class-room training course with the Italfly Safety Manager and a recurrent training performed once a year on ScandLearn computer based training (CBT) software.

A table identifies all Company safety training to be provided to each staff member detailing the training provider, the resources used, the duration, and the expiry/renewal date.

The following table show how SMS training is conducted for new staff members (induction training) and provided as recurrent training:

Contents	Training Objectives
Safety Policy	Understand the main elements of the Safety Policy.
Organisation, roles and responsibilities	Understand the organisation, roles and responsibilities concerning the SMS. Everyone to know his or her own role in the SMS.
Safety Objectives	Understand the ITALFLY's safety objectives.
Emergency Response Planning (ERP) (reinforced through practical simulations)	Understand the various roles and responsibilities in the Company's ERP. Everyone to know his or her own role in the ERP.
Occurrence and hazards reporting	Know the means and procedures for reporting occurrences and hazards.
Safety Risk Management (SRM) process including roles and responsibilities	Understand the Safety Risk Management process. Everyone to know his or her own role in the SRM.

Contents	Training Objectives
Continuous improvement of safety performance	Understand the principles of continuous improvement of safety performance.
Compliance Monitoring	Understand the basic principles of Compliance Monitoring.
Responsibility when contracting activities	Understand the Company's responsibilities when contracting activities. Everyone should know his or her own roles and responsibilities regarding this subject.

11.2 Communication

The Company shall establish an effective communication system regarding safety related matters that:

- ensures that all personnel are aware of safety management activities as appropriate to their safety responsibilities;
- conveys safety critical information, especially related to assessed risks and analysed hazards;
- explains why particular actions are taken; and
- explains why safety procedures are introduced or changed.

Communication also reinforces the commitment of everyone to report hazards and occurrences and provides feedback to the reporters (an essential condition for sustained reporting).

Regular meetings are organised with the personnel to communicate safety matters and discuss information, actions and procedures.

Communication is kept simple and appropriate to maximise effect, involve all personnel, and reinforce personal and team commitment to safety.

Communication is open. It encourages discussion, develops the ITALFLY's Safety Culture and makes the most of the lessons learned from running the SMS.

Different communication means are used:

- Safety meetings,
- Safety briefings,
- E-mail, postal mail
- Safety information from the OEMs, the authorities, Helicopter Associations and from national and international Safety Initiatives,
- Safety campaigns, safety posters,

- Newsletters
- Flight safety digests, digest of accidents and incidents (appropriately de-identified), from within and outside the Company,
- Digest of safety studies, audit reports, survey reports, and safety reviews,
- Company forum(s) or professional networks (Facebook),
- Subscription to publications and journals,

Communication is a two way process, meetings, e-mails and other interactive methods allow for the provision of feedback from the personnel and can generate discussion.

Appendix 1A – Flight Occurrence Report

Mandatory Occurrence Report

italfly AVIATION via Lidorno, 3 – 38123 Trento (ITALY) ph +39 0461944200 - camo@italfly.com	**MOR – MOR – MOR** TRANSMITTAL FORM	INTERNAL ID:	REV	DATE
		eE-MOR Ref:		

1. REFERENCE INFORMATION

Brief description of the occurrence:		A/C REG:	Place:
Name of submitter Signature	On behalf of Organization's Approval: ☐ AOC I-122 ☐ CAMO IT.MG.0122 ☐ IT.145-0299 ☐ I/FTO/024 ☐ COLA I-070LA	Occurrence Date: Time:	

2. REPORT TYPE

☐ Initial finding notification only (follow-up report will follow).	☐ Notification of finding with complete investigation results.
☐ Follow-up report on earlier notification, specify	Ref. no.: ..... Date:

3. AIRCRAFT INFORMATION

Aircraft Manufacturer and Type / Model		Aircraft s/n
Engines Manufacturer: (if relevant)	Type / Model	Engine 2 s/n Engine 1 s/n
Aircraft Usage Details: Since new Since overhaul	Engines Usage Details: (if relevant) Since new Since overhaul	Other: (if relevant) Since new Since overhaul

4. DETECTION PHASE AND NOTIFICATION

during MAINTENANCE	during OPERATIONS		
☐ Scheduled ☐ Non-Scheduled	☐ Taxi ☐ Take-off ☐ Climb ☐ En-Route	☐ Descent ☐ Approach ☐ Landing ☐ Hovering	☐ Ground Handling ☐ Unknown ☐ Other, specify: ....
Parties informed: ☐ NAA: ENAC ☐ Type Certificate / Approval Holder ☐Postholder ☐ ANSV ☐ Ref:			

5. INVOLVED COMPONENTS

Description	P/N	s/n	Remarks / condition:

6. POSSIBLE CAUSE

☐ Operational	☐ Inadequate maintenance	☐ Human factor	☐ Production	☐ Design
☐ Other, specify:				

7. REMARKS / BRIEF NARRATIVE

8. ATTACHMENTS

Ee-MOR Ref:	Pages:

CAME FORM 5.1-6 REV. 2 MOR TRANSMITTAL FORM PAGE 1 of 1 - END

Appendix 1B– Flight Occurrence Report

Mandatory Occurrence Report FSTD

italfly via Lidorno, 3 – 38123 Trento (ITALY) ph +39 0461944200	**MOR – MOR – MOR** TRANSMITTAL FORM	INTERNAL ID:	REV	DATE
		eE-MOR Ref:		

1. REFERENCE INFORMATION

Brief description of the occurrence:		A/C REG: **IT-063A**	Place:
Name of submitter Signature	On behalf of Organization's Approval: Italfly FSTD Operator	Occurrence Date: Time:	

2. REPORT TYPE

☐ Initial finding notification only (follow-up report will follow).	☐ Notification of finding with complete investigation results.
☐ Follow-up report on earlier notification, specify	Ref. no.: ..... Date:

3. SIMULATOR INFORMATIONS

Simulator Manufacturer and Type / Model Simulator s/n
SIM Usage Details: Since new Since overhaul

4. DETECTION PHASE AND NOTIFICATION

during MAINTENANCE	during OPERATIONS		
☐ Scheduled ☐ Non-Scheduled	☐ Taxi ☐ Take-off ☐ Climb ☐ En-Route	☐ Descent ☐ Approach ☐ Landing ☐ Hovering	☐ Ground Handling ☐ Unknown ☐ Other, specify: ....
Parties informed: ☐ NAA: ☐ Type Certificate / Approval Holder ☐Postholder ☐ ANSV ☐ Ref:			

5. INVOLVED COMPONENTS

Description	P/N	s/n	Remarks / condition:

6. POSSIBLE CAUSE

☐ Operational	☐ Inadequate maintenance	☐ Human factor	☐ Production	☐ Design
☐ Other, specify:				

7. REMARKS / BRIEF NARRATIVE

8. ATTACHMENTS

	Pages:

MOR TRANSMITTAL FORM PAGE 1 of 1 - END

Appendix 2 – Maintenance Occurrence Report

The contents of this report are confidential. Details contained herein will be used for trend analysis only and will not be released to the public in a manner which allows identification of you or your crew.	**SOR/M REF No.**

IN THE FIRST INSTANCE, PLEASE SUBMIT ALL OCCURRENCE REPORT TO THE FOLLOWING CONTACTS:

CONTACTS:

Franceschini Claudio
claudio.franceschini@italfly.com
+393457373729

Aita Massimo
massimo.aita@italfly.com
+393484429577

PLEASE CHECK ALL BOXES THAT APPLY

MAY WE CONTACT YOU? (If yes, please provide your name and contact details below)		YES		NO

NAME		PHONE		E-MAIL	

Impiego, qualifiche ed esperienza	
Settore di impiego	☐ Progettazione ☐ Costruzione ☐ Manutenzione ☐ Altro
Licenza Posseduta	
Esperienza lavorativa nel settore aeronautico	

Aeromobile	
Marca e modello	_____
Motore	_____
Sistema / Componente coinvolto	_____

Dipartimento Interessato	Natura del volo
☐ COA ☐ Scuola di volo ☐ CAMO/A ☐ CAMO/H	☐ TPP ☐ Addestramento ☐ Ferry ☐ Turismo ☐ Altro

Informazioni Relative all'evento	
Tipo di operazione manutentiva	☐ Ricerca guasti ☐ Sostituzione di parti ☐ Test Controllo programmato ☐ Riparazione parti ☐ Volo prova ☐ Registrazione su logbook ☐ Altro_____

Inconveniente riscontrato durante:	Conseguenze:
☐ Pre volo ☐ Taxi ☐ Ispezione programmata ☐ Post volo ☐ Altro	☐ Ritardo volo ☐ Rientro al gate ☐ Cancellazione ☐ Rientro sull'aeroporto di partenza ☐ Altro

L'addestramento ha avuto un ruolo?	☐ SI ☐ NO ☐ Ero in addestramento ☐ Ero istruttore
Quali altri fattori hanno contribuito?	☐ Infrstrutture ed ambiente di lavoro ☐ Equipaggiamento ed attrezzature ☐ Disegno aeromobile ☐ Performance individuale ☐ Organizzazione / Supervisione ☐ Comunicazione ☐ Altro_____

Descrizione dell'evento
Descriva sinteticamente l'evento, riportando, in particolare: • Cosa è successo e come ne ha preso conoscenza; • Fattori che a suo avviso abbiano contribuito all'evento; • Azioni correttive intraprese; • Misure di prevenzione suggerite per evitare la ripetizione di questo evento

Appendix 3 – Safety Occurrence Report H

The contents of this report are confidential. Details contained herein will be used for trend analysis only and will not be released to the public in a manner which allows identification of you or your crew.	**SOR REF No.**

IN THE FIRST INSTANCE, PLEASE SUBMIT ALL OCCURRENCE REPORT TO THE FOLLOWING CONTACTS:

CONTACTS:

Franceschini Claudio
claudio.franceschini@italfly.com
+393457373729

Aita Massimo
massimo.aita@italfly.com
+393484429577

PLEASE CHECK ALL BOXES THAT APPLY

MAY WE CONTACT YOU? (If yes, please provide your name and contact details below)		YES		NO

NAME		PHONE		E-MAIL	

1. LOCATION	2. DATE	3. TIME (UTC)	4. SCHOOL/RENT	5. Type of Helicopter and Registration

6. REPORTER				7. POB	8. DEP /ARR /DIVERSION	9. TECH LOG ENTRY			
	Instructor		Student		/ /		YES		NO
	PF		PNF	10. WEIGHT:					
	Pilot								

11. NEAREST AIRPORT	12. NEAREST NAVAID OR POINT	13. MISSION

14. FLIGHT PHASE															
	PRE-DEPARTURE		TOWING		BOARDING		PARKED		PUSHBACK		TAXI OUT		TAKE OFF		
	CLIMB		CRUISE		DESCENT		HOLDING		APPROACH		LANDING		TAXI IN		
	PARKING		POST-FLIGTH												
ALTITUDE:		SPEED:		KIAS		FLIGHT LEVEL									

15. ENVIRONMENT							16. SIGNIFICANT WX							
FLIGHT CO	ACTUAL WX		DAY		NIGHT	TWILIGHT		NIL		LIGHT		MOD		SEVERE
	IMC	WIND:		VISIBILITY:		TEMP C°:		HAIL		ICING		FOG		RAIN
	VMC	CLOUD:			QNH :			TURB		WINDSHEAR				SNOW

17. LANDING SITE CONDITIONS:																
RWY:		TYPE OF SURFACE:							HELICOPTER CONFIGURATION:							
	L		DRY			DAMP		WET	GEAR:		UP		DWN	DOORS:		Inst		Not Inst
	C		STANDING WATER			DUST			HYDRAULIC:		ON		OFF	GOV:		ON		OF
	R		SLUSH		ICE	SNOW		MUD	A/P:		ON		OFF	CARB HEAT		ON		OFF

18. CLASSIFICATION							
	ATC CLEARANCE DISCREPANCY		ATC DELAY		VORTEX RING		BIRDSTRIKE
	UNSTABLE APPROACH		NAV/COM FAILURE		OPEN PANEL/DOOR		AIRPROX
	RUNWAY INCURSION		NAV ERROR		W&B ERROR		LOW RPM
	RUNWAY EXCURSION		INSTRUMENT FAILURE		GROUND DAMAGE		F.O.D.
	WAKE VORTEX		VEHICLE CONFLICT		UNRULY PILOT OR STUDENT		ICING
	TURBULENCE		WINDSHEAR		SYSTEM IRREGURARITY		OBST NEARCOLL
	RAMP PROCEDURE OR EQUIPM		PERSON INJURY/ILLNESS		PRESSURISATION FAULT		Loss of Tail/Rotor Effectiveness
	Downgraded Visibility Environment		PROCEDURE Irregularity		OTHER		

19. WHAT HAPPENED (Please provide a concise description of the event including all key information such as WX condition, technical detail, crew, SOP, RWY, equipment, etc)	
	NOTIFICATION TO NATIONAL AUTHORITY
	HAS NATIONAL AUTHORITY BEEN INFORMED?
	☐ YES ☐ NO
	AUTHORITY:

20. HOW WAS THE PROBLEM FIXED? (Describe the corrective actions taken from the time you firt became aware of the problem and the time elapsed for recovering full control of the flight. Mention all assistance you received

21. CONTRIBUTING FACTOR: (Identify any weakness and describe how they affected the incident, ie: technical problem, training weakness, inappropriate or bad procedures, regulation, crew coordination, distraction, fatigue, CRM, commercial/company pressure, SOP, physical limitation)

22. POTENTIAL RISK: (What may have happened if corrective action not taken?)

23. YOUR SAFETY RACCOMENDATION(S): In your opinion, what corrective would help prevent a repeat occurrence and also who should be aware of this event/incident? (Pilot of this fleet, chief pilot, all company pilots, training staff, company management, engineering, ground ops, ATC, airport authority, aviation authority).

Appendix 3A – Safety Occurrence Report A

The contents of this report are confidential. Details contained herein will be used for trend analysis only and will not be released to the public in a manner which allows identification of you or your crew.	SOR REF No.

IN THE FIRST INSTANCE, PLEASE SUBMIT ALL OCCURRENCE REPORT TO THE FOLLOWING CONTACTS:

CONTACTS:

Franceschini Claudio
claudio.franceschini@italfly.com
+393457373729

Aita Massimo
massimo.aita@italfly.com
+393484429577

PLEASE CHECK ALL BOXES THAT APPLY

MAY WE CONTACT YOU? (If yes, please provide your name and contact details below)		YES		NO

NAME		PHONE		E-MAIL	

1. LOCATION	2. DATE	3. TIME (UTC)	4. FLIGHT NUMBER	5. A/C TYPE & REGISTRATION

6. REPORTER				7. POB	8. DEP /ARR /DIVERSION	9. TECH LOG ENTRY			
	CAPTAIN		F/O		/ /		YES		NO
	PF		PNF						

10. NEAREST AIRPORT	11. NEAREST NAVAID OR POINT

12. FLIGHT PHASE														
	PRE-DEPARTURE		TOWING		BOARDING		PARKED		PUSHBACK		TAXI OUT		TAKE OFF
	CLIMB		CRUISE		DESCENT		HOLDING		APPROACH		LANDING		TAXI IN
	PARKING		POST-FLIGTH										
ALTITUDE:		SPEED: MACH			KIAS				FLIGHT LEVEL				

13. ENVIRONMENT							14. SIGNIFICANT WX							
FLIGHT CO	ACTUAL WX		DAY		NIGHT	TWILIGHT		NIL		LIGHT		MOD		SEVERE
	IMC	WIND:		VISIBILITY:		TEMP C°:		HAIL		ICING		FOG		RAIN
	VMC	CLOUD:			QNH :			TURB		WINDSHEAR				SNOW

15. RWY CONDITIONS														
RWY:		RUNWAY STATE:					AIRCRAFT CONFIGURATION:							
	L		DRY		DAMP	WET	GEAR:		UP		DWN	FLAP:		UP		DWN
	C		STANDING WATER				SLATS:		IN		OUT	SPLRS:		IN		OUT
	R		SLUSH		ICE	SNOW	A/P:		ON		OFF	A/T:		ON		OFF

16. CLASSIFICATION							
	ATC CLEARANCE DISCREPANCY		ATC DELAY		ALTITUDE BUST		BIRDSTRIKE
	UNSTABLE APPROACH		NAV/COM FAILURE		OPEN PANEL/DOOR		AIRPROX/TCAS
	RUNWAY INCURSION		NAV ERROR		W&B ERROR		GPWS
	RUNWAY EXCURSION		INSTRUMENT FAILURE		GROUND DAMAGE		F.O.D.
	WAKE VORTEX		VEHICLE CONFLICT		UNRULY PAX		ICING
	TURBOLENCE		WINDSHEAR		SYSTEM IRREGURARITY		OTHER……
	RAMP PROCEDURE OR EQUIPM		PAX INJURY/ILLNESS		PRESSURISATION FAULT		OTHER……

17. WHAT HAPPENED (Please provide a concise description of the event including all key information such as WX condition, technical detail, crew, SOP, RWY, equipment, etc)	
	NOTIFICATION TO NATIONAL AUTHORITY
	HAS NATIONAL AUTHORITY BEEN INFORMED?
	☐ YES ☐ NO
	AUTHORITY:

18. HOW WAS THE PROBLEM FIXED? (Describe the corrective actions taken from the time you first became aware of the problem and the time elapsed for recovering full control of the flight. Mention all assistance you received

19. CONTRIBUTING FACTOR: (Identify any weakness and describe how they affected the incident, ie: technical problem, training weakness, inappropriate or bad procedures, regulation, crew coordination, distraction, fatigue, CRM, commercial/company pressure, SOP, physical limitation)

20. POTENTIAL RISK: (What may have happened if corrective action not taken?)

21. YOUR SAFETY RACCOMENDATION(S): In your opinion, what corrective would help prevent a repeat occurrence and also who should be aware of this event/incident? (Pilot of this fleet, chief pilot, all company pilots, training staff, company management, engineering, ground ops, ATC, airport authority, aviation authority).

TO BE FILLED OUT BY THE SAFETY MANAGER

ADDITIONAL ANALYSIS AND COURSE OF ACTION	Validated by:	Date:
Processed by the Safety Action Group Date:		
Manager:	Open on:	Closed on:

Appendix 4 – Occurrence Follow-up Action Form

OCCURRENCE FOLLOW-UP FORM		
Flight Occurrence Report No.:	Maintenance Occurrence Report No.:	Voluntary Occurrence Report No.:
1. PRELIMINARY ANALYSIS		
Performed by:	Date:	
The occurrence (Reminder of the facts): Reasons why the occurrence occurred - Safety barriers that failed or where inoperative: Reasons why it did not result in an accident - Safety barriers that were operative:		
Classification based on the Safety Risk Matrix		
ACCEPTABLE	**TOLERABLE**	**UNACCEPTABLE**
2. ADDITIONAL ANALYSIS BY THE SAFETY REVIEW BOARD or SAFETY ACTION GROUP (If the risk is not Acceptable)		
Validated by:	Date:	

Appendix 4 – Occurrence Follow-up Action Form (Cont'd)

3. CORRECTIVE ACTIONS					
Action No.	ACTION	Manager	Started	Closed	Comment

4. CLOSING THE EVENT		
Feedback transmitted to the personnel concerned on:		
MANAGER:	SIGNATURE:	DATE:

Appendix 5 – Intentionally left Blank

Appendix 6 – Corrective Action Form further to Audit

CORRECTIVE ACTION FORM FURTHER TO AUDIT

	CORRECTIVE ACTION FORM				On schedule	
	Created on:				Late	
	Revision of:				Critical	

Action Number	Action	Manager in Charge	Deadline	Running	Closed	Comments

Note: The form can also be used for preventive actions by replacing the term 'corrective' by 'preventive'.

Appendix 7 – Model of Corrective Action Follow-up File

MODEL OF CORRECTIVE ACTION FOLLOW UP FILE

CORRECTIVE ACTION FOLLOW UP FILE
Created on:
Revision of:

Diffused on:
By:

REF	Date	Activity Concerned	Preventive Measures to Implement	Action Number	Corrective Actions to Implement	Manager in Charge	Deadline	Summary List of Measures Implemented	Closed	Closure Validated by	
										Name	Signature

Note: The form can also be used for preventive actions by replacing the term 'corrective' by 'preventive'.

Appendix 8 – Intentionally left Blank

Appendix 9 – Procedure for Running the Safety Database

The *ITALFLY's* Safety Database is the tool used within the SMS to keep track of Safety Events and the corresponding hazards, associated risk levels, and safety risk controls.

This procedure details the different steps for integrating all safety information in the safety database.

Using a database helps when the number of safety data occurrences becomes substantial. A database can also help to structure the relationship between different types of data. For instance, each **Safety Event/Occurrence** can point to several **Hazards** which in turn can be linked to other Occurrences and/or to **Safety Studies**. Furthermore, every Hazard has its own **Risk level** and is addressed by one or many **Safety Controls/Defences/Mitigations**.

The database is composed by the following files:

✓ "Risk Assessment.btf" – This file logs all the risks identified in the company divided in 13 categories:

1. Loss of Control
2. Runway Excursion
3. CFIT
4. Runway Incursion
5. Airborne Conflict
6. Ground Handling
7. Fire
8. Umbrella
9. AOC
10. ATO
11. SIM
12. PART 145
13. SAPR

The **BowTie Methodology** is simple and the software is very intuitive to use. The software can be set up and customised with terminology and risk matrices.

A BowTie can be created in six simple steps

1. Add a Hazard
2. Add a Top Event
3. Add a Cause
4. Add an Outcome
5. Add Controls/Barriers
6. Add Defeating Factors

General Principle – The system described above is fully integrated. Whatever the source of information (reports, occurrences, studies, etc) whenever new hazards are identified they are logged into the "Hazard Log.xls", analysed and further processed.

Sheet n.1 Example Occurrence database template

OCCURRENCES DATABASE

Date	Ref	Classification	Type	Registration	Departure	Arrival	Localisation of event	Time (UTC)	Application of emergency	Mission	Number of passager	Flight phase	Flight rules	Visibility	Nébulosity	Wind	OAT	Weather conditions	Type of Undesirable Event	Description	Nature	CICTT Code

Nature	CICTT Code	Risk level	Damage on aircraft	If yes, description of damage	Related aircraft domain 1 (ATA)	Related aircraft domain 2 (ATA)	Pilot licence	Single engine Expérience	Multi engine Expérience	Age	Sex	Pilot health state	Copilot or stundent licence	Single engine Experience	Multi engine Experience	Age	Sex	Copilot health state

Sheet n.2 Example Occurrence database template cont.

Multi engine Experience	Age	Sex	Copilot health state	Nbre of pax or third parties slightly injuried	Nbre of pax or third parties badly injuried	Nbre of pax or third parties fatally injuried	Contributing factors 1	Contributing factors 2	Contributing factors 3	Contributing factors 4	Incident or accident investigated?	Corrective actions implemented	Investigation closed??	Date of completion

Appendix 10 – Safety Performance Indicators and Objectives

	Item	Objectives	Year 20XX Performance											
			1	2	3	4	5	6	7	8	9	10	11	12
			Qtr1			Qtr2			Qtr3			Qtr4		
			1st Half						2nd Half					
Level 1 of SMS implementation: Compliance														
Quantitative indicators	number of safety reviews performed,													
	number of staff who received training in SMS,													
	number of internal audits performed versus number of audits planned,													
	number of voluntary safety reports per staff member per year,													
	number of safety reports raised by customers per year.													
Qualitative indicators	feedback received from staff on the safety policy,													
	feedback received from staff r on new procedures implemented in the area of internal occurrence reporting or hazard identification,													
Level 2 of SMS implementation: Improvement														
	number of risk assessments performed following organisational changes,													
	percentage of standard operating procedures that have been subject to hazard identification,													
	average lead time for completing corrective actions following internal audit,													

	Item	Objectives	Year 20XX Performance											
			1	2	3	4	5	6	7	8	9	10	11	12
			Qtr1			Qtr2			Qtr3			Qtr4		
			1st Half						2nd Half					
	number of suggestions for safety improvements,													
	frequency and effectiveness of safety briefings,													
	number of additional procedural controls implemented.													
Level 3 of SMS implementation: Learning														
Quantitative indicators	number of high risk occurrences (coded amber and red)													
	mean value of risk ratings (over a reference period, e.g. 1 year)													
	sum of risk ratings (over a reference period, e.g. 1 year)													
	solidity of risk controls (defences) (rated from 0 to 5; over a reference period, e.g. 1 year)													

Appendix 11 - List of events requiring a Mandatory Occurrence Report

ANNEX I OCCURRENCES RELATED TO THE OPERATION OF THE AIRCRAFT

1. AIR OPERATIONS

1.1. Flight preparation

(1) Use of incorrect data or erroneous entries into equipment used for navigation or performance calculations which has or could have endangered the aircraft, its occupants or any other person.

(2) Carriage or attempted carriage of dangerous goods in contravention of applicable legislations including incorrect labelling, packaging and handling of dangerous goods.

1.2. Aircraft preparation

(1) Incorrect fuel type or contaminated fuel.

(2) Missing, incorrect or inadequate De-icing/Anti-icing treatment.

1.3. Take-off and landing

(1) Taxiway or runway excursion.

(2) Actual or potential taxiway or runway incursion.

(3) Final Approach and Take-off Area (FATO) incursion.

(4) Any rejected take-off.

(5) Inability to achieve required or expected performance during take-off, go-around or landing.

(6) Actual or attempted take-off, approach or landing with incorrect configuration setting.

(7) Tail, blade/wingtip or nacelle strike during take-off or landing.

(8) Approach continued against air operator stabilised approach criteria.

(9) Continuation of an instrument approach below published minimums with inadequate visual references.

(10) Precautionary or forced landing.

(11) Short and long landing.

(12) Hard landing.

1.4. Any phase of flight

(1) Loss of control.

(2) Aircraft upset, exceeding normal pitch attitude, bank angle or airspeed inappropriate for the conditions.

(3) Level bust.

(4) Activation of any flight envelope protection, including stall warning, stick shaker, stick pusher andautomatic protections.

(5) Unintentional deviation from intended or assigned track of the lowest of twice the required

navigation performance or 10 nautical miles.

(6) Exceedance of aircraft flight manual limitation.

(7) Operation with incorrect altimeter setting.

(8) Jet blast or rotor and prop wash occurrences which have or could have endangered the aircraft, itsoccupants or any other person.

(9) Misinterpretation of automation mode or of any flight deck information provided to the flight crewwhich has or could have endangered the aircraft, its occupants or any other person.

1.5. Other types of occurrences

(1) Unintentional release of cargo or other externally carried equipment.

(2) Loss of situational awareness (including environmental, mode and system awareness, spatial disorientation, and time horizon).

(3) Any occurrence where the human performance has directly contributed to or could have

contributed to an accident or a serious incident.

2. TECHNICAL OCCURRENCES

2.1. Structure and systems

(1) Loss of any part of the aircraft structure in flight.

(2) Loss of a system.

(3) Loss of redundancy of a system.

(4) Leakage of any fluid which resulted in a fire hazard or possible hazardous contamination of aircraft structure, systems or equipment, or which has or could have endangered the aircraft, its occupants or any other person.

(5) Fuel system malfunctions or defects, which had an effect on fuel supply and/or distribution.

(6) Malfunction or defect of any indication system when this results in misleading indications to the crew.

(7) Abnormal functioning of flight controls such as asymmetric or stuck/jammed flight controls (for example: lift (flaps/slats), drag (spoilers), attitude control (ailerons, elevators, rudder) devices).

2.2. Propulsion (including engines, propellers and rotor systems) and auxiliary power units (APUs)

(1) Failure or significant malfunction of any part or controlling of a propeller, rotor or powerplant.

(2) Damage to or failure of main/tail rotor or transmission and/or equivalent systems.

(3) Flameout, in-flight shutdown of any engine or APU when required (for example: ETOPS (Extended range Twin engine aircraft Operations), MEL (Minimum Equipment List)).

(4) Engine operating limitation exceedance, including overspeed or inability to control the speed of any high-speed rotating component (for example: APU, air starter, air cycle machine, air turbine motor, propeller or rotor).

(5) Failure or malfunction of any part of an engine, powerplant, APU or transmission resulting in any one or more of the following:

(a) thrust-reversing system failing to operate as commanded;

(b) inability to control power, thrust or rpm (revolutions per minute);

(c) non-containment of components/debris.

3. INTERACTION WITH AIR NAVIGATION SERVICES (ANS) AND AIR TRAFFIC MANAGEMENT (ATM)

(1) Unsafe ATC (Air Traffic Control) clearance.

(2) Prolonged loss of communication with ATS (Air Traffic Service) or ATM Unit.

(3) Conflicting instructions from different ATS Units potentially leading to a loss of separation.

(4) Misinterpretation of radio-communication which has or could have endangered the aircraft, its occupants or any other person.

(5) Intentional deviation from ATC instruction which has or could have endangered the aircraft, its occupants or any other person.

4. EMERGENCIES AND OTHER CRITICAL SITUATIONS

(1) Any event leading to the declaration of an emergency ('Mayday' or 'PAN call').

(2) Any burning, melting, smoke, fumes, arcing, overheating, fire or explosion.

(3) Contaminated air in the cockpit or in the passenger compartment which has or could have endangered the aircraft, its occupants or any other person.

(4) Failure to apply the correct non-normal or emergency procedure by the flight or cabin crew to deal with an emergency.

(5) Use of any emergency equipment or non-normal procedure affecting in-flight or landing

performance.

(6) Failure of any emergency or rescue system or equipment which has or could have endangered the aircraft, its occupants or any other person.

(7) Uncontrollable cabin pressure.

(8) Critically low fuel quantity or fuel quantity at destination below required final reserve fuel.

(9) Any use of crew oxygen system by the crew.

(10) Incapacitation of any member of the flight or cabin crew that results in the reduction below the minimum certified crew complement.

(11) Crew fatigue impacting or potentially impacting their ability to perform safely their flight duties.

5. EXTERNAL ENVIRONMENT AND METEOROLOGY

(1) A collision or a near collision on the ground or in the air, with another aircraft, terrain or obstacle

(2) ACAS RA (Airborne Collision Avoidance System, Resolution Advisory).

(3) Activation of genuine ground collision system such as GPWS (Ground Proximity Warning

System)/TAWS (Terrain Awareness and Warning System) 'warning'.

(4) Wildlife strike including bird strike.

(5) Foreign object damage/debris (FOD).

(6) Unexpected encounter of poor runway surface conditions.

(7) Wake-turbulence encounters.

(8) Interference with the aircraft by firearms, fireworks, flying kites, laser illumination, high powered lights, lasers, Remotely Piloted Aircraft Systems, model aircraft or by similar means.

(9) A lightning strike which resulted in damage to the aircraft or loss or malfunction of any aircraft system.

(10) A hail encounter which resulted in damage to the aircraft or loss or malfunction of any aircraft system.

(11) Severe turbulence encounter or any encounter resulting in injury to occupants or deemed to require a 'turbulence check' of the aircraft.

(12) A significant wind shear or thunderstorm encounter which has or could have endangered the aircraft, its occupants or any other person.

(13) Icing encounter resulting in handling difficulties, damage to the aircraft or loss or malfunction of any aircraft system.

(14) Volcanic ash encounter.

6. SECURITY

(1) Bomb threat or hijack.

(2) Difficulty in controlling intoxicated, violent or unruly passengers.

(3) Discovery of a stowaway.

ANNEX II - OCCURRENCES RELATED TO TECHNICAL CONDITIONS, MAINTENANCE AND REPAIR OF THE AIRCRAFT

1. MANUFACTURING

Products, parts or appliances released from the production organisation with deviations from applicable design data that could lead to a potential unsafe condition as identified with the holder of the type-certificate or design approval.

2. DESIGN

Any failure, malfunction, defect or other occurrence related to a product, part, or appliance which has resulted in or may result in an unsafe condition.

Remark: This list is applicable to occurrences occurring on a product, part, or appliance covered by the type certificate, restricted type-certificate, supplemental type-certificate, ETSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under Commission Regulation (EU) No 748/2012 .

3. MAINTENANCE AND CONTINUING AIRWORTHINESS MANAGEMENT

(1) Serious structural damage (for example: cracks, permanent deformation, delamination, debonding, burning, excessive wear, or corrosion) found during maintenance of the aircraft or component.

(2) Serious leakage or contamination of fluids (for example: hydraulic, fuel, oil, gas or other fluids).

(3) Failure or malfunction of any part of an engine or powerplant and/or transmission resulting in any one or more of the following:

(a) non-containment of components/debris;

(b) failure of the engine mount structure.

(4) Damage, failure or defect of propeller, which could lead to in-flight separation of the propeller or any major portion of the propeller and/or malfunctions of the propeller control.

(5) Damage, failure or defect of main rotor gearbox/attachment, which could lead to in-flight separation of the rotor assembly and/or malfunctions of the rotor control.

(6) Significant malfunction of a safety-critical system or equipment including emergency system or equipment during maintenance testing or failure to activate these systems after maintenance.

(7) Incorrect assembly or installation of components of the aircraft found during an inspection or test procedure not intended for that specific purpose.

(8) Wrong assessment of a serious defect, or serious non-compliance with MEL and Technical

logbook procedures.

(9) Serious damage to Electrical Wiring Interconnection System (EWIS).

(10) Any defect in a life-controlled critical part causing retirement before completion of its full life.

(11) The use of products, components or materials, from unknown, suspect origin, or unserviceable critical components.

(12) Misleading, incorrect or insufficient applicable maintenance data or procedures that could lead to significant maintenance errors, including language issue.

(13) Incorrect control or application of aircraft maintenance limitations or scheduled maintenance.

(14) Releasing an aircraft to service from maintenance in case of any non-compliance which endangers the flight safety.

(15) Serious damage caused to an aircraft during maintenance activities due to incorrect maintenance or use of inappropriate or unserviceable ground support equipment that requires additional maintenance actions.

(16) Identified burning, melting, smoke, arcing, overheating or fire occurrences.

(17) Any occurrence where the human performance, including fatigue of personnel, has directly contributed to or could have contributed to an accident or a serious incident.

(18) Significant malfunction, reliability issue, or recurrent recording quality issue affecting a flight recorder system (such as a flight data recorder system, a data link recording system or a cockpit voice recorder system) or lack of information needed to ensure the serviceability of a flight recorder system.

ANNEX V - OCCURRENCES RELATED TO AIRCRAFT OTHER THAN COMPLEX MOTOR-POWERED AIRCRAFT, INCLUDING SAILPLANES AND LIGHTER-THAN-AIR VEHICLES

1.1. Air operations

(1) Unintentional loss of control.

(2) Landing outside of intended landing area.

(3) Inability or failure to achieve required aircraft performance expected in normal conditions during take-off, climb or landing.

(4) Runway incursion

(5) Runway excursion.

(6) Any flight which has been performed with an aircraft which was not airworthy, or for which flight preparation was not completed, which has or could have endangered the aircraft, its occupants or any other person.

(7) Unintended flight into IMC (Instrument Meteorological Conditions) conditions of aircraft not IFR (Instrument flight rules) certified, or a pilot not qualified for IFR, which has or could have endangered the aircraft, its occupants or any other person.

(8) Unintentional release of cargo (3).

1.2. Technical occurrences

(1) Abnormal severe vibration (for example: aileron or elevator 'flutter', or of propeller).

(2) Any flight control not functioning correctly or disconnected.

(3) A failure or substantial deterioration of the aircraft structure.

(4) A loss of any part of the aircraft structure or installation in flight.

(5) A failure of an engine, rotor, propeller, fuel system or other essential system.

(6) Leakage of any fluid which resulted in a fire hazard or possible hazardous contamination of aircraft structure, systems or equipment, or risk to occupants.

1.3. Interaction with air navigation services and air traffic management

(1) Interaction with air navigation services (for example: incorrect services provided, conflicting communications or deviation from clearance) which has or could have endangered the aircraft, its occupants or any other person.

(2) Airspace infringement.

1.4. Emergencies and other critical situations

(1) Any occurrence leading to an emergency call.

(2) Fire, explosion, smoke, toxic gases or toxic fumes in the aircraft.

(3) Incapacitation of the pilot leading to inability to perform any duty.

1.5. External environment and meteorology

(1) A collision on the ground or in the air, with another aircraft, terrain or obstacle (1).

(2) A near collision, on the ground or in the air, with another aircraft, terrain or obstacle (1) requiring anemergency avoidance manoeuvre to avoid a collision.

(3) Wildlife strike including bird strike which resulted in damage to the aircraft or loss or malfunction of anyessential service.

(4) Interference with the aircraft by firearms, fireworks, flying kites, laser illumination, high powered lights lasers, Remotely Piloted Aircraft Systems, model aircraft or by similar means.

(5) A lightning strike resulting in damage to or loss of functions of the aircraft.

(6) Severe turbulence encounter which resulted in injury to aircraft occupants or in the need for a post-flight turbulence damage check of the aircraft.

(7) Icing including carburettor icing which has or could have endangered the aircraft, its occupants or any other person