APAC GmbH
*Austrian Product Assurance Company*
Austria, A – 2154 Unterstinkenbrunn 78
Tel.: +43/2526/6639, Fax: +43/720/884011
E-Mail: shz@apac.at; www.apac.at
Mobile: +43/664/4245242

APAC ALG TRANSPORTATION INFRASTRUCTURE & LOGISTICS

ČVUT ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

# Procedure for IFR Safety Assessment/Certification of a Specific Uncontrolled Aerodrome in the Czech Republic

## CZCAA IFR Study

| Status: | Name: | Date: | Signature: |
|---|---|---|---|
| created/updated: | Hans Scherzer | 2017-03-30 | electronic |
| reviewed: | Michal Mlynarik | 2017-03-30 | electronic |
| formally reviewed: | Andrej Lalis | 2017-03-30 | electronic |
| released: | Hans Scherzer | 2017-03-31 | APAC Ges.m.b.H Austrian Product Assurance Company A-2154 Unterstinkenbrunn 78 - Austria Tel.: +43/2526/20049 Fax +43/2526/20162 www.apac.at |

APAC GmbH
*Austrian Product Assurance Company*

Austria, A – 2154 Unterstinkenbrunn 78
Tel.: +43/2526/6639, Fax: +43/720/884011
E-Mail: shz@apac.at; www.apac.at
Mobile: +43/664/4245242




# Procedure for IFR Safety Assessment/Certification of a Specific Uncontrolled Aerodrome in the Czech Republic

## CZCAA IFR Study

| **Status:** | **Name:** | **Date:** | **Signature:** |
|---|---|---|---|
| created/updated: | Hans Scherzer | 2017-03-30 | electronic |
| reviewed: | Michal Mlynarik | 2017-03-30 | electronic |
| formally reviewed: | Andrej Lalis | 2017-03-30 | electronic |
| released: | Hans Scherzer | 2017-03-31 | |

## Change History

| Version | Status | Date | Affected Pages | Author | Cause and Summary of the Change |
|---|---|---|---|---|---|
| 00.01 | Draft | 2017-03-28 | All | H. Scherzer | First draft |
| 01.00 | Released | 2017-03-30 | All | H. Scherzer | Release version |

## Table of Contents



## Contents of Figures



## Content of Tables

N/A

# 1 Introduction

This document provides procedures incl. template and provides guidance for the safety assessment of a specific uncontrolled aerodrome in the Czech Republic applying for the introduction of IFR operations including the changes of the CZCAA standard procedure specific for the certification of the IFR operations. Safety assessment is one of the tasks to be performed during certification of a specific uncontrolled aerodrome applying for IFR operations.

CZCAA is responsible for the maintenance of this document. The safety assessment procedure shall be reviewed before it is applied for a safety assessment and, if necessary, be updated by the responsible person of the CZCAA. Improvement proposals and lessons learnt received during the performance of safety assessments shall be taken into account.

# 2 Safety Assessment Process

The safety assessment process is part of the certification procedures for the certification of a specific uncontrolled aerodrome applying for IFR operations. Figure 1 provides the general context of the safety assessment process within the certification procedure.

The safety assessment process is initialised by the CZCAA Certification Leader who is responsible for the specific certification of the uncontrolled aerodrome applying for IFR operations.

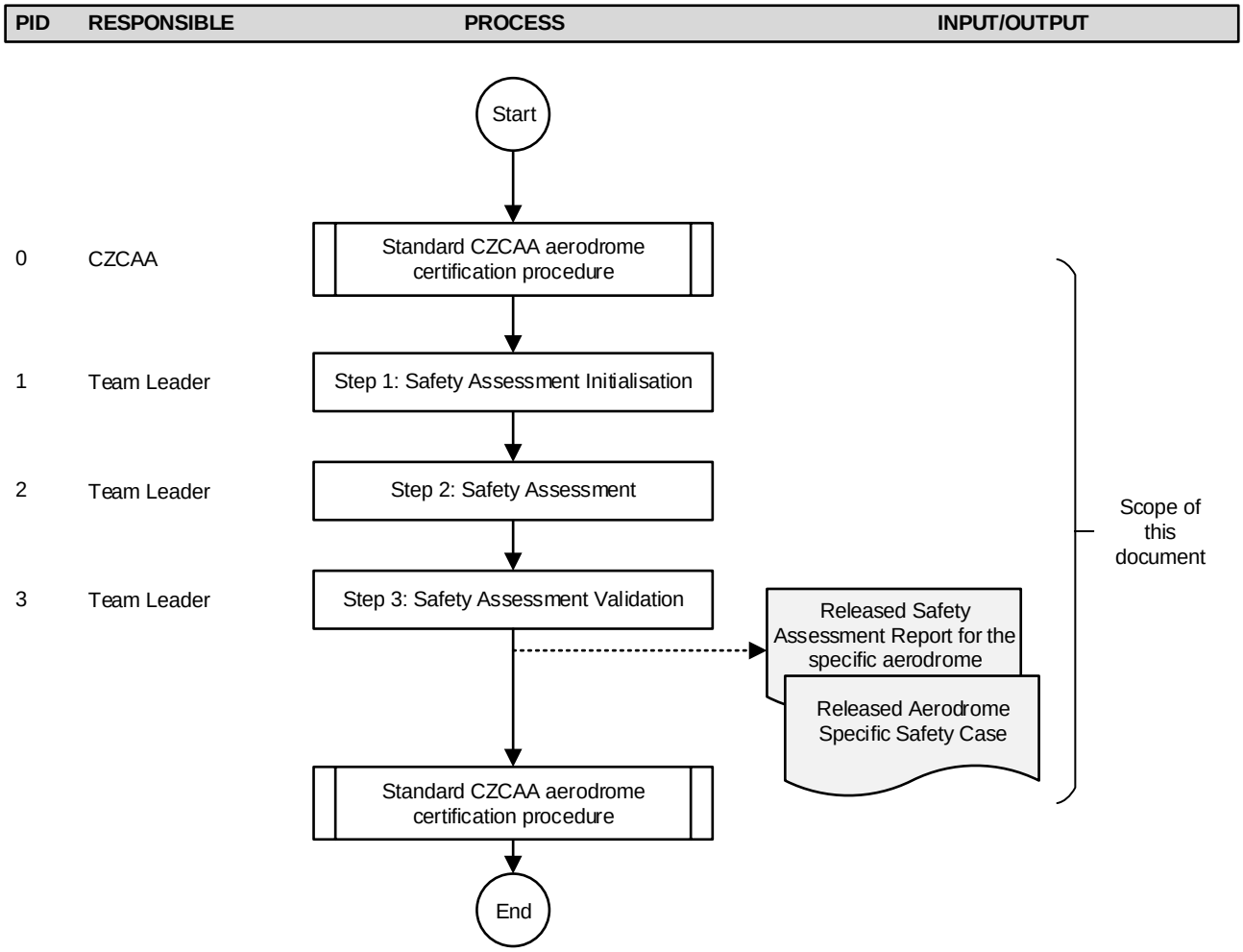


Figure 1 Overview of safety assessment/certification processes

PID 0 Standard certification process requires CZCAA to request a safety assessment from the aerodrome operator.

PID 1 For details please see 3 Step 1: Safety Assessment Initialisation. In general, the Safety Assessment Team Leader is responsible for this process.

PID 2 For details please see 4 Step 2: Safety Assessment of a Specific Uncontrolled Aerodrome. In general, the Safety Assessment Team Leader is responsible for this process.

PID 3 For details please see 5 Step 3: Safety Assessment Validation and Further Steps. In general, the Safety Assessment Team Leader is responsible for this process.

## 2.1 Goal and Scope of the Safety Assessment Process

This safety assessment process describes the applicable process for the safety assessment of a specific uncontrolled aerodrome in the Czech Republic applying for the introduction of IFR operations. This process ensures that the assessment is planned, performed and validated and tailors the applicable standard ([R06] Air Navigation System Safety Assessment Methodology) to this specific purpose.

## 2.2 Limitations of the Safety Assessment Process

The described safety assessment process takes into account that:

- it will be applied in the Czech Republic only a few times;
- the IFR operations at uncontrolled aerodromes have already been assessed, implemented, certified several times and are used operationally within the European Union (please see [R03] Deliverable D6 - Report on Similar European Activities);
- a specific safety assessment in the Czech Republic ([R04] Safety Study on Implementation of IFR operation at LKHK airport) with similar scope and environment was performed;
- [R07] Deliverable D3 - Generic Safety Case for the Implementation of IFR Operations and [R08] Generic Safety Assessment for the Implementation of IFR Operations are available.

The tailoring of [R06] Air Navigation System Safety Assessment Methodology takes into account the data and lessons learned of the activities described above. This results in a lean process and a lean team adequate for this assessment but not necessarily for other assessments. Therefore, the described process must not be used for other assessments than the introduction of IFR operations at an uncontrolled aerodrome in the Czech Republic.

## 2.3 Goal of the Safety Assessment

The goal of the safety assessment is to verify whether the implemented change (in this case the IFR operations implemented at specific uncontrolled aerodromes in the Czech Republic) is acceptably safe. Convincing evidence shall be provided if the change is considered acceptably safe.

## 2.4 High-level Safety Argument

IFR operations implemented at a specific uncontrolled aerodrome will be acceptably safe.

## 2.5 Safety Assessment Scope

The safety assessment shall include:

1. Operational concept.
2. Human factors (resources, qualification, training).
3. Aerodrome equipment (navigation, communication, meteorological, etc.).
4. Requirements for aircraft equipment (navigation, communication, etc.).
5. Procedures implemented.
6. Aerodrome environment (airspace, neighbouring aerodromes/airfield, etc.).

The change to be assessed is the implementation of IFR operations at an uncontrolled aerodrome which is AFIS certified.

# 3 Step 1: Safety Assessment Initialisation

Step 1 ensures that all safety assessment preconditions are available and satisfied. Figure 2 provides an overview of the Step 1 processes.

To avoid unnecessary overhead and increase efficiency most of the initialisation tasks should be performed by the Safety Assessment Team Leader.

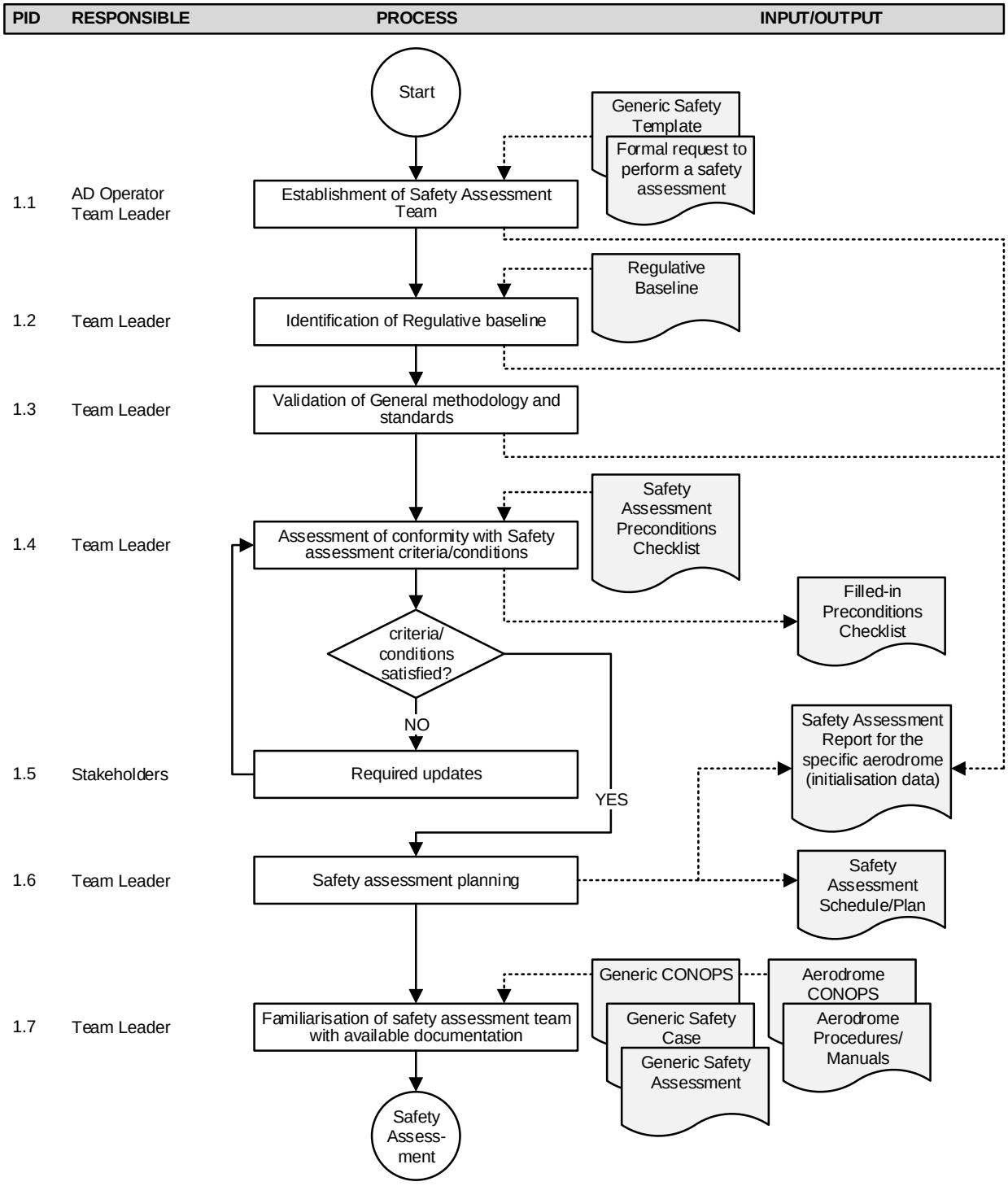


Figure 2 Step 1 process overview

PID 1.1 The CZCAA requests aerodrome operator to perform the safety assessment. The aerodrome operator mandates a Safety Assessment Team Leader. The Safety Assessment Team Leader should have the following minimum qualification:

- eight years of experience in ATM safety assessment;
- detailed knowledge of [R06] Air Navigation System Safety Assessment Methodology;
- familiar with ANSP and aerodrome operations.

Depending on the expertise of the Safety Assessment Team Leader he shall establish a Safety Assessment Team of aviation experts supporting him to cover the whole range of expertise necessary for the assessment. The experts of the Safety Assessment Team will receive all assessment-related information and shall review the documentation produced during the

assessment. A non-exhaustive list of stakeholders and their aviation experts that could contribute to the team expertise is provided in Annex C: List of Aviation Experts/Stakeholders.

Recommended Safety Assessment Team members are:

a. Safety Assessment Team Leader (mandatory);
b. Aerodrome operator representative covering safety;
c. Aerodrome operator – Head of AFIS station;
d. ANSP Safety representative;
e. ANSP ATCO;
f. Pilots.

PID 1.2 The Safety Assessment Team Leader shall review the [R09] Regulative Baseline for the Implementation of IFR Operations at Uncontrolled Aerodromes in the Czech Republic for completeness and correctness. Any change proposals of the regulative baseline will be submitted by the Safety Assessment Team Leader to CZCAA for review and approval.

PID 1.3 The applicable methodology and standard are described in this document. The Safety Assessment Team Leader shall validate it and amend it if not appropriate. Any amendments have to be approved by the CZCAA.

PID 1.4 Application of Annex A: Template - Safety Assessment Preconditions Checklist to the available data and documentation.

PID 1.5 If preconditions for the safety assessments are missing, the Safety Assessment Team Leader has to request them. If the directly involved stakeholders don't provide the information on time, it has to be escalated to the airport operator that will coordinate the next steps with the CZCAA.

PID 1.6 The Safety Assessment Team Leader is responsible for safety assessment planning. A tentative schedule has to be produced and maintained for all major steps described in this document.

PID 1.7 As the Safety Assessment Team has to contribute to the Safety Assessment Team Leaders' activities on short notice, the Safety Assessment Team should be familiar with the safety assessment even if most of the work will be performed by the Safety Assessment Team Leader. The Safety Assessment Team Leader should distribute the available information to the Safety Assessment Team members and invite them to a familiarisation workshop. The goal of the workshop is:

a. Familiarisation of the team with the assessment baseline, available documentation, scope and process;
b. Identification of additional information available;
c. Schedule.

# 4 Step 2: Safety Assessment of a Specific Uncontrolled Aerodrome

The goal of this process is:

- Determination whether the planned operations of a specific aerodrome are acceptably safe (please see [R07] for the definition of "acceptably safe").
- Limitation of the effort to what is necessary for a decision as to whether the IFR operation is acceptably safe.
- Re-use as many as already available results of similar activities as reasonable to avoid duplication of work but, of course, without the risk of implementing unsafe operations due to minimisation of the effort. Therefore, the results of the [R08] Generic Safety Assessment for the Implementation of IFR Operations should be re-used as much as reasonable. If similar operations (similar environment and similar operational characteristics) are assessed a re-assessment should only be performed if there are serious doubts about the correctness of the results of the [R08].

Figure 3 provides an overview of the Step 2 processes.

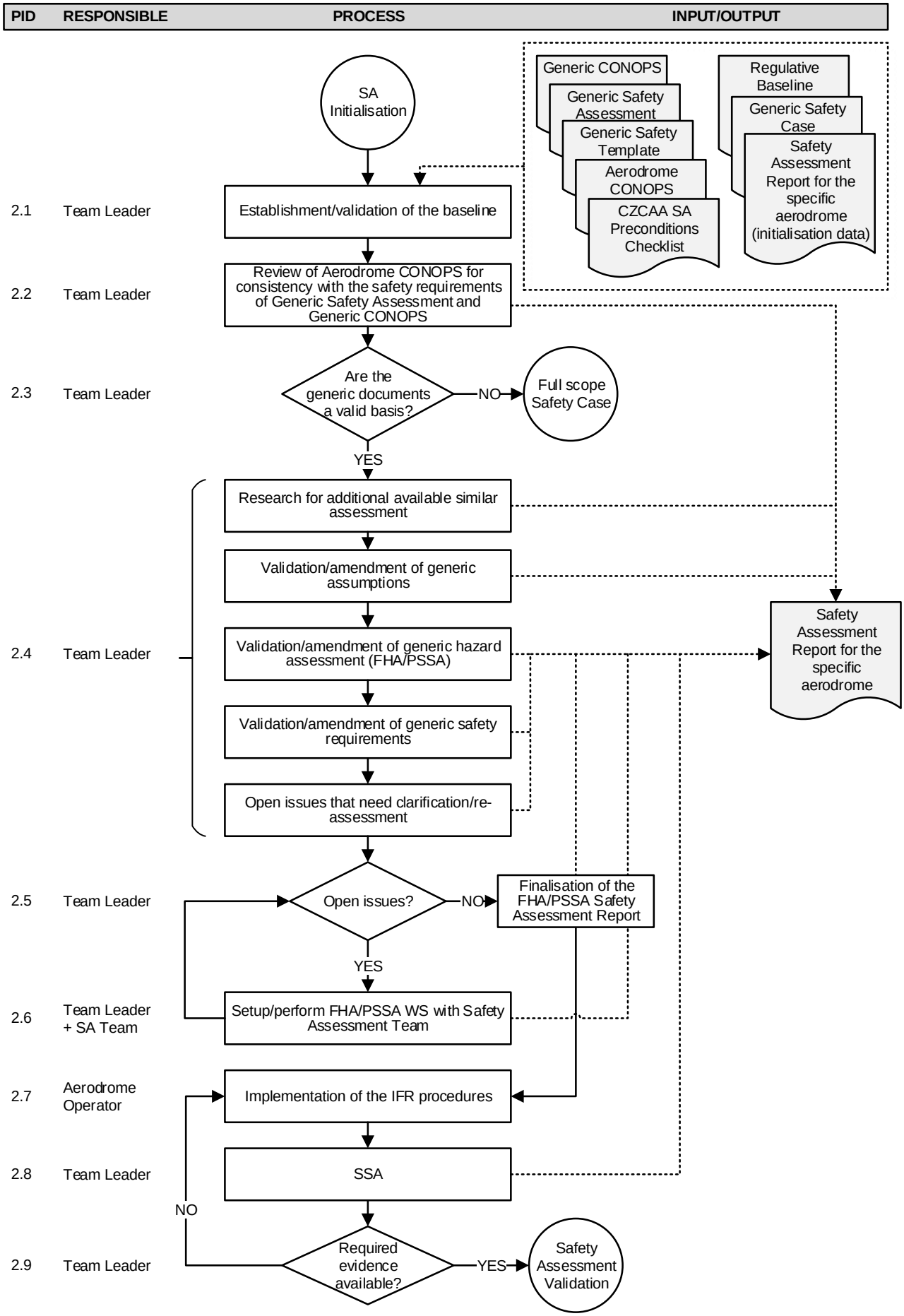


Figure 3 Step 2 process overview

PID 2.1 Only the applicable regulative baseline will be established during 3 Step 1: Safety Assessment Initialisation. Additionally, some documents (non-exhaustive) are identified in the grey box of Figure 3 Step 2 process overview. It is the task of the leader to investigate whether additional information should be incorporated into the baseline for the assessment (e.g. reports of recently performed similar assessments). Also the mentioned Aerodrome CONOPS may not provide all information necessary to provide the environmental and operational information needed, and in this case other documents need to be included.

PID 2.2 The investigation whether an aerodrome to be assessed is a similar environment and has similar operational characteristics as the "generic aerodrome IFR operation" is not limited to the documents identified in the box of Figure 3 Step 2 process overview. All relevant information available shall be taken into account.

PID 2.3 The Safety Assessment Team Leader should prepare the decision. If a new full-scope safety case has to be performed, the results of 3 Step 1: Safety Assessment Initialisation is not valid and a new initialisation according to [R06] Air Navigation System Safety Assessment Methodology has to be performed.

PID 2.4 The intention is that this assessment is performed by a very small team. The composition of the Safety Assessment Team depends on the competence of the Safety Assessment Team Leader and the Safety Assessment Team members. All hazard related assumptions and results have to be validated taking into account the specific aerodrome's environment and operation. Differences and issues introduced by the specific aerodrome that may cause new or different hazards have to be addressed.

PID 2.5 If the Safety Assessment Team cannot perform the assessment credibly, the open issues shall be subject to an assessment by a larger team with more competence. The Safety Assessment Team Leader shall record the status of open issues of the assessment, and if there are open issues, a safety assessment workshop shall be performed.

PID 2.6 The participants of the workshop shall be the Safety Assessment Team Leader, the Safety Assessment Team and additional experts and stakeholders as required. If the operational concept of the aerodrome to be assessed is unclear, it should be already clarified before the workshop. During the workshop the open issues should be discussed and the opinions consolidated, hazards/safety requirements with questionable status reassessed/validated, new hazards identified and assessed, if any, and the conclusion should be reviewed. The Safety Assessment Team Leader has to produce minutes and, based on the compilation of the workshop results, he has to update the Safety Assessment Report for the specific aerodrome.

PID 2.7 If the implementation was already performed and the evidence for the SSA is already available, this task can be skipped.

PID 2.8 The Safety Assessment Team Leader will perform the SSA and verify whether all evidence necessary to implement the results of the FHA/PSSA is available. See [R06] Air Navigation System Safety Assessment Methodology for required information. In case expertise is required that he doesn't have, he will invite specific experts.

PID 2.9 If the Safety Assessment Team Leader has doubts, the airport operator should consult with CZCAA.

# 5 Step 3: Safety Assessment Validation and Further Steps

The goal of this process is:

- Review of the draft Safety Assessment Report for the specific aerodrome by the Safety Assessment Team and selected stakeholders and mitigate/remove issues identified in a way to create a basis for the acceptance of the results by the stakeholders.
- If major issues are identified, they have to be addressed by means of adequate actions.
- A released Safety Assessment Report for the specific aerodrome.
- Based on the [R07] Deliverable D3 - Generic Safety Case for the Implementation of IFR Operations, a Safety Case for the specific aerodrome has to be produced for which the Safety Assessment Report on the specific aerodrome is a major and mandatory input.

The Safety Case for the specific aerodrome is the basis for the further certification process.

Figure 4 provides an overview of Step 3 processes.

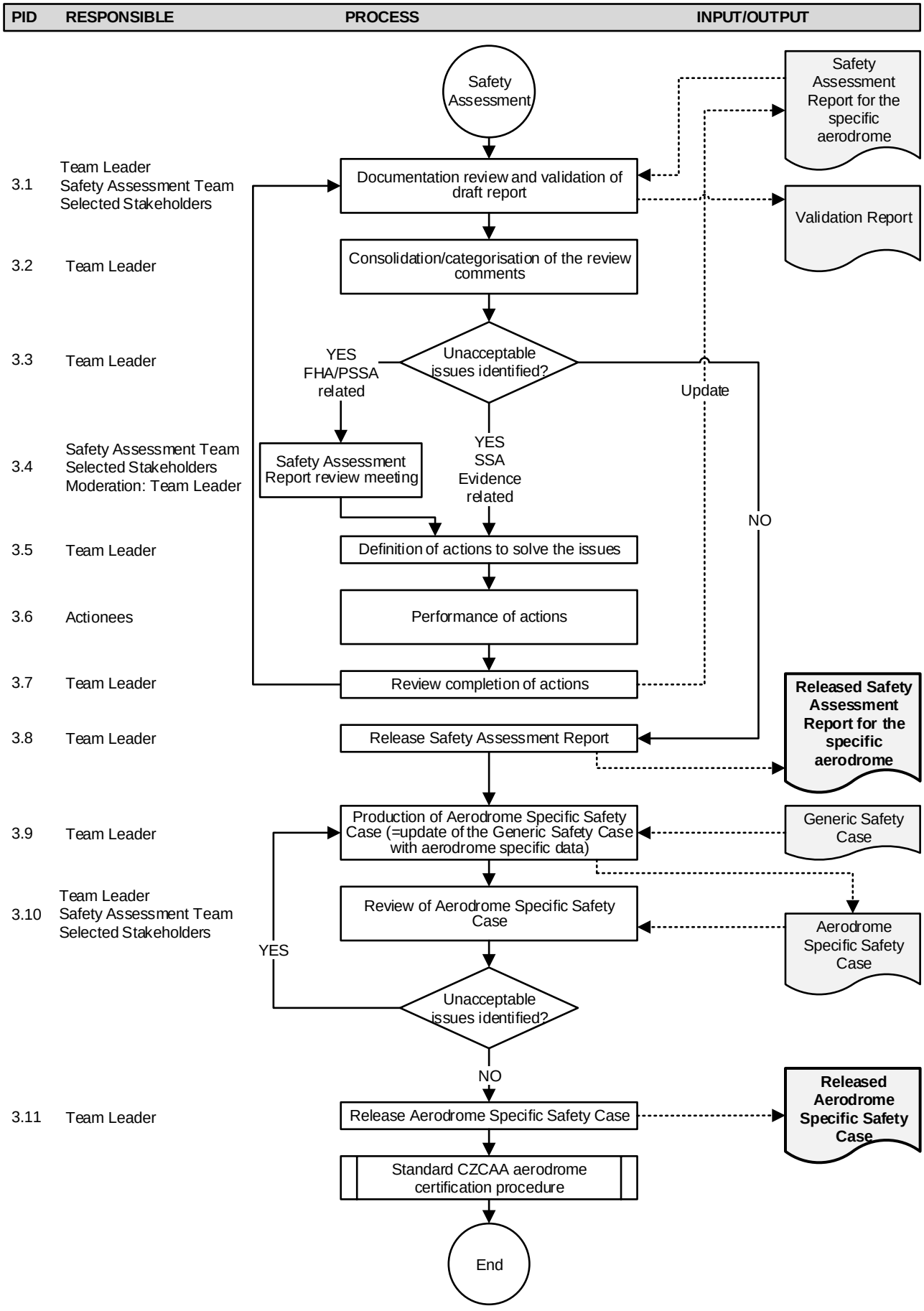


Figure 4 Step 3 process overview

PID 3.1 The Safety Assessment Report for the specific aerodrome produced in 4 Step 2: Safety Assessment of a Specific Uncontrolled Aerodrome and the referenced documentation is the main input for the review.
The review has to be managed by the Safety Assessment Team Leader.
As most of the reviewers were not involved in the safety assessment process, it is recommended to start the process with a meeting for the presentation of and familiarisation with the Safety Assessment Report for the specific aerodrome.
The review is not limited to any part of the assessment.
In parallel, the Safety Assessment Team Leader shall review the Safety Assessment Report for the specific aerodrome based on the [R06] Air Navigation System Safety Assessment Methodology checklist for the validation.
A review period of about 2 weeks is considered adequate as experience has shown that longer review periods don't necessarily lead to better reviews.
Review comments can be accepted in writing in any format. If a special format is considered more adequate and efficient, this has to be specified in a review guideline distributed together with the Safety Assessment Report for the specific aerodrome.

PID 3.2 Even if the review will be prepared well, it can be expected that the comments will need substantial compilation and enquiries.
The Safety Assessment Team Leader (team) has to clarify and consolidate the comments.
If the comments are related to evidence stated as incomplete or missing in the report, it may be sufficient to agree on actions in writing or discuss them on a case-by-case basis in person.
If the comments are related to the FHA, PSSA, SSA process or input data, it is recommended to perform a Safety Assessment Report Review meeting with a wider audience to promote broad acceptance of the results.

PID 3.3 The Safety Assessment Team Leader has to make the decision. If unacceptable issues are identified a consultation with the CZCAA is recommended before a final decision.

PID 3.4 The Safety Assessment Team Leader has to organise and moderate the meeting. It has to be taken into account that the more participants, the more difficult it will be to get consolidated results.

PID 3.5 The Safety Assessment Team Leader has to define the action items, manage the action item process and monitor the progress. If critical open issues cannot be closed, the Safety Assessment Team Leader should coordinate escalation with the CZCAA.
The data of the validation process has to be recorded continuously in a Validation Report.

PID 3.6 See PID 3.5.

PID 3.7 See PID 3.5.

PID 3.8 If the resolution of the open issues has reached an acceptable status, the Safety Assessment Report for the specific aerodrome can be released. There is no need for CZCAA approval as the report will become part of the Safety Case for the specific aerodrome anyway; Safety Case will be part of the IFR certification process.

PID 3.9 Together with the Safety Assessment Report for the specific aerodrome the Safety Assessment Team Leader will produce the Safety Case for the specific aerodrome as a major input. It is based on the [R07] Deliverable D3 - Generic Safety Case for the Implementation of IFR Operations, and only aerodrome specific data including SSA results have to be incorporated.

PID 3.10 It may be recommended to ask also other stakeholders for a review. This is a milestone in the certification process and CZCAA will take into account the Safety Case for the specific aerodrome as defined in the standard certification process.

PID 3.11 A Safety Case for the specific aerodrome that shows that the IFR operation at the specific aerodrome is acceptably safe is an important precondition for continuing the IFR certification process.

## 6 Abbreviations and Definitions

| | |
|---|---|
| ACC | Area Control Centre |
| AFIS | Aerodrome Flight Information Service |
| AFISO | Aerodrome Flight Information Service Officer |
| AIS | Aeronautical Information Service |
| ALG | Advanced Logistics Group |
| ANSP | Air Navigation Service Provider |
| APAC | Austrian Product Assurance Company |

| | |
|---|---|
| APP | Approach |
| ATC | Air Traffic Control |
| ATCO | Air Traffic Controller |
| ATFM | Air Traffic Flow Management |
| ATM | Air Traffic Management |
| CNS | Communication, Navigation, Surveillance |
| CONOPS | Concept of Operations |
| CTU | Czech Technical University in Prague, Faculty of Transportation Sciences |
| CZCAA | Civil Aviation Authority of the Czech Republic |
| IFR | Instrument Flight Rules |
| EOROCONTROL | European Organisation for the Safety of Air Navigation |
| FHA | Functional Hazard Assessment |
| LKHK | Hradec Králové aerodrome |
| MATCO | Military Air Traffic Controller |
| METEO | Meteorology |
| MIL | Military |
| PID | Process Identifier |
| PSSA | Preliminary System Safety Assessment |
| SA | Safety Assessment |
| SSA | System Safety Assessment |
| TWR | Tower |
| WS | Workshop |

## 7 References

| Ref. | Document name / identifier / author / date |
|---|---|
| [R01] | Deliverable D1 - General Feasibility Assessment / CZCAA IFR study 00019 01.00 Released / Alsina, Nuria/ALG / 2017-03-30 |
| [R02] | Deliverable D2 - CONOPS Implementation of IFR Procedures in the Czech Republic / CZCAA IFR study 00020 01.00 Released / Alsina, Nuria/ALG / 2017-03-30 |
| [R03] | Deliverable D6 - Report on Similar European Activities / CZCAA IFR study 00036 02.00 Released / Kraus, Jakub/CTU / 2017-03-30 |
| [R04] | Safety Study on Implementation of IFR operation at LKHK airport / CZCAA IFR study 00014 01.05 Draft / ANS CR / 2016-04-21 |
| [R05] | Kick-off meeting minutes (MoM), Prague 2017-01-16 / CZCAA IFR study 00004 01.00 Draft / Mlynarik, Michal/APAC / 2017-01-19 |
| [R06] | Air Navigation System Safety Assessment Methodology / SAF.ET1.ST03.1000-MAN-01, Edition 2.1, Released / EUROCONTROL / 2006-10-03 |
| [R07] | Deliverable D3 - Generic Safety Case for the Implementation of IFR Operations / CZCAA IFR study 00040 01.00 Released / Scherzer, Hans/APAC / 2017-03-30 |
| [R08] | Generic Safety Assessment for the Implementation of IFR Operations (containing FHA and PSSA) / CZCAA IFR study 00047 01.00 Released / Scherzer, Hans/APAC / 2017-03-30 |
| [R09] | Regulative Baseline for the Implementation of IFR Operations at Uncontrolled Aerodromes in the Czech Republic / CZCAA IFR study 00043 01.00 Released / Scherzer, Hans/APAC / 2017-03-30 |

## Annex A: Template - Safety Assessment Preconditions Checklist

Filename: CZCAA IFR study 00054 01.00 Released Template Checklist Safety Assessment Preconditions.doc

## Annex B: Template – IFR Safety Assessment of a Specific Uncontrolled Aerodrome

Filename: CZCAA IFR study 00061 01.00 Released Template IFR Safety Assessment.doc

## Annex C: List of Aviation Experts/Stakeholders

1) CZCAA
   - CZCAA Expert from Flight Division;
   - CZCAA Expert from Aeronautical Operations Division.
2) Aerodrome operator
   - Safety representative;
   - Head of AFIS station;
   - AFISO;
   - Aerodrome procedure designer expert;
   - Aerodrome operations expert;
   - Other representatives of aerodrome operator.
3) Neighbouring aerodrome operator
   - Safety representative;
   - Head of ATC station - TWR (if available);
   - ATCO - TWR (if available);
   - Head of AFIS station (if available);
   - AFISO (if available);
   - Radio operator;
   - Aerodrome procedure designer expert;
   - Aerodrome operations expert;
   - Other representatives of neighbouring aerodrome operator.
4) ANSP
   - Safety representative;
   - Head of ATC station – TWR, APP, ACC;
   - ATCO – TWR, APP, ACC;
   - Procedure designer expert;
   - Other ANSP representatives.
5) Military
   - Safety representative;
   - Head of military ATC station;
   - MATCO;
   - Military procedure designer expert;
   - Military operations expert;
   - Other representatives of military ANSP/aerodrome.
6) Airspace users
   - Pilots, parachutists;
   - Representative of aircraft operators;
   - Representative of Light Aircraft Association;
   - Other representatives of airspace users.
7) Other aviation experts
   - CNS experts;
   - AIS experts;
   - METEO experts;
   - ATFM experts;
   - Equipment manufacturers (ANSP, aerodrome and aircraft equipment);
   - Other experts.