

EHEST SAFETY MANAGEMENT TOOLKIT

SAFETY ASSESSMENT DOCUMENT - GUIDANCE

1st Edition, December 2015



Courtesy: Elicampiglio
Photo: Michele Calovi

European Helicopter Safety Team

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GUIDANCE

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1. ABOUT THIS MANUAL

This manual has been developed by the Specialist Team Operations & SMS of the European

The word "RISK ASSESSMENT" is used in the Regulation with different meanings depending on the context.

- Risk assessment as "evaluation", "measurement" of the level of the risk associated to a particular consequence, as part of the overall risk management process.
- Risk assessment as a "safety document", or "safety study", that describes the operation, defines the hazards, the possible consequences, evaluates the risk levels, lists the safety barriers and assesses the tolerability of the residual risks.

In order to distinguish between these two concepts, this EHEST tool uses a different word to address the "document" and the "study".

As per ICAO SMM Doc. 9859, these documents are called "SAFETY ASSESSMENT":

5.3.46 *The service provider's safety information management system should include **safety assessment documentation** that contains hazard descriptions, the related consequences, the assessed likelihood and severity of the safety risks, and required safety risk controls. Existing safety assessments should be reviewed whenever new hazards are identified and proposals for further safety risk controls are anticipated.*

This guidance helps the operator to develop his own SAFETY ASSESSMENTS based on a RISK MANAGEMENT process, as required by "SPO.OP.230 - Standard operating procedures".

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3. ACRONYMS

AIB	Aviation Investigation Board
CO	Consequence
ESSI	European Strategic Safety Initiative
HE	Hazardous Event
PB	Proactive Barrier
RA	Risk Assessment (risk evaluation as part of the Risk Management process)
RB	Recovery Barrier
SA	Safety Assessment document
SOP	Standard Operating Procedure
TA	Task analysis
TAF	Task Analysis Form
TE	Task Elements
TSE	Task Sub-Elements

4. PURPOSE

The purpose of this Safety Assessment (SA) document is to fulfil the requirements in EASA OPS SPO.OP.230 Standard Operating Procedures. This requires an operator to conduct a SA, analyse the complexity of the activity, to determine the hazards and associated risks inherent in the operation, analyse and evaluate the risks, and to establish mitigating measures before commencing a specialised operation.

A Standard Operating Procedure (SOP) appropriate to the specialised activity and aircraft used, taking account of the requirements of SPO subpart E, shall be established based on this SA document. The SOP will be part of the Operations Manual or a separate document. The SOP needs to be regularly reviewed and updated, as appropriate.

5. TYPE OF OPERATION AND BRIEF DESCRIPTION

Describe the operation for which the SOP is to be used in sufficient detail. This should be based on customer requirements, previous experience, relevant regulatory requirements and any other pertinent source.

Operations should be described with enough detail to facilitate a Task Analysis (TA) and the Risk Management process. This does not mean that all details and limitations have to be considered.

The description should cover the type of operation, any equipment involved, type of environment (etc.) unless covered under other items below.

6. WORKING GROUP PARTICIPANTS

A working group is set up to perform the analysis. Size of the operator permitting, this working group should ideally be composed of multi-disciplinary participants (for instance chief pilot, safety manager, maintenance manager, flight operations post holder, etc.).

7. DATA USED

Various material and data should be used, such as:

- Regulatory requirements;
- Existing SOPs and SAs ;
- Operator risk/hazard register;
- Operator data bank/analyses including occurrences and safety concerns raised within the organisation;
- AIB investigations;
- ESSI results;
- Authority inspection reports;
- Expert judgement;
- Simulations;
- Codes of Practice; and
- Industry standards.

Material and data should be assessed for suitability, relevance and currency. Data may not be fully representative, may be under or over-reported, and may lack precision and accuracy. Expert opinions can be used to compensate for such limitations.

8. DESCRIPTION OF THE ANALYSIS METHOD

The Hazardous event Identification & Risk Assessment (HIRA) method is a simplified method for quickly identifying the main hazards involved in a given operation. For simple operations the HIRA-RADEC method maybe sufficient. The operator should determine the method that best fits the required analysis.

The above methods can also be used to reassess existing SOPs/procedures.

This chapter should include a description of the chosen method along with relevant references regarding further details contained within other documents, such the Safety Management Manual, Operations Manual etc.

9. EXTERNAL CONTEXT

9.1. Rules and Regulations

The applicable rules and regulations that affect the operation should be determined and listed.

9.2. Approvals/Authorisations

Evaluate if the operation is carried out over an area where the safety of third parties on the ground is likely to be endangered in the event of an emergency, or if the type of operation or area where the operation is to be conducted is designated as high risk by the competent authority. If so, an application to the competent authority to obtain authorisation is required. An authorisation is similarly required from other national authorities if the operation is performed in another state. Various approvals and/or exemptions may be required for certain types of operations. These should be listed here including the status of each. It must be assessed if the operation is within the operator's privileges.

9.3. Environmental conditions (visibility, wind, turbulence, contrast, light, elevation etc. unless evident from the SOP)

Describe the environmental conditions (visibility, wind, turbulence, contrast, light, elevation etc.) relevant to the operation.

9.4. Stakeholders and their potential interest

External stakeholders may be persons living in the vicinity of where the operation takes place, and they could be affected by noise and flights at low altitude (frightened) or even more directly if the operation involves dropping of objects/spraying or certain helicopter operations such as sawing of trees, power line inspection or maintenance, etc.

10. INTERNAL CONTEXT

10.1. Type(s) of aircraft

The operator's aircraft types that will be used for the operation should be listed.

10.2. Personnel and qualifications

The categories of personnel that will be employed for the operation should be listed including their competence and qualification.

10.3. Combination/similarity with other operations/SOP

List existing SOPs that address similar operations and that may be used as a basis, only requiring an assessment of the differences between that operation and the operation being assessed here.

10.4. Other SA to be referenced/used/considered/plugged in

List existing SAs that address similar operations, as they can be used as reference, be affected by or "plugged in" with this SA in order to avoid unnecessary duplication.

11. TASK ANALYSIS

The operation may be subdivided into task elements (planning, preparation, take off, departure, enroute, load preparation, briefing, etc.). Task Elements (TE) could be further subdivided into Task Sub-Elements (TSE) for complicated operations, but they should be grouped in order to make it possible to maintain a "building block" approach (i.e. it should not be necessary to repeat the SA for the take-off, landing and en-route phases for every type of operation if the conditions are similar, e.g. "take-off from an unprepared landing site on snow covered ground in a hostile environment). Each task element should be described in sufficient detail to facilitate the safety risk management process.

The task analysis may be documented in an attached Task Analysis Form (TAF). There is room for a more comprehensive description to be added to task elements/sub-elements to ensure good understanding of the scope of each of these and of the entire operation.

The Task Analysis is not a required document by the Regulation, but it could help to identify the related Hazardous Events in complex operations.

12. HAZARDOUS EVENTS IDENTIFICATION, RISK ANALYSIS and RISK ASSESSMENT

A full risk management process shall be performed (Hazardous Events identification, Risk Analysis probability/severity, Risk Assessment/tolerability and Risk Control/mitigation). The risk management elements can be described and listed in this chapter or a reference can be done to safety analysis documents. Insert the following paragraphs as needed.

12.1. Identification of Hazardous Events

Each Hazardous Event that could be triggered by the operation being studied shall be listed and analysed.

Task Elements, if defined, can be used to group the related Hazardous Events. Each Hazardous Event should then be analysed to determine the possible consequences. It is important to identify as many relevant Hazardous Events and related Consequences as possible.

Existing and new safety Barriers, which could reduce the risk, shall then be listed. The Barriers should contain a reference to where in the SOP (or other documentation) this barriers are described and implemented.

Each Hazardous Event could have more than one barrier (Proactive and Recovery Barriers), and one barrier may work to prevent more than one Hazardous Event.

12.2. Risk Analysis and Risk Evaluation

Each Consequence should then be analysed to determine its risk level and acceptability (is the risk adequately controlled to the extent that the risk is acceptable?). In case the residual risk level is not acceptable, new Barriers should be sought and the Consequence re-assessed.

13. RISK DESCRIPTION

A summary of the most important Hazardous Events, their possible Consequences and the related Risks levels shall be documented.

14. RISK EVALUATION

The resulting risk (also called residual risk) described above should be evaluated to determine if it is acceptable against the operator's risk acceptance criteria.

If the resulting risk is unacceptable, further risk reduction is necessary: see next Section Further Risk Reduction Measures.

When the resulting risk is found to be acceptable based the operators risk acceptance criteria, continue with the "Conclusions".

15. FURTHER RISK REDUCTION MEASURES

If it is found that the residual risk is unacceptable or there are hazards or consequences that are not adequately controlled, further risk reduction is required.

Further risk reduction can be achieved by identifying and implementing new barriers, or by modifying/removing existing Proactive and/or Recovery Barriers).

Risk Transfer check: It should be verified that new, modified or removed barriers do not create new Hazardous Events or increase other risks in an unacceptable manner.

The new barriers should be entered in the HIRA or Safety Assessment document, and the Risks of the affected Consequences should be re-analysed.

The Risk Management process should then start again from step "12. HAZARDOUS EVENTS IDENTIFICATION, RISK ANALYSIS and RISK ASSESSMENT" and steps 12, 13 and 14 should be repeated until the residual risk is acceptable.

When residual risk is considered acceptable, the new or modified barriers should be included in the SOP as normal procedures and/or abnormal or emergency procedures as appropriate.

16. CONCLUSIONS

The SA should contain the conclusions. The conclusion(s) should be unambiguous, precise and robust to enable decision makers to assess the overall risk of the operation.

Conclusions should address issues such as:

- the operation could be performed with an acceptable risk level (the risk of performing the operation according to the SOP is acceptable);
- the operation complies with all relevant regulatory requirements;
- the operation is within the operator's privileges; and
- the operator's aircraft and equipment are adequate for the operation.

17. MONITORING AND FOLLOW UP

The monitoring and follow up requirements for the SA and the coupled SOP (set) should be determined and included here.

An interval for periodic review should be determined and included, as well as the requirement to review SOP following incidents and accidents within the operator and also within the industry in general, to identify further Hazardous Events, Consequences and Barriers.

SA and SOP should also be reviewed based on operational feedback (for instance when incidents occur) or when changes are introduced into the operations.

Attachments:

Document	Title/ID #	Revision/date
This Safety Assessment is the basis for SOP		
Task Analysis		
HIRA		

This authorising statement should be signed by the relevant manager:

"The risk as described in this Safety Assessment is considered acceptable according to company criteria and the operation may be performed according to the associated SOP."

This table can be placed in the first page to readily show the signatures and the last revision and date.

Signature				
Position				
Name				
	Issued by	Checked by	Approved by	Approved by