



ICAO

Doc 10084

Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones

Third Edition, 2023



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION



| ICAO

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HISTORY AND RELATED WORK IN PROGRESS

In response to the downing of Malaysia Airlines flight 17 (MH17) on 17 July 2014, the International Civil Aviation Organization (ICAO), Airports Council International (ACI), the Civil Air Navigation Services Organisation (CANSO) and the International Air Transport Association (IATA) issued a joint statement¹ on 29 July 2014 expressing strong condemnation of the use of weapons against a civil aircraft, and support for establishing a senior-level task force to address issues related to the safety and security of civil aircraft in airspace flying over or near conflict zones.

In 2014, ICAO established the Task Force on Risks to Civil Aviation arising from Conflict Zones (TF RCZ), which developed a work programme with twelve objectives, including the establishment of a centralized system that would consolidate the available information related to conflict zones. The Conflict Zone Information Repository (CZIR), a tool to disseminate information related to risks to civil aviation arising from conflict zones, was launched in 2015.

The first edition of this document, initially drafted under the title *Civil Aircraft Operations Over Conflict Zones (Restricted)*, was published in November 2016 and reissued in April 2017 as Doc 10084 (Restricted).

On 13 October 2015, the Dutch Safety Board published the MH17 Final Report of the accident investigation with safety recommendations to ICAO, IATA, ICAO Member States and operators.

During its 209th Session, the ICAO Council noted that there had been significant progress on the part of States and industry in developing systems, separate from the CZIR, to share information concerning risks associated with operations over or near conflict zones. In considering these developments and noting the decline in the number of postings in the CZIR, the ICAO Council requested a comprehensive study be undertaken on the availability of tools and mechanisms developed by external entities to share risk-based information. As part of the study, ICAO, in partnership with CANSO, IATA and the International Business Aviation Council (IBAC), launched a survey to determine the availability and adequacy of information related to risks to civil aviation provided by entities external to ICAO. The survey was held from December 2016 to January 2017.

The analysis of replies provided by aircraft operators and air navigation services providers (ANSPs) revealed that the appropriate information on risks to civil aviation was effectively being made available outside of the CZIR by both States and industry. The study also recognized a significant decline in the number of States making their information related to risks to civil aviation over or near conflict zones available on the CZIR and showed that such information was mostly disseminated through Notices to Airmen (NOTAMs), Aeronautical Information Circulars (AIC) and aeronautical information publication (AIP) supplements. However, the responders to the enquiry revealed a desire to standardize the format in which risk information was made available and to develop solutions allowing for timely and automated access to such information.

¹ Joint Statement on Risks to Civil Aviation Arising from Conflict Zones: <https://www.icao.int/Newsroom/Pages/Joint-Statement-on-Risks-to-Civil-Aviation-Arising-from-Conflict-Zones.aspx>

Considering the results of the survey and the decline in the number of postings in the CZIR, ICAO noted that the CZIR had ceased to function as a means to gather and disseminate specific risk-based information concerning operations over or near conflict zones, and a decision was made to discontinue the CZIR and to transition the CZIR into a library of links on the ICAO public website to States' own aeronautical information related to risks to civil aircraft operations over or near conflict zones.

In November 2017, ICAO decided to discontinue the ICAO web-library of risk-based information and to devote increasing efforts to provide training and capacity-building initiatives in order to assist States to further develop their risk management capabilities as well as multilateral arrangements for the sharing of risk information.

Doc 10084 was further amended in the second edition to expand the advice for States and operators regarding the risks from surface-to-air missiles (SAMs) and key risk factors to be considered for their own risk assessments. The second edition of Doc 10084 was published in 2018 under the new name *Risk Assessment Manual for Civil Aircraft Operations over or near Conflict Zones*, in line with its revised content. The enhanced guidance material in the manual is based on existing ICAO provisions and industry practices related to:

- a) responsibilities of States, operators and other service providers within States;
- b) significant regulatory developments and existing practices since 2014;
- c) consolidated source material for conducting risk assessments;
- d) outline of risk information sharing mechanisms;
- e) guidance to States and operators on what to do with threat and risk information; and
- f) existing mechanisms for State-to-operator and/or State-to-State sharing of information.

In order to make the guidance material in the second and future editions of Doc 10084 more accessible for States, aircraft operators, ANSPs, and other entities concerned, and considering that the revised material does not contain any sensitive security information, ICAO amended the document's classification from restricted to non-restricted.

In response to the downing of Ukraine International Airlines flight 752 (PS752) on 8 January 2020, Canada established the Safer Skies Initiative, whose objective is to improve the safety and security of air travel worldwide by addressing gaps in the way the civil aviation sector deals with conflict zones.

ICAO welcomed the Safer Skies Initiative and initiated a comprehensive gap analysis of current airspace management and conflict zone Standards and Recommended Practices (SARPs) as well as related guidance material, vis-à-vis work completed post-MH17.

In 2021, ICAO concluded its gap analysis highlighting the progress of current airspace management and conflict zone SARPs as well as related guidance material, which included:

- a) the applicability of relevant amendments of Annex 6, Annex 11 and Annex 15 on 5 November 2020;
- b) the publication of the first edition of the *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088) in January 2021; and
- c) the ongoing work on the *Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations* (Doc 9554).

On 24 June 2021, the Dutch Safety Board published its final report titled *Safe flight routes - Responses to escalating conflicts*. This report synthesizes the findings of the Dutch Safety Board's previous MH17 investigations (one in 2015 and a follow-up investigation of the safety recommendations in 2019), and is complemented with new findings on the current practice of airspace management, information sharing and decision-making in the context of flying over or near conflict zones. The report contains two international safety recommendations: addressing the development and application of risk assessment methods based on the precautionary principle for civil aviation operations over or near conflict zones and developing guiding principles related to airspace closure.

In parallel to these efforts, several global and regional initiatives were established, strengthening baseline and rapid information sharing practices within the civil aviation community, enhancing effective airspace risk management (including harmonizing airspace notification language), creating a mitigation strategy inventory, developing guiding principles related to airspace closure, and exploring the precautionary approach.

The third edition of Doc 10084 follows the outcome² of the 41st Session of the ICAO Assembly in 2022, which supported the proposal to prioritize the review of Doc 10084, taking into consideration the work conducted by international and regional groups and organizations.

² Report of the Executive Commission, paragraph 28.29

GLOSSARY

When the following terms are used in this manual, they have the following meanings:

Acceptable level of safety performance (ALoSP). The level of safety performance agreed by State authorities to be achieved for the civil aviation system in a State, as defined in its State safety programme (SSP), expressed in terms of safety performance targets and safety performance indicators.

Note.— An acceptable level of safety performance for the State can be demonstrated through the implementation and maintenance of the SSP as well as safety performance indicators and safety performance targets showing that safety is effectively managed, built on the foundation of implementation of existing safety-related SARPs.

Acts of unlawful interference. These are acts or attempted acts such as to jeopardize the safety of civil aviation, including but not limited to:

- unlawful seizure of aircraft;
- destruction of an aircraft in service;
- hostage-taking on board aircraft or on aerodromes;
- forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility;
- introduction on board an aircraft or at an airport of a weapon or hazardous device or material intended for criminal purposes;
- use of an aircraft in service for the purpose of causing death, serious bodily injury or serious damage to property or the environment; and
- communication of false information such as to jeopardize the safety of an aircraft in flight or on the ground, passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

(Aircraft) Operator. In the context of this document, references to the (aircraft) operator refer to operators subject to ICAO Annex 6 — *Operation of Aircraft*, Parts I, II and III, being operators of aeroplanes or helicopters authorized to conduct international commercial air transport operations or involved in international general aviation.

Air navigation services. This term includes air traffic management (ATM), communications, navigation and surveillance systems (CNS), meteorological services for air navigation (MET), search and rescue (SAR) and aeronautical information services/aeronautical information management (AIS/AIM). These services are provided to air traffic during all phases of operations (approach, aerodrome and en route).

Air navigation services provider (ANSP). Any entity providing ATM and/or other air navigation services mentioned in the definition for *Air navigation services*.

Note.— Annex 17 uses the term Air traffic service provider (ATSP). ATSP should be considered synonymous with ANSP as used in this manual.

Air-to-air missiles. Missiles fired at an aircraft from another aircraft.

Appropriate ATS authority. The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

Appropriate authority for aviation security. The authority designated by a State within its administration to be responsible for the development, implementation and maintenance of the national civil aviation security programme.

Aviation Security. Safeguarding civil aviation against acts of unlawful interference. This objective is achieved through a combination of measures and human and material resources.

Civil aircraft. Non-State aircraft (pursuant to Article 3 of the Chicago Convention). This could include passenger airliners, cargo aircraft, and business or private jets.

Conflict zones. Areas where conflict is occurring or is likely to occur between militarized parties, which may include both State and non-State actors. It also includes areas where such parties are in a heightened state of tensions.

Contingency plan. A proactive plan to include measures and procedures addressing various threat levels, risk assessments and the associated security measures to be implemented, designed to anticipate and mitigate events as well as prepare all concerned parties having roles and responsibilities in the event of an actual act of unlawful interference. A contingency plan sets forth incremental safety, efficiency and security measures that may be elevated as the threat increases. It may be a stand-alone plan or included as part of a Crisis Management Plan.

Hazard. A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

Man-Portable Air Defence Systems (MANPADS). Shoulder-launched surface-to-air missile weapon systems. These have the capability of reaching aircraft from the ground to altitudes in excess of 25 000 ft (7 600 m) above ground level (AGL).

Non-State actors. Individuals, groups of individuals or organizations that are not under the control of, nor report to, a State.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Overflying. Passing over terrestrial areas (land or sea) at cruising altitude.

Risk index matrix. A matrix that is used during safety risk assessment to define the level of risk by considering the category of probability or likelihood against the category of consequence severity. This is a simple mechanism to increase visibility of risks and assist management decision-making.

Risk level. See **Acceptable level of safety performance (ALoSP)**.

Risk mitigation. The process of incorporating additional measures to lower the vulnerability to a specific scenario.

Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

Safety risk. The predicted probability and severity of the consequences or outcomes of a hazard.

Security risk. Identification of the level of exposure to a successful attack being carried out on a specific target, taking into account the assessed threat and consequences, as well as an assessment of the remaining vulnerabilities after evaluating the effectiveness of the aviation security measures currently in place.

Service provider. Any organization providing aviation products and/or services. The term thus encompasses approved training organizations that are exposed to safety risks during the provision of their services, aircraft operators, approved maintenance organizations, organizations responsible for type design and/or manufacture of aircraft, engines or propellers, air navigation services providers and certified aerodromes.

Surface-to-air missiles (SAMs). Advanced military weapon systems, capable of targeting aircraft from the ground up to, and above, cruising level altitudes. MANPADS are a subset of SAMs.

Surface-to-surface missiles (SSMs). Military weapon systems capable of long-range attacks (e.g. ballistic missiles), which can be precision-guided or unguided.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

Threat. The likelihood of a credible attack being attempted, based on the intentions and capabilities of perpetrators but not taking into account current security measures.

Unmanned aircraft (UA). An aircraft intended to be operated with no pilot on board.

Unmanned aircraft system (UAS). An aircraft and its associated elements, which are operated with no pilot on board.

Vulnerability. Factors or attributes that render an entity, asset, system, network or geographic area open to successful exploitation or attack, or susceptible to a given threat or hazard.

ACRONYMS AND ABBREVIATIONS

ACARS	Aircraft communications addressing and reporting system
ACI	Airports Council International
AGL	Above ground level
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
ANSP	Air navigation services provider
ASCB	Aviation Security Coordination Body
ASP	Aviation Security Programme
ATS	Air traffic services
ATM	Air traffic management
AVSEC	Aviation security
CANSO	Civil Air Navigation Services Organisation
CCT	Contingency Coordination Team
CZIB	Conflict Zone Information Bulletin
CZIR	Conflict Zone Information Repository
DfT	Department for Transport (United Kingdom)
Doc	Document
EASA	European Union Aviation Safety Agency
EGRICZ	Expert Group on Risk Information overflying Conflict Zones
EU	European Union
FIR	Flight Information Region
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICAO	International Civil Aviation Organization
MANPADS	Man-portable air defence systems
MH17	Malaysia Airlines flight 17
NCASP	National Civil Aviation Security Programme
NOTAM	Notice to Airmen
PS752	Ukraine International Airlines flight 752
SAM	Surface-to-air missile
SARPs	Standards and Recommended Practices
SMM	Safety Management Manual
SSCC	Safer Skies Consultative Committee
SSM	Surface-to-surface missile
SSP	State safety programme
TF RCZ	Task Force on Risks to Civil Aviation Arising from Conflict Zones (ICAO)
UAS	Unmanned aircraft system(s)

RELATED ICAO PUBLICATIONS

ANNEXES

Annex 6 — *Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes*
Annex 11 — *Air Traffic Services*
Annex 15 — *Aeronautical Information Services*
Annex 17 — *Aviation Security — Safeguarding International Civil Aviation Against Acts of Unlawful Interference*
Annex 19 — *Safety Management*

GUIDANCE MATERIAL

Doc 4444, *Air Traffic Management (PANS-ATM)*
Doc 8126, *Aeronautical Information Services Manual*
Doc 8973 (Restricted), *Aviation Security Manual*
Doc 9426, *Air Traffic Services Planning Manual*
Doc 9433, *Manual Concerning Interception of Civil Aircraft*
Doc 9554, *Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations*
Doc 9859, *Safety Management Manual (SMM)*
Doc 9971, *Manual on Collaborative Air Traffic Flow Management (ATFM)*
Doc 9985, *Air Traffic Management Security Manual*
Doc 10088, *Manual on Civil-Military Cooperation in Air Traffic Management*
Doc 10108 (Restricted), *Aviation Security Global Risk Context Statement*
Man-Portable Air Defence Systems (MANPADS) - Information and Airport Vulnerability Assessment Guide

Chapter 1

INTRODUCTION

1.1 PURPOSE AND SCOPE

1.1.1 This manual contains advice to States, aircraft operators (civil and military), air navigation services providers (ANSPs) and other entities deemed appropriate on the subject of risk management for civil aircraft operations over or near conflict zones. It contains consolidated guidance to support implementation of relevant International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs), ICAO guidance material and industry best practices. It covers the risk from both deliberate acts and unintentional hazards to civil aircraft operations over or near conflict zones.

1.1.2 States should issue and/or enable warning of threats and hazards in their sovereign and delegated airspace, including to aircraft operators and ANSPs, and coordinate activities so as to minimize threats and hazards. With the objective of assisting in this, this manual aims to provide guidance to identify the main risk factors that States could take into account.

1.1.3 Ultimately, aircraft operators and ANSPs are the entities responsible for conducting safety risk assessments specific to the geographical location, type and extent of their operations. Assessments should be an integral part of the risk management process implemented by these entities.

1.1.4 The manual focuses primarily on the risk posed by long-range surface-to-air missiles (SAMs) as these are currently considered to pose the most significant risk to civil aircraft operating over or near conflict zones. The manual does not cover the risk that arises at lower altitudes (including during take-off and landing phases) from shorter-range SAMs such as Man-portable air defence systems (MANPADS), which has been the subject of other assessments.¹ However, some of the considerations and conclusions may be applied to MANPADS that have the capability of reaching aircraft from the ground to altitudes in excess of 25 000 ft (7 600 m) above ground level (AGL) and would also apply to air-to-air missiles launched from manned or unmanned aircraft.

1.1.5 The decision as to whether a civil aircraft will be flown over or near conflict zones is the responsibility of the various parties involved, i.e. the State(s) (and regional civil aviation authority or authorities if applicable) where the conflict zone is located and their ANSPs, the State of the Operator, the aircraft operator, and other relevant stakeholders. This manual describes the roles, responsibilities and/or activities of such parties, which are largely based on the applicable provisions contained in Annex 6 — *Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes*, Annex 11 — *Air Traffic Services*, Annex 15 — *Aeronautical Information Services*, Annex 17 — *Aviation Security — Safeguarding International Civil Aviation Against Acts of Unlawful Interference* and Annex 19 — *Safety Management*, as well as related guidance material (Docs 8126, 8973 (Restricted), 9426, 9433, 9554, 9859, 9985, 10088, and 10108 (Restricted)). The manual also describes the risk management processes, including risk assessment and mitigation, such as conducting closure and reassessment of conflict zone airspace to safeguard civil aviation operations over or near conflict zones. It provides best practice examples drawn from States and industry.

1. *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted), Third Edition, September 2022; and *Man-Portable Air Defence Systems (MANPADS) - Information and Airport Vulnerability Assessment Guide* (Restricted), First Edition, July 2015.

1.1.6 When introducing restrictions for aircraft operators to fly over or near conflict zones, States should take into consideration that any aircraft may, at any moment in time, need to divert from the air traffic control clearance and/or dedicated flight profile if an emergency occurs, which may lead to a diversion or forced landing in a conflict zone or overflying closed airspace.

1.1.7 When introducing restrictions, States should also take into consideration the potential range of different types of ground and air-based weapons used during armed conflict or military exercises.

Chapter 2

RISKS TO CIVIL AIRCRAFT FROM OPERATIONS OVER OR NEAR CONFLICT ZONES

2.1 SURFACE-TO-AIR MISSILES — CAPABILITY AND PROLIFERATION

2.1.1 The principal weapons of concern for these purposes are SAMs with the capability of reaching aircraft at flight cruising altitudes. These are large and complex pieces of defensive equipment, which are designed to be operated by military personnel. There are many different types of SAMs, with varying capabilities and technologies, that are designed to identify, track and destroy airborne threats. Civil aircraft represent highly vulnerable targets due to their size and predictable flight paths and are generally not equipped to detect SAM threats, nor are they capable of responding to being fired upon by a SAM.

2.1.2 SAMs may be permanently installed at fixed locations on the ground and on warships, or remain mobile and can be moved quickly between locations. Some may have integrated sensor systems, while others need to be linked to a separate radar sensor to identify targets. Numerous States have acquired SAMs as part of their military capability. Anti-aircraft capabilities that include long range (stand-off) SAMs with more automated target selection processes may present additional unintended risks.

2.1.3 Given the wide proliferation of weapon systems, some non-State actors will very likely have obtained SAMs, either indirectly by sponsoring States, or through the seizure of former State assets during or following conflict situations. In either case, the risk to civil aviation increases when these weapon systems are operated by non-State actors, given that these actors might lack access to formal military training on target identification and airspace deconfliction, and do not have information about civilian air traffic for an affected area.

2.2 A HISTORIC THREAT TO CIVIL AVIATION

2.2.1 SAM attacks on civilian aircraft are rare and generally have been inadvertent or accidental events. To date, there have been no documented cases of an intentional SAM attack to deliberately shoot down a civilian aircraft. There have been four documented occurrences¹ where the destruction of civilian aircraft has been attributed to SAM engagements (other than MANPADS). In three of the documented cases, it is likely the event was unintentional, as the target was probably mistakenly identified as a military or an unmanned aircraft. According to open-source data reports, three of the known events occurred during periods of military conflict or high tension; the fourth event appears to have occurred during a military training exercise.

1. Iran Air flight 655 (1988) - ICAO Circular 260-AN/154, Aircraft Accident Digest no. 35 and US DOD investigation report (<https://apps.dtic.mil/sti/citations/ADA203577>); Siberia Airlines flight 1812 (2001); Malaysia Airlines flight 17 (2014) – Report of the Dutch Safety Board ([Crash MH17, 17 July 2014 - Onderzoeksraad](#)); and Ukraine International Airlines flight 752 (2020) – Report of the Aircraft Accidents Investigation Board of I.R. Iran (<https://www.icao.int/safety/airnavigation/AIG/Documents/Safety%20to%20ICAO/Final%20Reports/PS752Finrep.pdf>).

2.3 THE RISK OF AN ATTACK

2.3.1 Some non-State actors have publicly stated that they have a continuing and active interest in attacking civil aviation. Aircraft are seen as iconic targets whose destruction could have a major impact, not only through the loss of life, but also in terms of economic consequences, publicity, political reaction and loss of public confidence in the aviation sector. In general, non-State actors (as opposed to militarized forces) may not have access to long-range SAMs (as distinct from MANPADS). However, in making this assessment it is important to stress that:

- a) there is a high level of intent among some of these actors to attack aviation should the opportunity arise;
- b) although some of these actors may have sufficient resources to acquire SAMs — they would find it difficult to do so without sponsorship and training by States;
- c) future weapon advancements and proliferation through State sponsorship may result in long-range SAM and/or air-to-air missile capabilities becoming accessible to non-State actors;
- d) this position could change rapidly given the fluidity of current political and military events in some regions; and
- e) this assessment is based on the information available and may not be complete.

2.3.2 Non-State actors tend to operate more freely in conflict zones where there is a breakdown of State control. If these actors succeed in acquiring SAMs, and the capability to operate them, the vulnerability of aircraft operating in airspace over or near those areas would be high. With regard to States and non-State actors that currently have access to SAMs, there is no reason to believe that the intent is to target civil aviation deliberately. However, the last two caveats in 2.3.1 also apply here.

2.3.3 The overall risk to civil aviation from an attack in conflict zones is assessed by ICAO² as medium-high, which is the fourth step in a five-point scale. Even so, the situation in these zones can be subject to unpredictable changes, which could rapidly and significantly increase the level of risk. Ongoing monitoring of conflict zones is therefore the best way to continually assess and mitigate those risks. Possible mitigations for this risk would include:

- a) counter-proliferation measures;
- b) avoidance of airspace within range of a possible attack;³
- c) ensuring air traffic services (ATS) authorities do not issue air traffic control clearances to aircraft into airspace that could be hazardous due to a planned or potential short or no-notice change of activity within the airspace of a conflict zone;
- d) closing all or part of the controlled airspace and/or aerodrome(s) within conflict zones. Chapter 5 provides guidance how to conduct conflict zone airspace closure; and
- e) improved civil-military coordination, weapon command and control and airspace deconfliction will reduce the inadvertent risk to civil aviation operations.

2. ICAO *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted), Third Edition, 2022

3. It is noteworthy that the hazardous range may well exceed territorial boundaries and the airspace above it.

2.4 THE RISK OF UNINTENTIONAL IMPACT

2.4.1 In conflict zones, the capability to target aviation assets may be high and widespread, but historically there has been little to no intent by States to target passenger aircraft. Past events suggest there is a higher risk to civil aviation as an unintended target when flying over or near conflict zones, in particular the deliberate firing of a missile that misses its intended target, or based on the misidentification of a civil aircraft. This could also be applied when taking into account the use of missile defence systems by State actors to shoot down ballistic missiles or military grade weaponized unmanned aircraft systems (UAS). Launches of surface-to-surface missiles (SSMs) (regardless of being test or real launches) also need to be taken into consideration as an SSM might impact a civil aircraft on its trajectory towards the intended target. Areas of conflict may also include a State sponsored entity or proxy group armed with anti-aircraft weapons that have limited training and are operating outside the authority of a State or national command, presenting an increased risk of unintentional impact.

2.4.2 There are well established mitigations in place through existing airspace management, surveillance, navigation and communication systems, which, if they are operating correctly, should enable civilian aircraft flying through controlled airspace to be readily identified. Therefore, at the global level, the historical overall rate of occurrence of unintentional impacts is low. However, this risk may vary significantly over time, and from place to place, as a result of events. Higher levels of risk are associated with flying over or near conflict zones.⁴

2.4.3 This guidance attempts to identify the specific factors that seem most likely to be associated with risks of an unintentional SAM, SSM or air-to-air missile impact on a civil aircraft. Risk factors are presented in Appendix A⁵. To support States, aircraft operators and ANSPs in conducting their geographically-specific risk management, possible actions include:

- a) the conduct of risk assessments by States, aircraft operators and/or ANSPs to inform aircraft routing decisions for operating over or near conflict zones or other areas of high tension;
- b) implementation of provisions by ICAO and/or States, guidance, and leveraging of appropriate information (including information about the results of assessments done by others) that would assist in making those risk assessments, or in making routing decisions; and
- c) avoidance by civil aircraft of airspace over or near conflict zones where the risk of unintentional impact is assessed as high.

2.4.4 There is an additional risk of unintentional impacts on civil aviation from SAM tests or training launches conducted by military forces⁶. However, it is understood that large numbers of such launches take place each year without incident. Provided such tests or training launches are conducted in closed airspace, with robust planning, supervision and proper notification to civil aviation entities, the rate of incidents linked to tests or training has been historically low.

2.4.5 State level research and development of emerging capabilities such as hyper glide vehicles and long-range anti-aircraft weapons with increased standoff ranges may result in increased inadvertent risk concerns, resulting in a greater area of airspace affected than by existing military systems.

4. In the case of MANPADS in areas of conflict and proliferation, see the ICAO *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted) for the assessment of the residual risks.

5. Appendix A does not cover the risk factors for civil aircraft operations associated with missile defence systems, as mentioned in 2.4.1.

6. There is evidence that Siberia Airlines flight 1812 (2001) was hit under these circumstances.

2.5 AIR-TO-AIR ATTACKS

2.5.1 Risk factors (and mitigations) associated with an unintentional impact from air-to-air missiles launched by military aircraft flying over or near conflict zones would be broadly similar to those for SAMs.

2.5.2 Air-to-air attacks could occur when a civilian aircraft is perceived as a potential threat by State authorities. This could be due to the aircraft crew reporting an act of unlawful interference on board (e.g. breach of the cockpit or hijack), or exhibiting suspicious behaviour (e.g. not communicating with Air Traffic Control or deviating from its air traffic control clearance). The risk of successfully commandeering an aircraft for use as a weapon is regularly assessed in the *ICAO Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted). Instances of failed communication occur frequently and are normally resolved successfully by use of standard intervention procedures in accordance with ICAO's *Manual Concerning Interception of Civil Aircraft* (Doc 9433).

2.5.3 Emerging weapons' capabilities, however, will increase the inadvertent risk to civil aviation from air-to-air missiles. Long-range weapons for beyond line-of-sight targeting may increase the risk of potential aircraft misidentification, including by trained military pilots.

2.5.4 The use of military-grade UAS equipped with anti-aircraft weapons is under development by multiple States. There is potential for UAS platforms to be used to intercept aircraft directly or to be equipped with anti-aircraft missiles. The proliferation of these systems to non-State actors will likely increase the risk of flying over or near conflict zones. The threat by non-State actors is likely to be higher due to the lack of training and lack of integration with State or national command and control systems, as well as lack of information about civilian air traffic in the affected area, e.g. applicable Notices to Airmen (NOTAMs) or inbound/outbound civilian flights. ICAO has developed guidance material related to unauthorized UAS operations near airports.⁷

7. Response to Unauthorized UA in the Vicinity of Aerodrome:
<https://www.icao.int/safety/UA/Documents/Response%20to%20Unauthorized%20UA%20in%20the%20Vicinity%20of%20Aerodrome.pdf>

Chapter 3

ROLES OF PARTIES CONCERNED AND PROMULGATION OF INFORMATION

INTRODUCTION

This chapter describes the roles of the various parties involved in the decision-making process related to flying over or near conflict zones, the associated provisions for promulgation of information and current practices. The described parties involved are: the State that manages the airspace, the aircraft operator, the ANSP, the State of the Operator, ICAO, the regional civil aviation authorities and other stakeholders.

ROLES OF THE PARTIES CONCERNED

3.1 THE STATE THAT MANAGES THE AIRSPACE

3.1.1 States play a major role in providing various parties with essential risk information related to the airspace above conflict zones. Annex 17 Standard 3.1.3 requires States to keep under constant review the level and nature of threats to civil aviation within their territory and the airspace above it, and adjust their security programmes accordingly, based upon a security risk assessment. This review should include delegated airspace. National authorities, including intelligence agencies, should address risks arising from conflict zones and support the State's contribution to the sharing of threat information.

3.1.2 Annex 17 Standard 2.4.4 requires States to establish and implement procedures to share with other States, in a timely manner, threat information that applies to the aviation security interests of those States, to the extent practicable. Annex 17 Standard 3.1.5 also requires States to establish and implement procedures to share, as appropriate, with relevant airport operators, aircraft operators, air traffic services providers or other entities concerned, in a practical and timely manner, relevant information to assist them to conduct effective security risk assessments relating to their operations. Appendix C includes examples of guidance provided by States in the risk assessment process. Appendix D provides examples of how information is shared for exchange and promulgated.

3.1.3 States have exclusive sovereignty over their airspace. This provides States with the authority to enforce a requirement for overflights to be conducted in accordance with their guidance/authorization. Each State also has the authority to prohibit or restrict the use of airspace over its sovereign territory and/or delegated airspace, for reasons of military necessity or public safety, but no State can compel another State to do so.

3.1.4 Based on the information available, the State(s) responsible for providing ATS over a geographical area should identify the area impacted by a conflict zone, assess the hazards/threats or potential hazards/threats to international civil aircraft operations, and determine whether such operations in or through the area of conflict should be avoided or may be continued under specified conditions.

3.1.5 According to Annex 11, the responsibility for instituting special measures, such as contingency plans, to ensure the safety of international civil aircraft operations remains with the State(s) responsible for providing ATS in the airspace affected by the conflict, including delegated airspace, even in cases where coordination with military authorities is not initiated or completed.

3.1.6 In the event of armed conflict or the potential for armed conflict, States whose military forces are engaged in the conflict must initiate the coordination process with ATS. If the necessary information and/or the development of contingency planning is not forthcoming from the States whose authorities are engaged in the armed conflict, other State(s) in the region or those with international flight operations should ascertain the nature and scope of the hazards or potential hazards from other sources, such as aircraft operators, associations of the civil airline industry, airline pilots, civil air navigation services providers, air traffic controllers, adjacent or other States with additional information, or in some cases the relevant ICAO Regional Office in order to support the conduct of a risk assessment, if required.

3.1.7 The need for any safety and security measures will depend on the results of the risk assessment conducted by the State(s) responsible for providing ATS. Flight operations by civil aircraft through the airspace should only be allowed to continue if the risks can be mitigated to an acceptable level (refer to Chapter 5 for guidance on how to conduct conflict zone airspace closure).

3.1.8 The State authority should, when establishing airspace restrictions due to a known or probable threat, request the support of the appropriate military authority and/or any other relevant authority in performing the risk assessment. To ensure effective implementation of those restrictions, a State should establish a joint high-level policy body that will be responsible for oversight, implementation and application of collaborative air traffic management. The high-level body should also have responsibility for continually monitoring the output of national collaborative processes to ensure that both civil and military needs are considered. It should also collaborate with other adjacent or affected States.

3.1.9 If appropriate, and depending on the duration of the conditions, an international Aeronautical Information Publication (AIP) supplement, NOTAM, or Aeronautical Information Circular (AIC), containing the necessary information, advice and safety measures to be taken into account, should then be issued and subsequently updated in light of developments. All those concerned with initiating and issuing a NOTAM should be aware of the provisions governing the duration of the published NOTAM in Annex 15. The promulgation of information is further addressed in 3.7.

3.1.10 Upon the request of an aircraft operator, and if operations are being permitted, the appropriate authority of the State where the conflict zone is located could consider providing real time reports of the situation of the concerned airspace and the destination airport. This information could also include recommendations on how to carry out operations, safety/security advice for crews while on the ground, and any other relevant information for the safe execution of the civil aviation operation while within the conflict zone.

3.1.11 If civil aircraft operations through the area are allowed, immediate attention should be given by the States concerned to special arrangements regarding:

- a) coordination between military authorities, security authorities and ATS units;
- b) briefings of personnel;
- c) identification of civil aircraft by military units;
- d) issuance of warnings and navigational advice; and
- e) air traffic restrictions.

3.2 AIRCRAFT OPERATOR

3.2.1 Annex 6 requires aircraft operators to ensure that flights over or near conflict zones will not commence unless risk assessments have been carried out and appropriate mitigation actions are taken to ensure the safety and security of the aircraft on the intended route. The risk assessments should consider the routeing(s) from the aerodrome of departure to the aerodrome of arrival, as well as the intended take-off, destination and en-route alternate aerodromes. This includes assessing the airspace over or near areas where there is armed conflict posing a risk to civil aviation. In planning the conduct of operations through areas of armed conflict, or with the potential for armed conflict, operators should give due regard (but not be limited) to:

- a) any additional fuel required for in-flight diversion out of the conflict area;
- b) any deferred item in accordance with the minimum equipment list, if applicable for take-off and departure from the conflict zone without refuelling;
- c) consideration of emergency and non-normal procedures, such as depressurization and engine failure;
- d) alternate communication and navigation methodologies to account for the potential of conflict-associated jamming or electric interference that disrupts normal aircraft communications and navigation;
- e) availability and serviceability of aircraft equipment needed to facilitate identification of the aircraft by military units;
- f) use of procedures and means to ensure that the pertinent authorities are advised of the flight plan; and
- g) ensuring monitoring of the appropriate frequencies.

3.2.2 The absence of any restrictions in foreign airspace should not preclude the operator from making its own determination on the safety/security risks of the airspace to be flown through. Various information sources can be used (e.g. government advisories, other aircraft operators, open-source intelligence) including in-house resources tasked with flight route management.

3.2.3 Aircraft operators have a need to know of any material regarding airspace restrictions or (potential) hazards/threats that affect the safety and security of their operations. This material includes available information and recommendations on conflict zones, which should be incorporated into their risk assessment and decision-making processes. Aircraft operators should furthermore share their own risk assessment information with their national authorities and are encouraged to share this information with other operators and service providers.

3.2.4 The operator should ensure that there is a mechanism to facilitate the communication of necessary information to the pilot-in-command, in real time. While information can nearly always be provided before take-off, in some instances, because of rapidly changing circumstances, updated information must be provided en-route for in-flight re-planning, as this could result in a change to the intended route. The collection of relevant information is further addressed in 4.3.

3.2.5 Flight crews should maintain extra vigilance when knowingly operating over or near a conflict zone. Maximum effort should be taken by operators to facilitate identification of the aircraft by military units (i.e. weather radar, transponder, radio altimeter, lighting) and ensure that appropriate radio communication frequencies are monitored.

3.3 AIR NAVIGATION SERVICES PROVIDER

3.3.1 The ANSP responsible for providing air navigation services in a conflict zone, and ANSPs responsible for areas that are adjacent to a conflict zone, should conduct a risk assessment for any activities potentially hazardous to civil aircraft and ensure that appropriate risk mitigation measures are implemented. This involves the ANSPs working closely with military and other security authorities with regard to activities that may affect flights of civil aircraft and civil-military coordination in the event of an armed conflict.

3.3.2 Within a conflict zone, with due consideration to unexpected service disruption, the ANSP responsible for providing air navigation services should make available as much information as possible to neighbouring ANSPs to allow users, operators and other ANSPs to conduct their own risk assessments. As far as practicable, close coordination with military and other security/safety authorities should be initiated to create clear-of-conflict airspaces (i.e. corridors) for the purpose of permitting the transit of those civil aircraft that, for any reason (humanitarian, weather avoidance, etc.), are unable to avoid the airspace within which the conflict zone is located.

3.3.3 Annex 11 requires the ATS authority to develop and promulgate contingency plans for implementation in the event of disruption, or potential disruption, of ATS and related supporting services in the airspace for which they are responsible. Contingency plans may include a temporary deviation from the regional air navigation plan concerned. When necessary, ICAO provides assistance with the development of such contingency plans in close coordination with the ANSPs responsible for the provision of services in adjacent portions of airspace and with the airspace users concerned.

3.4 STATE OF THE OPERATOR

3.4.1 According to Annex 17 Standard 3.1.5, States shall establish and implement procedures to share, as appropriate, relevant information with their aircraft operators (amongst others) to assist them to conduct effective security risk assessments relating to their operations.

3.4.2 Some national aviation authorities provide information, issue recommendations or restrict their aircraft operators from overflying foreign airspace deemed to be unsafe. In some States, these advisories and restrictions are promulgated through the aeronautical publications (e.g. AIP, NOTAM or AIC) directed to the State's own operators for operations within and outside the State's sovereign airspace. This is in contrast to airspace advisories and restrictions that are published by a State for its own sovereign or delegated airspace over high seas only, or due to the lack of any such aeronautical publications. Appendix C provides examples of various States' information promulgation processes.

3.4.3 Under the oversight of their respective State regulatory authority, aircraft operators are responsible for their own operations. However, the State of the Operator also holds responsibility for determining compliance with, and validating the effectiveness of, its national civil aviation security programme, which includes ensuring that aircraft operators registered to their State conduct a risk assessment and that appropriate risk mitigation measures are taken when intending to operate over or near conflict zones. In the event that a State is in the process of promulgating risk management regulations, it is expected that the existing oversight and monitoring process will ensure risk assessments are carried out, including those for operating over or near conflict zones.

3.5 INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

3.5.1 In the event of disruption of ATS and related supporting services affecting international civil aviation operations wherein the authorities cannot adequately discharge the responsibility as referred to in 3.1.6 and 3.3.3 of this document under Annex 11, ICAO will initiate and coordinate appropriate contingency action with the States and ANSPs responsible for airspace adjacent to the airspace affected by the disruption, and in close consultation with other concerned stakeholders, including international, regional and industry organizations.

3.5.2 If required, contingency plans can be used for each contingency and as the main platform for sharing of information across the airspace affected by a conflict zone. Such plans may also be activated in cases where operators decide to circumnavigate an affected airspace, which might significantly increase air traffic movement in other airspace(s). The plans should include required coordination, implementation strategies, operational procedures and measures, where necessary, to overcome the associated challenges affecting air traffic management (ATM).

3.5.3 One mechanism for such close coordination is the establishment of a Contingency Coordination Team (CCT).

3.6 REGIONAL CIVIL AVIATION AUTHORITIES

European Union (EU)

As outlined below, the regional civil aviation authority of the European Union has set up a conflict zone risk assessment information alerting system and an information sharing and cooperation platform on conflict zones for its Member States.¹

3.6.1 Following the downing of flight Malaysia Airlines flight 17 (MH17), the EU developed the “EU Conflict Zone Alerting System” (the System), an information alert system to achieve more consistency in the advice offered to aircraft operators and to protect the interest of European citizens travelling inside and outside of Europe. The System has been active since early 2016 through cooperation among EU Member States, EU institutions, the European Union Aviation Safety Agency (EASA) and other aviation stakeholders to share and distribute intelligence information on risks for civil aviation arising from conflict zones.

3.6.2 Common risk assessments at the EU level take place on a regular basis (quarterly), or exceptionally in case of urgent circumstances, under the lead of the Integrated EU Aviation Security Risk Assessment Group (the Group). The Group is chaired by the European Commission and allows for the exchange of relevant information between EU Member States, the European External Action Service (EEAS) and EASA. EU air operators and airline associations also contribute to the preparatory work of the Group. The outcomes of the Integrated EU Aviation Security Risk Assessment Group support the decision-making process on possible mitigation measures including the issuance of Conflict Zone Information Bulletins (CZIBs) or Information Notes by EASA.

3.6.3 Each meeting of the Group is preceded by a preparatory meeting with the EU air operators and airline associations with the objective to gather any advance inputs, which are brought to the attention and inform the discussions of the Integrated EU Aviation Security Risk Assessment Group.

1. ICAO encourages regional civil aviation authorities that are willing to share this information to be included in future amendments of this manual.

3.6.4 Participating representatives of EU institutions and bodies as well as EU Member States have developed a methodology to assess the risk for civil aviation operations over or near conflict zones. The Group shares confidential information on threats and existing mitigation measures in place, with the aim of reaching consensus on the risk level and to identify necessary further risk mitigation measures.

3.6.5 In 2021, the European Information Sharing and Cooperation Platform on Conflict Zones (the Platform) was launched by EASA to support the EU CZ Alerting System. After a trial period, the Platform was established for long-term operation as of 2022. The Platform is a voluntary, cooperative partnership for the European aviation community that is designed to assist institutions and air operators in conducting risk assessments in a timely manner, in particular by providing conflict zone related information. The membership is open to eligible EU institutions, EASA Member States, as well as their national commercial aircraft operators. Appendix D (Example 2) contains the process diagram of the EU Conflict Zone Alerting System including the Platform.

3.6.6 The objective of the System is to join up available information and intelligence sources, and conflict zone risk assessment capabilities, to enable the publication in a timely manner of information and recommendations on risks to civil aviation operations over or near conflict zones, for the benefit of all EU Member States, operators and passengers. It complements national capabilities when they exist, by adding, when possible, a EU level common risk picture and corresponding recommendations. Risk mitigation measures at the EU level are implemented by the following actions:

- a) the publication of CZIBs on the EASA website, which may contain operational recommendations, for States that were deemed to have a “high” risk level as a result of the EU risk assessment, or in other cases where there is a need to make other information public;
- b) the publication of Information Notes on the Platform based on the conclusions of the EU risk assessments with more detailed operational information and recommendations addressed to Member State representatives and their aircraft operators; and
- c) the circulation of conflict zones alerts through the Platform, including information and data on specific risk areas, conflict zones developments and incidents, which are distributed regularly to the members of the Platform.

3.7 OTHER STAKEHOLDERS

International Air Transport Association (IATA)

3.7.1 IATA established the Tactical Operations Portal, known as IATA Tactical Operations Portal (ITOP). ITOP provides subscribers with real-time alerts related to airspace and airport operations. In addition to receiving email alerts, it provides subscribers with the ability to collaborate via a chat function on items that impact airline operations on a global scale. ITOP provides alerting ability to all regions but may focus on a specific region, Flight Information Region (FIR), airport, security or threat risk, such as a conflict zone. ITOP has several different functionalities, but the core activities include ATC disruption alerts and collaboration on contingency events. ITOP has a five-level alerting system, which can be adjusted by IATA and by the individual user. Refer to Appendices F and G for matters of best practices for information sharing.

Expert Group on Risk Information overflying Conflict Zones (EGRICZ)

3.7.2 The Expert Group on Risk Information overflying Conflict Zones (EGRICZ) is an informal international group that includes government authorities from States² that publish aeronautical information related to foreign or delegated airspace conflict zone risk assessments. It is aimed at building a more harmonized approach towards security considerations when flying over or near conflict zones at the international level. EGRICZ also brings together States and the aviation industry to better understand common needs, both national and international, to build up trust among the participants, as well as to develop practical ways to support the development of relevant information exchange, while taking into account national and international legal limitations. EGRICZ endeavours to create a common understanding of threats and risks involved when flying over or near conflict zones. EGRICZ aspires to optimize cooperation, information exchange and coordination between partners or equivalent structures to improve State to State as well as State to industry communication, with the goal of protecting aviation security and creating a proactive network of relevant actors in the aviation domain.

Safer Skies Consultative Committee (SSCC)³

3.7.3 The Safer Skies Consultative Committee (SSCC) provides a formal international platform with global representation to consolidate discussions on conflict zone related matters. The international committee shares best practices, facilitates information sharing, and recommends international standards, guidance and training on mitigating the risks conflict zones pose to civil aviation. It liaises with States, industry and international organizations, and advocates at ICAO for improvement on all matters related to conflict zones. The functions of the SSCC are:

- a) to support the work of individual States, regional State mechanisms, IATA regional coordination groups, air operators, industry associations and international organizations on all matters pertaining to conflict zones;
- b) to elaborate guiding principles to promote best practices to regulators, ANSPs and aircraft operators regarding risk assessments and mitigation strategies;
- c) to enable information-sharing and a broader dialogue between relevant parties on current issues and way-forward for mitigation strategies;
- d) to advocate for the consideration of, modifications to, and implementation of SARPs and/or other conflict zones-associated guidance documents; and
- e) to organize the global Safer Skies Forum, an international forum dedicated to mitigating the risks of airspace over or near conflict zones.

2. EGRICZ members are Canada, Finland, France, Germany, Netherlands, Spain, Switzerland, United Kingdom, United States and EASA.

3. SSCC members: Australia, Canada, CANSO, EGRICZ, France, Germany, IATA, IFALPA, IFATCA, Jordan, Kenya, Morocco, Netherlands, New Zealand, Republic of Korea, United Kingdom and United States.

PROMULGATION OF INFORMATION

3.8 PROVISION OF AERONAUTICAL INFORMATION

Aeronautical Information Publication (AIP)

3.8.1 The AIP contains aeronautical information of a permanent nature as well as temporary changes of long duration to this information. Temporary changes of longer duration (three months or longer) and information of short duration, which contain extensive text and/or graphics, are normally published as AIP Supplements. The AIP forms the basic element of the aeronautical information products supplied by Aeronautical Information Services. The products also include the amendment service to the AIP, AIP Supplements, NOTAM, pre-flight information bulletins (PIB), AIC, checklists and lists of valid NOTAMs.

Notice to airmen (NOTAM)

3.8.2 A NOTAM is a notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

3.8.3 A NOTAM is originated and issued promptly whenever the information to be distributed is of a temporary nature and of short duration or when operationally significant permanent changes, or temporary changes of long duration are made at short notice, except for extensive text and/or graphics. Annex 15 requires that a NOTAM be published for a number of reasons, including:

- a) the presence of hazards outside promulgated sites that affect air navigation (including obstacles, military exercises, displays, races and major parachuting events); and
- b) the presence of threats from a conflict zone, which is considered a reportable hazard for air navigation, including information as specific as possible regarding the nature and extent of threats arising from the conflict and its consequences for civil aviation.

3.8.4 The use of a NOTAM arises from the State's responsibility to provide aeronautical information about its sovereign and delegated airspace under Annex 15. Most States have dedicated entities responsible for issuing aeronautical information, usually by (national) ANSPs.

Aeronautical Information Circular (AIC)

3.8.5 An AIC is a notice containing information that does not qualify for the origination of a NOTAM or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.

State advisories and industry solutions

3.8.6 Since the downing of flight MH17, several tools and mechanisms to share risk-based information relevant to the operation of civil aircraft, as well as next generation systems, have been developed by States and the industry. States have been primarily relying on existing mechanisms such as NOTAMs, AICs and AIP to disseminate information. However, several private sector solutions have been developed, and increasingly States are employing secure web-based solutions to disseminate risk information available in an automated format with the intent to facilitate queries by end users. These systems rely on different sources and technologies and use a variety of different formats and structures for the content.

Some systems presented rely on a network of local points of contact that provide real-time and first-hand information which, in turn, is validated using other sources, including information provided by States and industry partners, and is made available as aggregated risk information. Other information-sharing products use automated systems to collect data from a variety of available sources including AIPs, NOTAMs and AICs, as well as security information derived from public and private sector sources.

3.8.7 The development of best practices and standardized lexicon will reduce operator confusion with understanding various State issued information-sharing, AIP, NOTAM or AIC products for a conflict zone. Further development and sharing of best practices covering publication formats and methodologies (e.g. risk assessments process, aviation threat level definitions correlating with the risk levels), will promote and enhance the international baseline for mitigating risks to civil aviation operations over or near conflict zones. Standardized risk communication also provides aircraft operators with the potential for a better understanding of the risks assessed and will allow governmental assessment units to cooperate together more transparently. Nevertheless, due to differing risk tolerance levels, it is likely that mitigation measures as a result of these risk assessments continue to differ. Appendix G provides guidelines for coordinated risk communication.

Chapter 4

CONDUCTING SECURITY RISK ASSESSMENTS FOR FLYING OVER OR NEAR CONFLICT ZONES

4.1 INTRODUCTION

4.1.1 Conflict zones pose unique challenges to risk assessment processes due to their lack of predictability and their rapidly evolving nature. Furthermore, most civil aircraft do not have available mitigation measures against anti-aircraft capable weapons, such as SAMs, once on a dedicated flight path at cruising altitude.

4.1.2 A systematic approach to conducting risk assessments is therefore needed to adequately account for the specific nature of the risks posed by conflict zones. The risk assessment process outlined in this chapter is consistent with the ICAO methodology provided in the ICAO *Aviation Security Manual* (Doc 8973 – Restricted) and the ICAO *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted). Additional risk assessment guidance can be found within both documents.

4.1.3 As indicated in Annex 17, Standard 3.1.3, States shall keep the level of threat to civil aviation under constant review, and establish and implement policies and procedures to adjust relevant elements of their national civil aviation security programmes accordingly, based upon a security risk assessment carried out by the relevant national authorities. In the context of conflict zones, risk assessments should be a continuous cycle whereby any significant changes in the threat situation compels a new assessment to be initiated.

4.1.4 Threat analysis needed to feed valid risk assessments may be best achieved by instituting a systematic and continual process consisting of collecting intelligence information and evaluating associated data. Mechanisms should be in place for obtaining up-to-date and valid threat information in a timely and efficient manner to ensure the resultant risk assessment is current, accurate and complete. This is typically done by the national appropriate authority, but not in all cases (refer to Appendix C for differences between guidance provided by States in the risk assessment process), and requires coordination at the national level among all responsible entities as well as close cooperation with the international and regional intelligence community.

4.1.5 When collecting and analysing both threat and vulnerability information, it is important that this is done in the most objective way possible, based on facts and the analysis thereof. It is therefore paramount to stay away from biases that may be caused by different elements, such as diplomatic, political or historical factors that could impact the results of the risk assessment. When possible, comparing risk assessment results with international partners for possible divergences can enable introducing adjustments as necessary.

4.1.6 The identified mitigation measures should be flexible and commensurate with the risk assessment, which may fluctuate given changing circumstances.

4.2 CHARACTERISTICS OF CONFLICT ZONE RISK ASSESSMENT METHOD

4.2.1 Like a traditional aviation security risk assessment, a conflict zone risk assessment should be based on an evaluation of threat (measured through likelihood in ICAO's methodology), consequence and vulnerability for each defined scenario. Once the risk value is obtained, recommendations for possible mitigations (where necessary) can be provided.

ICAO recommends using a five-point scale from HIGH to LOW to score likelihood, consequences and vulnerability; however, scales may be tailored to individual needs. The method described in this chapter should assist States, aircraft operators, relevant authorities and service providers in carrying out their own risk assessment in a logical, consistent and clear manner. Refer to Appendix A for additional information with regards to the risk assessment process described in Doc 10108.

4.2.2 Carefully identified and defined scenarios should be the foundation of a risk assessment. These scenarios should be as specific and thorough as possible to allow for an accurate characterization of threat, consequences and vulnerability.

4.2.3 It is readily acknowledged that the responsibility for assessing the nature and level of threat to civil aviation within a State may be delegated to another entity, such as an intelligence service or a military component. Relevant authorities and service operators responsible for threat and risk assessments should collaborate in adapting this model as necessary to fit a State's particular circumstances.

4.3 THREAT

4.3.1 Threat should be assessed based on the capability and intent of threat actors relevant to a particular scenario, without taking into consideration existing mitigation measures. Likelihood can be used as an indicator of the threat, as it measures the probability of the attack described in a specific scenario being carried out. Information regarding the intent and capability of State and non-State actors involved in a conflict may be difficult to gather for several reasons, including the fact that the information may be classified.¹

4.3.2 States may obtain relevant threat information and intelligence through direct gathering of classified information or through exchanges with other States. This intelligence should be used in conjunction with other sources, including open-source information, in order to conduct threat assessments.

4.3.3 Aircraft operators and ANSPs may collect relevant information through a variety of available formal and informal sources. Information should be cross-validated through a variety of possible sources, including:

a) *Aeronautical information*

Most risk information is provided in the form of operating advisories and restrictions in either AIP supplements, NOTAMs, or AICs. These advisories and restrictions concern publications of a State's own sovereign or delegated airspace, or publications directed to its own operators for operations within and outside the State's sovereign airspace;

1. Where feasible, efficient lines of communication and information-sharing protocols should be established between intelligence units and State authorities responsible for conducting conflict zone risk assessments for civil aviation operations. The United Nations Office of Counter-Terrorism's *Threat Assessment Models for Aviation Security (TAM)* programme assists States in bridging this gap to ensure relevant information is shared among government agencies (<https://www.un.org/counterterrorism/tam-programme>).

b) *State — Operator information mechanisms*

States may provide relevant information in a discreet and non-public fashion to aircraft operators and service providers under their oversight responsibility. The exchange of appropriate information may be conducted through various levels of formality and include non-public details with high value for conflict zone risk assessments;

c) *Membership networks*

Informal networks are available to operators through operator alliance networks and commercial entities offering membership to information exchange platforms. Such networks enable a relatively free exchange of information gathered by individual members of the network. The value of the information exchanged through a membership network may be higher than publicly available open-source information, as it can provide a certain level of confidentiality to the sources;

d) *Aerodromes*

Other sources for local information are the various aerodrome resident departments, agencies and other entities with an operational relevance for the conduct of a flight. Such information may be made available directly to the aircraft operator or further disseminated through alliance networks; and

e) *Open source*

Open-source information such as traditional media and information from social media platforms may be used to identify potential threats to the operator's flight routes and destinations. Possible means to stay up to date about global security risks and threats to the aviation sector are to subscribe to daily newsletters and to regularly consult databases, preferably introducing geographically diverse sources relevant to the aircraft operator's areas of operations. Such sources should always be assessed and scrutinized in order to identify potential bias or disinformation.

Open-source websites can also be used to gather relevant information that could be used in undertaking a risk assessment. Subscriptions to services provided by organizations that specialize in providing information and analysis about conflict and security issues is another option available.

4.3.4 A risk assessment should be specific and thorough in considering the threat as much as possible. To do so, it may be useful to identify precise factors in assessing the threat. Examples of such factors can be found in Appendix A.

4.4 CONSEQUENCES

4.4.1 Consequences can be assessed by the scale and nature of the impacts of an attack in human, economic, political and reputational terms, under a reasonable worst-case scenario. When looking at the risk associated with flying over or near conflict zones, it can reasonably be assumed that the worst-case scenario of successfully downing a passenger aircraft would have catastrophic consequences, due to the loss of life, as well as the political and economic repercussions of such an attack.

4.5 VULNERABILITY

4.5.1 Any existing measures to mitigate threat should be identified and considered when assessing vulnerability. Existing aeronautical publications such as AIP, NOTAMs or AICs should be reviewed and considered.

4.5.2 Vulnerability scores would decrease should the State responsible for managing its airspace implement effective mitigation measures, such as re-routing flights or closing its airspace. On top of mitigation measures implemented by the relevant State authority, additional measures that aircraft operators and ANSPs may have chosen to adopt should also be considered when assessing vulnerability. The risk mitigation inventory for flying over or near conflict zones can be used as reference to identify existing mitigating measures (refer to Appendix E) for an accurate vulnerability assessment.

4.6 SECURITY RISK

4.6.1 Risk is identified as the level of exposure to a successful attack being carried out on a specific target, taking into account the assessed threat and consequences, as well as an assessment of the remaining vulnerabilities after evaluating the effectiveness of the aviation security measures currently in place. As risk assessment is a cyclical process, the risk needs to be evaluated in the same way as the initial risk assessment was conducted after the threat picture has been reviewed, and after any possible mitigation actions have been identified and their implementation factored in to re-assess vulnerability. The scoring of consequences for the initial risk assessment should usually remain unchanged when it is repeated.

4.7 METHODOLOGICAL ASSUMPTIONS

4.7.1 Risk assessment methodologies can choose to give more weight to a particular factor to, for instance, meet risk management requirements, take a more conservative approach, account for human factor limitations or be aligned with existing risk appetite. As such, methodologies may lean towards giving the greatest weight to likelihood and do not account for the unpredictable and rapidly evolving nature of conflict zones. The catastrophic results in the case of a successful strike against a civil aircraft are not fully reflected in the risk assessment results when likelihood receives a more prominent role.

4.7.2 In this line, a precautionary approach² should be applied as part of a conflict zone risk assessment process. Fundamentally, a lack of evidence or low likelihood should not be a reason to delay action, as the impact of the threat should carry greater weight in deciding to act. As a matter of best practice for the application of the precautionary approach in conducting conflict zone airspace closure, see Chapter 5.

4.8 ADDITIONAL MITIGATIONS

4.8.1 All stakeholders will need to determine their risk tolerance for each scenario. Risk tolerance is defined as the level of risk an entity is prepared to accept before it reaches a point where it needs to further mitigate the risk, or avoid

2. The precautionary approach aims to give more weight to uncertain but catastrophic scenarios to ensure the safety of the aircraft, crew and passengers in the context of assessing conflict zones risks and identifying appropriate mitigation measures. The impact of the risk should be a leading consideration to ensure a higher level of protection through preventative decision-taking.

it altogether. In summary, risk tolerance is achieved when existing controls, measures or procedures provide sufficient confidence that the probability and/or impact of risks posed by any activity and/or characteristics that could endanger the safety and security of civil aviation can be adequately reduced/mitigated.

4.8.2 Where the risk tolerance of an entity has been exceeded, additional mitigations should be applied. The risk mitigation inventory for flying over or near conflict zones (refer to Appendix E) provides a detailed list of mitigation measures that can be implemented by stakeholders throughout the civil aviation sector from pilots to aircraft operators, ANSPs and international organizations.

4.8.3 The airspace over or near an emerging or actual conflict zone should only be used by civil aviation if effective risk mitigation measure(s) can be applied with confidence. This effective implementation should ensure vulnerability is kept to a level to allow that the risk tolerance threshold is not exceeded.

4.8.4 When determining which mitigation measure(s) should be taken, the impact of each measure must be weighed, as often effective mitigation measures can cause indirect 'spillover' issues or unintended consequences. To that end, once the security risk assessment is completed and the mitigating measures are identified, aircraft operators or service providers may wish to conduct a safety risk assessment to identify any additional safety risks arising from these mitigations. For example, re-routing flights or restricting airspace may result in additional traffic in other flight routes or air corridors, requiring an aircraft to operate at a higher altitude over a conflict zone, which may result in increased fuel requirement and a decrease in the aircraft payload for that flight route. Appendix B provides an example of the guidance material for a safety risk assessment.

4.9 INTEGRATED RISK ASSESSMENT CYCLE

4.9.1 The collection of relevant information, the subsequent threat analysis, the security risk assessment, the hazard identification, the safety risk assessment and the risk determination constitute necessary steps in the continuous risk assessment cycle. This cycle involves specific processes and decisions to address all aspects of risk exposure. A detailed description of the process is outlined in the following flow chart (Figure 4-1).

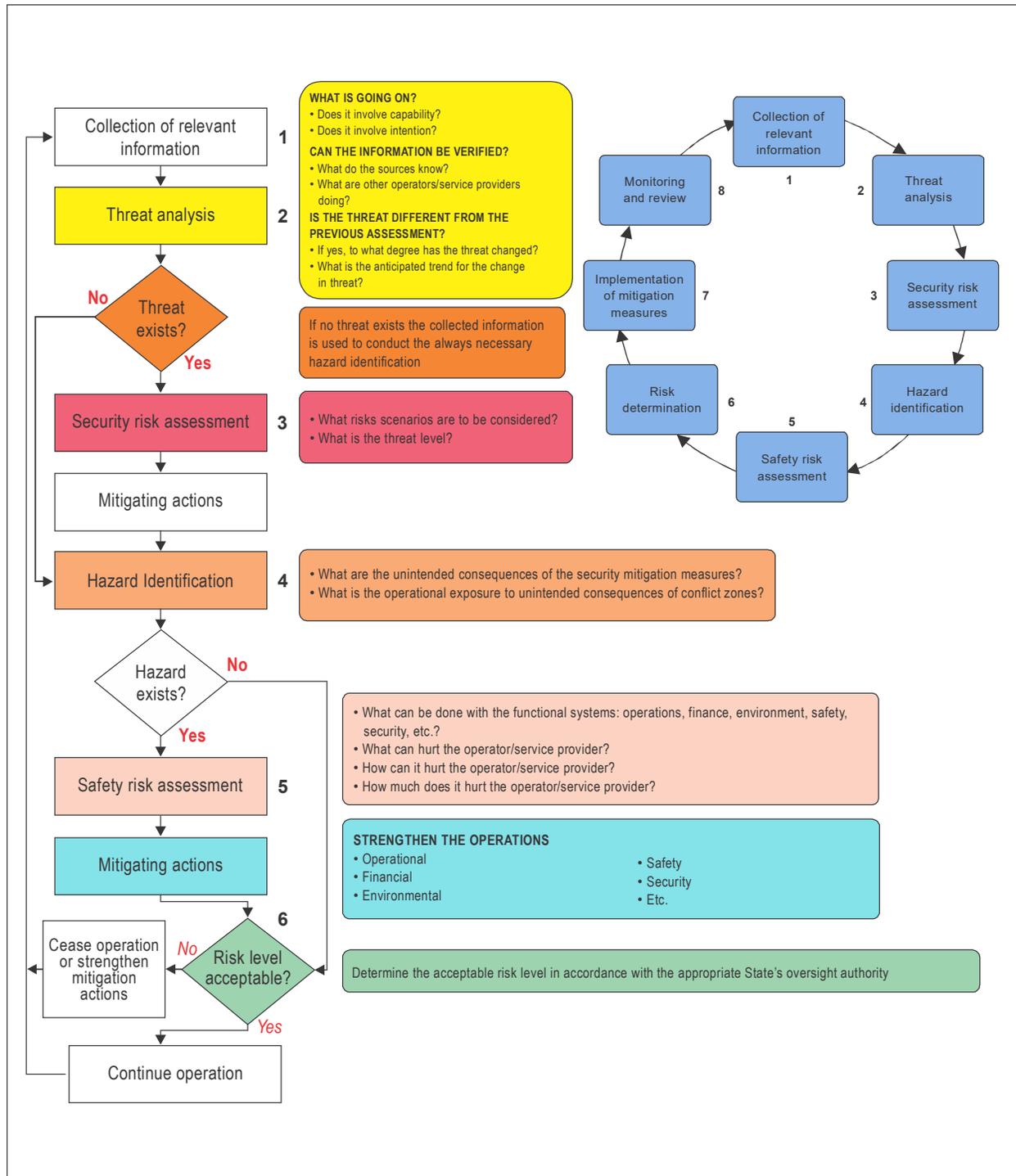


Figure 4-1. Flow chart of an integrated risk assessment cycle for States, aircraft operators and service providers

Chapter 5

CONDUCTING CONFLICT ZONE AIRSPACE CLOSURES

5.1 INTRODUCTION

5.1.1 This chapter outlines suggested actions for managing operations and/or airspace. It provides guidance on the roles of States experiencing heightened tensions and/or military activities, aircraft operators flying or planning to fly over or near the affected airspace, and the State of the Operator of aircraft deployed by those operators.

5.1.2 While the State experiencing heightened tensions and/or military activities that may present an increased risk to civil aviation has the highest responsibility, all other stakeholders also have an important role by sharing relevant information and taking appropriate action in alignment with the precautionary approach, to ensure the safety and security of civil aviation.

5.2 STATES EXPERIENCING HEIGHTENED TENSIONS AND/OR MILITARY ACTIVITIES THAT MAY PRESENT AN INCREASED RISK TO CIVIL AVIATION

5.2.1 When a State identifies an emerging crisis that may pose an increased risk to civil aviation, the appropriate authority and/or their delegated representative should consider taking precautionary steps by proactively initiating a risk assessment and developing appropriate contingency plans before any significant risks arise. As situations evolve, plans should be regularly reviewed.

5.2.2 If a significant increase of threat related to heightened tensions and/or military activities occurs, which could affect civil aviation, stronger mitigation measures may be required. A significant increase of threat to civil aviation can be described as any situation that has significantly deteriorated, such as:

- a) incident-driven increase of military alarm level;
- b) violent attacks (occurring or anticipated);
- c) loss of effective command and control over relevant anti-aircraft capable military equipment and/or military unit operations; and
- d) loss of effective ATC.

5.2.3 A significant increase of threat could pose a heightened risk to civil aviation, particularly if the emerging situation could not be duly evaluated and assessed by the relevant stakeholders, including the timely deployment of existing contingency plans or development of new contingency plans.

5.2.4 When a situation changes and additional significant elements not included in previous risk assessments need to be considered, or if mitigation measures might not be effective to mitigate the risk, States should consider closing the affected airspace temporarily, in application of the precautionary approach.

5.2.5 A temporary airspace closure is recommended to proactively safeguard civil aviation and allow sufficient

time for stakeholders to conduct a holistic threat evaluation and airspace risk assessment, and to communicate the results, where appropriate, to relevant stakeholders. A temporary airspace closure also provides stakeholders with the ability to determine whether any additional mitigation measures must be established, or if their flights should be cancelled, rerouted or prohibited until the applicable risks to civil aviation have been mitigated by other means.

5.2.6 Aircraft cannot be denied access to high seas airspace, although operational restrictions might apply for air traffic control service reasons. This might include the promulgation of suitably placed Danger areas.

5.3 AIRCRAFT OPERATORS FLYING OR PLANNING TO FLY OVER OR NEAR THE AFFECTED CONFLICT ZONE THAT MAY PRESENT AN INCREASED RISK TO CIVIL AVIATION

5.3.1 Annex 6 requires aircraft operators to ensure the airspace containing the intended route can be safely used. Furthermore, when intending to operate over or near conflict zones, a risk assessment shall be conducted, and appropriate mitigation measures taken. Aircraft operators should consider avoiding an affected airspace (including the geographical safety margin) temporarily, in application of the precautionary approach, until the risk assessment has been updated.

5.3.2 Aircraft operators should follow the instructions issued by States managing the affected airspace when experiencing heightened tensions and/or military activities complementary to mitigating measures taken by the State of the Operator or the operator itself.

5.4 STATE OF THE OPERATOR EXPERIENCING HEIGHTENED TENSIONS AND/OR MILITARY ACTIVITIES THAT MAY PRESENT AN INCREASED RISK TO ITS OPERATORS

5.4.1 The State of the Operator should engage in assisting aircraft operators to evaluate the safety and security of civil aviation in the airspace relevant to the operator's intended route and should endeavour to collect applicable information in a timely manner, including confidential information. The State of the Operator may publish AIP, NOTAM or AIC accordingly and/or wish to inform the operators in a practical and timely manner in other ways.

5.4.2 However, any State of the Operator who is not the State managing the affected airspace might not have access to all relevant or applicable information and may not be able to thoroughly evaluate if the security of civil aviation might be compromised at the time a significant increase of threat occurs. In such cases, or due to insufficient instructions from the State managing an affected airspace, the State of the Operator may consider temporarily prohibiting the use of an affected airspace for aircraft operators under their oversight, in application of the precautionary approach, and provided it possesses legal powers to do so.

Chapter 6

REASSESSING POST CONFLICT ZONE AIRSPACE

6.1 INTRODUCTION

6.1.1 This chapter provides guidance to support State authorities' and aircraft operators' risk assessment and decision-making processes.

6.2 PRINCIPLES

6.2.1 It is equally important for State authorities and aircraft operators to establish criteria to assess stabilization of conflicts or indications of a cessation of hostilities, as it is to establish a process to identify, assess and mitigate emerging or ongoing risks of flying over or near conflict zones. Monitoring these indicators will help determine when a formal reassessment of changing risk levels is warranted in order to support the resumption of civil aviation operations over or near a conflict zone.

6.2.2 State authorities and aircraft operators should monitor and regularly assess specific indicators as a conflict stabilizes, as well as after it ceases, to support policy and operational decision-making processes.

6.2.3 To support decision-making, collaboration with aviation sector stakeholders as well as other community partners is key to ensuring an accurate and mutual understanding of a current situation and its evolving factors.

6.3 PROPOSED CRITERIA FOR SAFE RESUMPTION OF FLIGHT OPERATIONS

6.3.1 The following criteria are proposed, but not limited to, for consideration when resuming flight operations:

- a) Sustained or consistent reduction in the level of intensity of a conflict, or associated tactics, that lower the risk posed to civil aviation, such as a transition from offensive operations to a near-static or defensive posture, and/or a demonstrated cessation in the targeting of airports and aviation operations.
- b) Reduction in the presence of weapons systems or capabilities that lower the risk posed to civil aviation, such as:
 - 1) the removal of key weapons systems or capabilities, i.e. the removal/redeployment of long-range SAMs or SSMS in such a way that previously affected aerodromes, air navigation routes or airspaces are no longer at risk; and
 - 2) the introduction of new and robust defensive capabilities, i.e. the deployment of missile defence capabilities into the area in conjunction with robust airspace command and control, and deconfliction protocols. This addition would help reduce the direct SAM risk as well as reduce the potential risk of inadvertent air defence misidentification of civil aviation operations.

- c) Initiation of peace negotiations and a subsequent ceasefire declaration that reduces the risk posed to civil aviation. The agreement should be monitored and assessed against the following implementation indicators:
 - 1) reduction in political rhetoric;
 - 2) reduction of hostilities and military force alerts;
 - 3) sustainment of ceasefire conditions; and
 - 4) redeployment of military forces, weapons and anti-aircraft capabilities, which may have posed a risk to civil aviation (aircraft and infrastructure), away from the conflict area.
- d) Application of cease-fire measures that would indicate a high degree of certainty in a cease-fire agreement, such as:
 - 1) the standing down of tactical air and air defence forces;
 - 2) improved command, control and airspace deconfliction between military and civil authorities;
 - 3) sustained implementation of security guarantees agreed by the combatants of the affected airspace; and
 - 4) the degree of proactive bilateral and multilateral information exchanges that assist in reducing the unpredictability of military activities.
- e) Ability of the affected appropriate authority and ANSP to safely manage its airspace and associated activities, such as:
 - 1) AIP Supplement, NOTAM or AIC issuances;
 - 2) start of air traffic control operations;
 - 3) ATS surveillance service capabilities (ADS-B/radar); and
 - 4) resumption of operational activities.
- f) Status of international and regional aerodromes in the affected area. This would include serviceable infrastructure and functioning support services such as fuel, security, fire/rescue services and cargo handling.
- g) Presence, and implementation/activation, of revised contingency plan to support resumption of enroute services for overflight operations.
- h) Re-emergence of safe domestic air traffic operations, charter operations, and/or the resumption of flights into, over, or through previously affected adjacent airspace, providing safe airspace management and the absence of incidents contributing to the overall reassessment process.

6.3.2 As risks to civil aviation are reduced, it may be possible to re-establish civil aviation operations into, out of, or through the airspace of the impacted State, using a gradual approach. Utilizing a gradual approach may include implementing additional temporary operational procedures such as specific communication or operational flight procedures. These additional procedures could be reduced, or operations could be expanded (i.e. low altitude flights), once confidence in the safe operation of flights can be further established.

Appendix A

SECURITY RISK ASSESSMENT FACTORS, INFORMATION, SOURCES, METHODOLOGY AND CONCEPT

KEY RISK FACTORS TO BE TAKEN INTO ACCOUNT IN CONDUCTING A RISK ASSESSMENT FOR OPERATIONS OVER OR NEAR CONFLICT ZONES

1. As noted in Chapter 2, past events suggest there is a considerable risk to civil aviation as an unintended target when flying over or near conflict zones. In order to assist the conduct of relevant, geographically-specific risk assessments by States or aircraft operators, this Appendix presents more specific and refined criteria in assessing the risk of an unintentional impact.
2. The existence of armed conflict, internal or external, in an area over which a flight is operating is a significant risk factor. This should be taken to include the threat of conflict where the parties are on a high state of military alert or heightened tension (see Glossary, *Conflict zones*). At any given time, however, the areas (which may include areas over the high seas) that are subject to conflict may be numerous and widespread.
3. In that context, when flying over or near conflict zones where it may be assumed that anti-aircraft weapon systems are available to a party engaged in the conflict, the most important risk factors are considered to be:
 - a) use of military aircraft in a combat role or for hostile reconnaissance by at least one party in the conflict. Increasingly, this could include remotely piloted (unmanned) aircraft;
 - b) use of aircraft to transport ground troops or military equipment by at least one party (such aircraft may be more difficult to distinguish from civil aircraft, particularly where operating near air corridors and close to civil aircraft cruising altitudes);
 - c) poorly trained or inexperienced personnel operating SAMs (this may also be associated with the absence of robust command and control procedures for authorizing launch and is likely to increase the risk of misidentification of civil aircraft). This risk may be difficult to evaluate, but is likely to be the highest where SAMs may have been acquired by non-State actors;
 - d) lack of effective air traffic management over the relevant airspace, for example, perhaps due to a conflict situation, or the State responsible for that airspace not being in full control of its own territory, or not able to fulfil its air traffic control, coordination and promulgation obligations; and
 - e) routeing passes over or close to locations or assets of high strategic importance that may be considered vulnerable to aerial attack in a conflict situation.
4. As noted above, knowledge that SAMs are in the possession of a non-State actor that is known or suspected to be likely to launch an intentional attack on civil aircraft would strongly indicate the need to avoid all airspace that may be within range of attack from areas where such groups are able to freely deploy them.

RELEVANT INFORMATION AND POSSIBLE SOURCES

1. Bearing in mind the key risk factors identified above, States or aircraft operators wishing to conduct their own assessment of the risk of flying over or near a particular zone of conflict or high tension may wish to gather information on:
 - a) the nature of the conflict, and in particular whether one party was reported to be using, or was considered likely to use, air power against another party;
 - b) the types of military equipment available to the parties and, in particular, the likelihood that they may have access to SAMs or anti-aircraft equipment. Evidence of this may be found in reporting on the use of missile attacks against military aircraft;
 - c) the use of military aircraft in a combat role or for information gathering by at least one party in a conflict. Increasingly, this could include remotely piloted (unmanned) aircraft;
 - d) the broader military capabilities of parties;
 - e) a lack of effective air traffic management over a relevant airspace, e.g. due to a conflict situation, the State responsible for that airspace not being in full control of its own territory, or unable to fulfil its air traffic control, coordination and promulgation obligations; and
 - f) whether the routeing passes over or close to locations and/or assets of high strategic importance that may be considered vulnerable to an aerial attack in a conflict situation.
2. Those who do not have reliable access to this sort of information may wish to consider subscribing to services provided by organizations that specialize in providing information and analysis about conflict and security issues. Some aircraft operators are known to be already using such information and analysis to inform their risk assessments.
3. Open source websites can also be used to gather relevant information that could be used in undertaking a risk assessment. In some cases, a membership is necessary to achieve full access.

SECURITY RISK ASSESSMENT METHODOLOGY AND CONCEPT

(Source: Doc 10108 – *Aviation Security Global Risk Context Statement*)

1. The objective of this section is to describe a risk assessment method that can be utilized to assist States and relevant authorities in carrying out their own risk assessment of possible and/or potential concerns and threats in a logical, consistent and clear manner. The same methodology is used in the ICAO *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted), which serves as a tool for developing evidence-based risk assessments and modifying possible mitigation actions that States may implement to achieve risk-based security programmes.
2. It is readily acknowledged that the responsibility for assessing the nature and level of threat to civil aviation within a State may be delegated to another entity, such as an intelligence service or a military component, and not to the civil aviation authority. This guidance material is provided primarily to assist States in meeting their requirements under Annex 17 to conduct risk assessment processes for civil aviation. The relevant authorities responsible for threat and risk assessment should collaborate in adapting this model as necessary to fit a State's particular circumstances.

3. The described risk assessment method is comparable to existing good practices for risk management systems, adapted to take account of the particular issues associated with threats to civil aviation security, especially from non-State actors. The risk assessment process comprises four elements as follows:

- a) analysis of plausible threats, likelihoods and consequences;
- b) the assessment of current mitigations and remaining vulnerabilities;
- c) residual risk assessment; and
- d) recommendations for further risk-based work and possible mitigation.

4. The key components for completion of the risk assessment are:

- a) *threat scenario* — identification and description of a credible attack comprising a target, the modus operandi and the adversary;
- b) *likelihood of an attack* — the probability or likelihood of that attack being attempted, based on perpetrators' intentions and capabilities but NOT taking into account current security measures;
- c) *consequences* — the nature and scale of the impact of the specific attack, in human, economic, political and reputational terms under a reasonable worst-case scenario;
- d) *current mitigating measures* — the relevant SARPs, national civil aviation security programmes (NCASPs), aviation security programmes (ASPs) and any other factors that assist in mitigating the threat, which are assumed to be effectively implemented. It is assumed that no threat can be entirely eliminated;
- e) *vulnerability* — the extent of the remaining vulnerabilities once the current mitigating measures have been taken into account;
- f) *residual risk* — the overall risk of a successful attack, taking account of threat likelihood and consequences of the threat scenario, and considering the remaining vulnerabilities after assuming current mitigation measures have been implemented; and
- g) *possible additional mitigation* — identified measures that Member States, ICAO or others may implement to further mitigate residual risks where necessary.

5. It is important that the risk assessment identify the possible or potential scenarios carefully, being specific and thorough in considering each form of threat. Threats could be directed at air traffic control facilities or navigational equipment, as well as aircraft, including different forms of aviation, such as general aviation, passenger aircraft and cargo-only aircraft.

6. In this methodology, likelihood, consequences and vulnerability may be scored on a ten-point scale from HIGH to LOW. The general meanings of the scores, in each case, are given below.

7. For likelihood:

- a) **HIGH (rated as 9 or 10)** means a very plausible scenario, with an actual attack of this kind having occurred in the past few years, or strong evidence of capability, intent and planning;

- b) **MEDIUM-HIGH (rated as 7 or 8)** means a clearly plausible scenario, with relatively recent examples or evidence of early attack planning or hostile reconnaissance;
- c) **MEDIUM (rated as 5 or 6)** means an essentially plausible scenario, with some evidence of intent and capability and possibly some examples, but no evidence of current attack planning;
- d) **MEDIUM-LOW (rated as 3 or 4)** means a scenario for which there are no, or no recent, examples, but some evidence of intent, yet with a method apparently not sufficiently developed for a successful attack scenario or probably superseded by other forms of attack; and
- e) **LOW (rated as 1 or 2)** means a theoretically plausible scenario but with no examples or signs of attack or attack planning, and a theoretical intent but no apparent capability.

8. For consequences, the scores mean that, in a realistic worst-case scenario, the outcome can be expected to be along the lines in Table A-1.

Table A-1. Rating of consequences

Consequences			
<i>Impact rating</i>	<i>Human</i>	<i>Direct economic impact</i>	<i>Other</i>
HIGH (rated as 9 or 10)	Hundreds of deaths	Billions of United States dollars	Severe disruption to services and confidence in the aviation system
MEDIUM-HIGH (rated as 7 or 8)	Some but not all of the HIGH consequences above		
MEDIUM (rated as 5 or 6)	Tens of deaths	Tens or hundreds of millions of United States dollars	Substantial disruption to services and confidence in the aviation system
MEDIUM-LOW (rated as 3 or 4)	Some but not all of the MEDIUM consequences above		
LOW (rated as 1 or 2)	Possibly some deaths and injuries	Some economic impact	Some disruption to services and confidence in the aviation system

9. For vulnerability:

- a) **HIGH (rated as 9 or 10)** means no mitigating measures are in general effect, either because there is no regulatory requirement or because no realistic effective measures are available;
- b) **MEDIUM-HIGH (rated as 7 or 8)** means that mitigation has a limited scope and that important areas and aspects of the risk are not covered by regulatory requirements or measures in general effect;
- c) **MEDIUM (rated as 5 or 6)** means that features of both **MEDIUM-HIGH** and **MEDIUM-LOW** are present;

- d) **MEDIUM-LOW (rated as 3 or 4)** means that mitigating measures are generally in place, but they may be immature or only partially effective. For instance, the broad regulatory requirements may be in place for all areas and aspects, but they are capable of being further developed or better implemented in practice; and
- e) **LOW (rated as 1 or 2)** means that clear regulatory requirements exist and that mitigating measures generally regarded as effective are in widespread use.

10. Each plausible scenario identified is then given a residual risk score based on a combination of the assessed scores for likelihood, consequences and vulnerability.

11. Residual risk is assessed on a five-point scale. The ranking is derived from the other scores, and it involves some elements of judgement as well as the aggregation of the scores assigned to likelihood, consequences and vulnerability. The mathematical formula used to calculate residual risk in this methodology is presented below.

	Threat (T)		Consequence (C)		Vulnerability (V)	Risk Score	Risk Rating
HIGH	9-10	+	9-10	+	9-10	25.6 to 30	HIGH
MEDIUM-HIGH	7-8	+	7-8	+	7-8	19.6 to 25.5	MEDIUM-HIGH
MEDIUM	5-6	+	5-6	+	5-6	13.6 to 19.5	MEDIUM
MEDIUM-LOW	3-4	+	3-4	+	3-4	7.6 to 13.5	MEDIUM-LOW
LOW	1-2	+	1-2	+	1-2	3.0 to 7.5	LOW

Appendix B

EXAMPLE OF A SAFETY RISK ASSESSMENT METHODOLOGY

(Source: Doc 9859 – *Safety Management Manual (SMM)*)

1. Safety risk probability

1.1 Safety risk probability is the likelihood that a safety consequence or outcome will occur. It is important to envisage a variety of scenarios so that all potential consequences can be considered. The following questions can assist in the determination of probability:

- a) Is there a history of occurrences similar to the one under consideration, or is this an isolated occurrence?
- b) What other equipment or components of the same type might have similar issues?
- c) What is the number of personnel following, or subject to, the procedures in question?
- d) What is the exposure of the hazard under consideration? For example, during what percentage of the operation is the equipment or activity in use.

1.2 Taking into consideration any factors that might underlie these questions will help when assessing the probability of the hazard consequences in any foreseeable scenario.

1.3 An occurrence is considered foreseeable if any reasonable person could have expected the kind of occurrence to have happened under the same circumstances. Identification of every conceivable or theoretically possible hazard is not possible. Therefore, good judgment is required to determine an appropriate level of detail in hazard identification. Service providers should exercise due diligence when identifying significant and reasonably foreseeable hazards related to their product or service.

Note.— Regarding product design, the term “foreseeable” is intended to be consistent with its use in airworthiness regulations, policy and guidance.

1.4 Table B-1 presents a typical safety risk probability classification table. It includes five categories to denote the probability related to an unsafe event or condition, the description of each category and an assignment of a value to each category. This example uses qualitative terms; quantitative terms could be defined to provide a more accurate assessment. This will depend on the availability of appropriate safety data and the sophistication of the organization and operation.

Table B-1. Safety risk probability table

Likelihood	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Note.— This is an example only. The level of detail and complexity of tables and matrices should be adapted to the particular needs and complexities of each organization. It should also be noted that organizations might include both qualitative and quantitative criteria.

2. Safety risk severity

2.1 Once the probability assessment has been completed, the next step is to assess the severity, taking into account the potential consequences related to the hazard. Safety risk severity is defined as the extent of harm that might reasonably be expected to occur as a consequence or outcome of the identified hazard. The severity classification should consider:

- a) fatalities or serious injury which would occur as a result of:
 - 1) being in the aircraft; or
 - 2) having direct contact with any part of the aircraft, including parts which have become detached from the aircraft; and
- b) damage:
 - 1) damage or structural failure sustained by the aircraft which:
 - i) adversely affects the structural strength, performance or flight characteristics of the aircraft;
 - ii) would normally require major repair or replacement of the affected component;
 - 2) damage sustained by ATS or aerodrome equipment which:
 - ii) adversely affects the management of aircraft separation; or
 - ii) adversely affects landing capability.

2.2 The severity assessment should consider all possible consequences related to a hazard, taking into account the worst foreseeable situation. Table B-2 is a typical safety risk severity table. It includes five categories to denote the level of severity, the description of each category, and the assignment of a value to each category. As with the safety risk probability table, this table is an example only.

Table B-2. Example safety risk severity table

Severity	Meaning	Value
Catastrophic	<ul style="list-style-type: none"> • Aircraft/equipment destroyed • Multiple deaths 	A
Hazardous	<ul style="list-style-type: none"> • A large reduction in safety margins, physical distress or a workload such that operational personnel cannot be relied upon to perform their tasks accurately or completely • Serious injury • Major equipment damage 	B
Major	<ul style="list-style-type: none"> • A significant reduction in safety margins, a reduction in the ability of operational personnel to cope with adverse operating conditions as a result of an increase in workload or as a result of conditions impairing their efficiency • Serious incident • Injury to persons 	C
Minor	<ul style="list-style-type: none"> • Nuisance • Operating limitations • Use of emergency procedures • Minor incident 	D
Negligible	<ul style="list-style-type: none"> • Few consequences 	E

3. Safety risk tolerability

3.1 The safety risk index rating is created by combining the results of the probability and severity scores. In the example above, it is an alphanumeric designator. The respective severity/probability combinations are presented in the safety risk assessment matrix in Table B-3. The safety risk assessment matrix is used to determine safety risk tolerability. Consider, for example, a situation where the safety risk probability has been assessed as Occasional (4), and the safety risk severity has been assessed as Hazardous (B), resulting in a safety risk index of (4B).

Table B-3. Example safety risk matrix

Safety Risk		Severity				
Probability		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely improbable	1	1A	1B	1C	1D	1E

Note.— In determining the safety risk tolerability, the quality and reliability of the data used for the hazard identification and safety risk probability should be taken into consideration.

3.2 The index obtained from the safety risk assessment matrix should then be exported to a safety risk tolerability table that describes — in a narrative form — the tolerability criteria for the particular organization. Table B-4 presents an example of a safety risk tolerability table. Using the example above, the criterion for safety risk assessed as 4B falls in the “intolerable” category. In this case, the safety risk index of the consequence is unacceptable. The organization should therefore take risk control action to reduce:

- a) the organization’s exposure to the particular risk, i.e. reduce the probability component of the risk to an acceptable level;
- b) the severity of consequences related to the hazard, i.e. reduce the severity component of the risk to an acceptable level; or
- c) both the severity and probability so that the risk is managed to an acceptable level.

3.3 Safety risks are conceptually assessed as acceptable, tolerable or intolerable. Safety risks assessed as initially falling in the intolerable region are unacceptable under any circumstances. The probability and/or severity of the consequences of the hazards are of such a magnitude, and the damaging potential of the hazard poses such a threat to safety, that mitigation action is required or activities are stopped.

Table B-4. Example of safety risk tolerability

Safety Risk Index Range	Safety Risk Description	Recommended Action
5A, 5B, 5C, 4A, 4B, 3A	INTOLERABLE	Take immediate action to mitigate the risk or stop the activity. Perform priority safety risk mitigation to ensure additional or enhanced preventative controls are in place to bring down the safety risk index to tolerable.
5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	TOLERABLE	Can be tolerated based on the safety risk mitigation. It may require management decision to accept the risk.
3E, 2D, 2E, 1B, 1C, 1D, 1E	ACCEPTABLE	Acceptable as is. No further safety risk mitigation required.

Appendix C

DIFFERENCES BETWEEN THE GUIDANCE PROVIDED BY STATES IN THE RISK ASSESSEMENT PROCESS¹

1. States play a major role in decision-making processes related to conflict zones because they usually have more possibilities for aggregating intelligence than do aircraft operators, ANSPs and other concerned organizations.
2. The differences between the guidance provided by States are characterized by two extremes as illustrated in Figure C-1. One extreme involves States in which the authorities do not, or virtually do not, provide any guidance for the aircraft operators and ANSPs on the potential risks posed by conflict zones to civil aviation; while the other extreme involves States in which the authorities have established a regulatory framework that includes the issuance of conflict zone related airspace notifications. In between are States that (formally and/or informally) provide operators with risk information and/or issue recommendations.

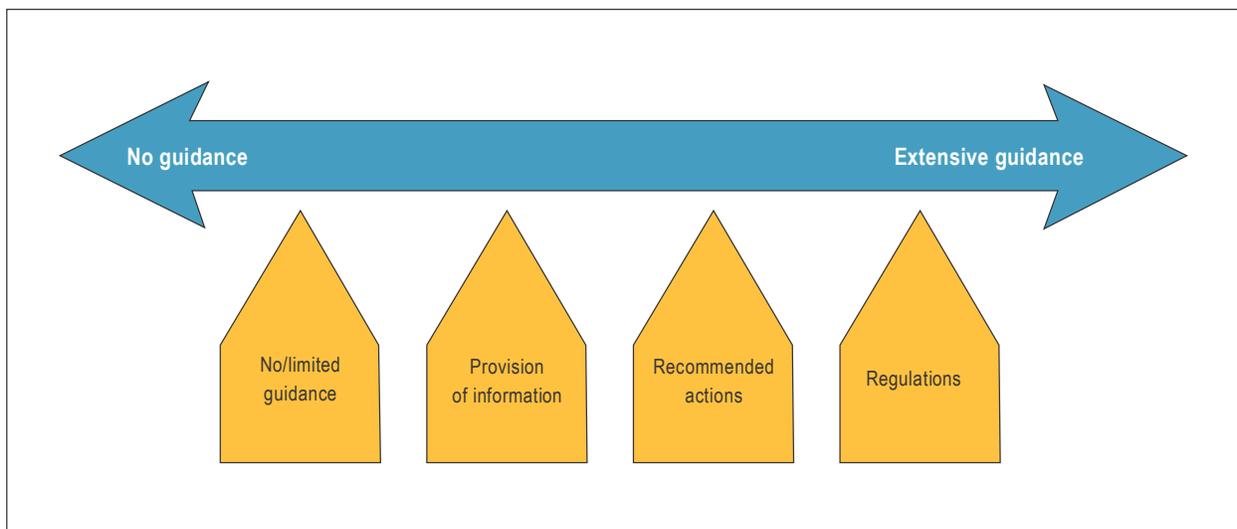


Figure C-1. Differences between authorities in the degree of guidance they offer
[source: Dutch Safety Board]

1. Based on the MH17 Crash Final Report – Dutch Safety Board.

Example 1: No or limited guidance and/or information from the authorities

The national authorities do not provide, or provide limited, guidance and/or information to their operators on flying in foreign airspace over or near conflict zones. A State that adopts this role considerably reduces the chance for its aircraft operators and ANSPs to receive confidential information related to their operations. This increases the need for those operators and ANSPs to actively aggregate relevant information, recognizing that not all of them have equivalent resources for doing so. Where resources are limited, it is all the more necessary for operators to seek out alternative sources of information. The way in which authorities provide limited information and/or guidance in this practice may differ from one State to another and may involve informal means.

Example 2: Information and/or guidance provided by the authorities

These national authorities provide their operators and ANSPs with threat-related information and/or guidance to support the operator's or ANSP's threat analysis, risk assessment and decision-making processes. The way in which authorities provide information in this practice differs from one State to another. State examples² include:

Netherlands

The Netherlands Expert group has representatives of several national aircraft operators, intelligence services, State authorities, the Ministry of Foreign Affairs and is chaired by the National Coordinator for Security and Counterterrorism (NCTV) and co-chaired by the Director of the Civil Aviation Department of the Ministry of Infrastructure and Water Management. The Expert group meets on a regular or ad hoc basis when there is concrete information about a specific and immediate threat to civil aviation. The aircraft operators will be informed immediately through or in consultation with the NCTV. The aircraft operator representatives provide information about the choices they make when planning their routes and preparing flights, based on information they have collected internally and via contacts with other operators. The authorities check what information is available at their level and eventually what other States have for information. The Expert group is also used to prepare the input for the European meetings, coordinated by the European Commission, and to discuss feedback. This information is used by EASA to draft CZIBs and Information Notes.

The aircraft operators remain responsible for their own risk assessments and decisions. The government has no legal power to force operators not to fly in a specific part of foreign airspace. The Netherlands has not developed a national website but is making use of the EASA website with the CZIBs, Information Notes and the EU Platform.

Switzerland

The Swiss Aviation Security Coordination Body (ASCB) assesses the threat and risk to civil aviation. This assessment is carried out, as far as possible, in close cooperation with industry security representatives. To ensure and strengthen international cooperation, the Federal Office of Civil Aviation (FOCA) participates in several international aviation security (AVSEC) working groups.

2. Text in examples has been provided by the referenced States.

The FOCA regularly informs the industry about current AVSEC threats and risks, including in conflict zones, through an online platform. This platform allows the rapid, targeted and secure sharing of information. National aircraft operators have access to government-provided information, but they remain responsible for risk assessment and decision making regarding their flight routes and destinations. The industry can also share any relevant information on this platform. If necessary, ad hoc in-person meetings can be convened at any time.

The ASCB is composed of representatives of the cantonal police, the Federal Office of Police, the Federal Intelligence Service, the Military Intelligence Service, the Federal Department of Foreign Affairs and the FOCA. Whenever appropriate, it can be extended to other expert entities. It meets regularly to exchange information and ensure coordination. In the event of an unexpected serious AVSEC incident, an ad-hoc crisis meeting can be convened quickly.

Once a year, the National Security Committee meeting provides an additional platform for industry security representatives and the ASCB to exchange AVSEC information. Among other things, the current threat situation to civil aviation is reviewed and security measures are discussed.

Example 3: Recommended actions provided by the authorities

National authorities provide their national operators with threat-related information, aviation-specific risk analyses or issue a recommendation based on this information. Some States also provide warnings, e.g. in the form of AIP Supplements, NOTAMs or AICs, about destinations and flight routes outside the State's own airspace. The operators include this advice in their decision-making process. A State example³ includes:

Spain

The Spanish Cargo and Risk Department from the Aviation Safety and Security Agency (AESA) carries out a risk assessment in the event of detecting a threat that could affect Spanish operators and based on the information received from different sources including intelligence services, whether it occurs in sovereign, foreign or delegated airspace. According to the result of this risk assessment, the following recommendations are issued:

1. Level 1. No direct recommendation. Spanish civil aircraft operators are recommended to take into account the information submitted for their risk analysis. An informative note is sent to the operators;
2. Level 2. Recommendation not to fly over an airspace or not to fly below a certain flight level. A NOTAM is issued; and
3. Level 3. Strong recommendation not to fly over the airspace or not to fly below a certain flight level. A NOTAM is issued.

3. Text in examples has been provided by the referenced States.

For the publication of the NOTAMs, AESA informs about the text and expiration date to be published by the ANSP (Spanish Air Navigation Services Provider - ENAIRE). If the NOTAM is to be extended over a longer period than three months, it would be replaced by a Supplement AIP, although the possibility of grouping long term recommendations by AIC is under consideration.

Aircraft operators remain responsible for their own risk assessments and decisions. AESA has no legal power to force aircraft operators not to fly in a specific part of foreign airspace.

AESA, as an added value to the publications issued and to help the operators directly affected by a specific threat in their decision-making, shares risk analysis reports on the assessed threat with those aircraft operators, always on a need-to-know basis.

In addition, with the aim of maintaining direct communication with the industry, AESA meets periodically with national aircraft operators in the 'Forum for the exchange of information on risk analysis' (FIIAR) to share relevant information on risk assessment, initiatives of the Appropriate Authority (AESA), as well as the concerns and needs of aircraft operators, to help improve the decision-making process.

Example 4: Regulation by the authorities

National authorities may prohibit operators registered in their State and code-sharing partner operators from entering conflict zone airspace. Based on the State's intelligence and threat and risk analyses, the information can be issued in the form of AIPs, NOTAMs, AICs or as an emergency order. States that impose overflight bans on their aircraft operators offer an additional means of limiting risks, although such States may use these tools on an exceptional basis. This approach may be appropriate where, for example, the State is aware of relevant information that it is not able to disseminate more widely for use by aircraft operators in their risk assessments. State examples⁴ include:

Canada

Canada's Conflict Zone Information Office (CZIO), part of Transport Canada, is responsible for monitoring both open-source information and intelligence for indications of heightened risk to civil aviation from conflict zones. Where such indications exist and there is a heightened threat posture, a risk assessment is conducted to determine if action should be taken. The CZIO also conducts risk assessments periodically for existing airspace notifications (e.g. NOTAMs, AICs) to ensure that the information provided is relevant and up to date.

1. Level 1: Medium risk (information/general advice) - Advises Canadian aircraft operators to take all potential risk information into account in risk assessment and flight routing decisions in certain airspace;
2. Level 2: High risk (recommendation) - Recommends that Canadian aircraft operators take certain action or not enter a certain airspace; and

4. Text in examples has been provided by the referenced States.

3. Level 3: Critical risk (prohibition) - Canadian aircraft operators cannot enter a certain airspace.

France

The French Risk Assessment Unit (Pôle d'Analyse du Risque pour l'Aviation Civile - PARAC) from the Direction Générale de l'Aviation Civile (DGAC) performs risk analysis to support decision-making of the French government. As regards to the specific risk arising from conflict zone overflights, the PARAC, based on intelligence information made available by the relevant services, is in charge to conduct the risk analysis. Regular exchanges with airlines make it possible to share some elements, taking into account the level of classification and on a need-to-know basis.

France's directives are addressed to air carriers holding an operating license issued by France, whether they are operating carriers and/or contractual carriers, including air services performed through a wet lease or a codeshare agreement. France's directives apply to any flight performed with an aircraft registered in France.

According to its risk analysis, France publishes NOTAMs when the situation requires urgent and swift decision. For longer-term validity positions, France publishes AIC, gathering positions and decisions of the State. France advisories and prohibitions may take the following forms:

1. Level 1 (vigilance): Operators are advised to follow specific caution for overflight in a given airspace;
2. Level 2 (restriction): Operators are requested to maintain at all times a minimum given flight level over a given airspace and/or are requested to fly specific routes; and
3. Level 3 (prohibition): Operators are requested not to enter a given airspace.

Germany

The German Bundesministerium für Digitales und Verkehr (BMDV) has entrusted the Luftfahrt-Bundesamt (LBA) to gather and assess information to determine flight operational risks from shelling during flights to and over conflict zones for German civil aircraft.

The LBA conducts a risk-based assessment of potential threats to German civil aircraft, following a methodological approach that includes a threat analysis and a risk assessment. The results of the analysis are submitted to the BMDV with a vote either to issue a flight operational recommendation or to issue a flight ban. In addition, the publication of an Information Sharing Document (ISD) may be considered. The assessments are subject to specified revision intervals unless there is cause for an early update in the interim. This ensures that recommended flight operational measures are kept current.

If it is determined that there is a danger to German civil aircraft, the authorities will publish measures to mitigate the danger if these measures cannot be adequately taken and implemented by the State concerned. Representatives of the aviation industry are involved before these measures are defined, prolonged or changed. They are also invited to information meetings on the current status of existing threats.

The publication of flight bans and flight operational recommendations is carried out by Deutsche Flugsicherung GmbH (DFS) on behalf of the BMDV, initially via NOTAMs. In the case of longer-term validity, the content of the NOTAM is transferred to the AIC; the NOTAM is cancelled. Short-term changes that are to take effect before the respective next publication date of the AIC are published by NOTAM.

The textual form of the publication is based on a harmonized structure:

1. Level 1: Medium risk (information/general advice) - Advises German aircraft operators to take all potential risk information into account in risk assessment and flight routing decisions in certain airspace;
2. Level 2: High risk (recommendation) - Recommends that German aircraft operators take certain action or not enter a certain airspace; and
3. Level 3: Critical risk (prohibition) – German aircraft operators cannot enter a certain airspace.

Kenya

Both Kenya's National Contingency Committee and National Aviation Security Committee, assisted by the Civil/Military Coordination Technical Committee, determine the level of threat. To aid in decision making, several factors are considered, such as: political influences (diplomatic relationships), available machinery in place to effect the mitigation, types and capability of the surface or air-to-air defence systems available, reliability of the intelligence received, and economic impact of the choice of mitigation.

Once the level of threat has been ascertained, the State authority then issues advisories of potential risks to aircraft operators who are expected to take initiative for the safe conduct of their operations.

Dissemination of safety information of a permanent nature are then executed through the AIP while those of temporary nature are done through the NOTAMs.

Civil aircraft operations may only be permitted to operate within such airspace, or portion thereof, that has been determined to be of high risk only after obtaining special authorization/clearance from the National Security Agencies.

United Kingdom

The United Kingdom Department for Transport (DfT) is responsible for providing advice to United Kingdom (UK) registered air carriers in relation to conflict zones and other airspace security threats. The DfT receives intelligence and assessments from a number of UK intelligence partners, and then translates any threats identified into a risk analysis. Based upon this, the DfT makes the advice available to UK aircraft operators as a basis for their own risk assessments. The DfT issues advice in the form of NOTAMs or entries in the UK AIP, with advice split into three levels:

1. Level 1: Medium risk (information/general advice) - Advises UK aircraft operators to take all potential risk information into account in risk assessment and flight routing decisions in certain airspace;
2. Level 2: High risk (recommendation) - Recommends that UK aircraft operators take certain action or not enter a certain airspace; and
3. Level 3: Critical risk (prohibition) - UK aircraft operators cannot enter a certain airspace.

United States

The United States Federal Aviation Administration (FAA) monitors, evaluates, and responds to situations such as those in which a conflict or fighting, heightened tensions, military or paramilitary action, terrorist activity, and/or other weapons-related hazards may pose a risk to the safety of United States civil aviation operating in airspace managed by another State. The FAA will conduct a risk-based assessment of the potential hazard to United States civil aviation using an internal methodological framework and available intelligence threat information from across the United States government. In appropriate circumstances, the FAA may engage with the appropriate authorities of other States regarding hazards to United States civil aviation operating in airspace managed by those States or by other States. If the FAA determines that a hazard to United States civil aviation exists and that sufficient protective measures have not or may not have been taken by the State responsible for managing the affected airspace, the FAA may issue a flight advisory or prohibition for United States civil aviation, as appropriate. FAA flight advisories and prohibitions issued due to hazards to United States civil aviation operations in airspace managed by another State may take the following forms:

1. Advisory Notice to Airmen (NOTAM): Advises United States civil aviation of a risk to their operations in a specified area; does not prohibit United States civil aviation operations;
2. Flight Prohibition NOTAM: Issued as an emergency order of the FAA Administrator that prohibits United States civil flight operations in specified areas; or
3. Flight Prohibition Special Federal Aviation Regulation (SFAR): Issued as a follow-up action to a flight prohibition NOTAM, unless the hazard to United States civil aviation has abated. Prohibits United States civil flight operations in specified areas; published as a United States federal regulation.

Note: The Office of the Secretary of Transportation of the United States Department of Transportation prohibits foreign air carriers from carrying their United States code-sharing partners' code on any flight that enters, departs, or transits airspace of any area for whose airspace the FAA has issued a flight prohibition.

Appendix D

EXAMPLES OF HOW ORGANIZATIONS OR STATES SHARE INFORMATION BETWEEN STATES, AIRCRAFT OPERATORS AND SERVICE PROVIDERS FOR EXCHANGE AND PROMULGATION OF INFORMATION

Annex 17, Standard 3.1.5, requires States to establish and implement procedures to share, as appropriate, with relevant airport operators, aircraft operators, air traffic services providers or other entities concerned, in a practical and timely manner, relevant information to assist them to conduct effective security risk assessments relating to their operations.

This appendix provides an example of procedures for implementation between the State, its aircraft operators, and other parties concerned to ensure that threat information is shared at the national level between the government and its national operators so that the operators can carry out a thorough risk analysis based in part on this information in order to ensure the safety and security of their flight operations.

Example 1: Contingency Coordination Team (CCT)

1. ICAO Regional Offices, upon receipt of information from any source (States, other specialized agencies of the United Nations, IATA or individual aircraft operators, media, internal or external source, etc.), can initiate coordination between States, international organizations and others concerned, and closely monitor the situation. The notification procedures are reflected in Table D-1. A CCT would be established once the conclusion had been reached that one was needed.
2. A CCT, normally named for the airspace it concerns, should be composed of technical experts of the States concerned, ICAO (Headquarters and the Regional Office(s) concerned), IATA, as well as other relevant international and regional organizations. The CCT's scope, participation and duration depend on the contingency event and the associated impact on the air operations across the airspace concerned.
3. The CCT maintains close liaison in accordance with the procedures in Table D-1, shares information, and conducts teleconferences and face-to-face meetings as required. From its side, IATA coordinates with its members in order to address the operators' views and needs, and keeps close coordination with the CCT.

Table D-1. Notional Notification/coordination process

Airspace avoidance				
Operator actions	Airline actions	IATA actions	ICAO Regional Office actions	States/ANSP actions
Monitor global activities that have an effect on flight operations (currently in place)	NONE	NONE	NONE	NONE
Review State activity that requires operator safety and security review (currently in place)	Notify IATA as to effected FIR and factors under review (security and/or safety)	When more than [30%] of operators reporting, notify ICAO Regional Office	Call for CCT establishment and activation	NONE
Identify specific factors and pending trigger events (currently in place)	Inform IATA on review findings and possible trigger events	Inform CCT on findings and number of operators reporting	Notify effected States/ANSP on number of operators reviewing current activity	NONE
Event triggered: review avoidance options and select avoidance scenario	Inform IATA of selected scenario and volume/initial timelines	Inform CCT	Notify effected States/ANSP of scenario and volume/timelines	Review scenario and give feedback on feasibility
48 hours prior to activation of planned avoidance re-routes	Notify IATA	Notify CCT	Notify effected States/ANSP	Prepare NOTAMS and avoidance scenario
24 hours prior to activation of planned avoidance re-routes	Notify IATA	Notify CCT	Notify effected States/ANSP	Publish NOTAMS

Example 2: EU Conflict Zones Alerting System

See 3.6 for the description of the EU Conflict Zones Alerting System.

Risk mitigation measures at the EU level are implemented by the following actions:

- a) the publication of CZIBs on the EASA website, which may contain operational recommendations, for States that were deemed to have a “high” risk level as a result of the EU risk assessment, or in other cases where there is a need to make other information public;
- b) the publication of Information Notes on the European Information Sharing and Cooperation Platform on Conflict Zones (the Platform) based on the conclusions of the EU risk assessment with more detailed operational information and recommendations addressed to Member State representatives and their air carriers; and
- c) the circulation of conflict zones alerts through the Platform, including information and data on specific risk areas, conflict zones developments and incidents, which are distributed regularly to the members of the Platform.

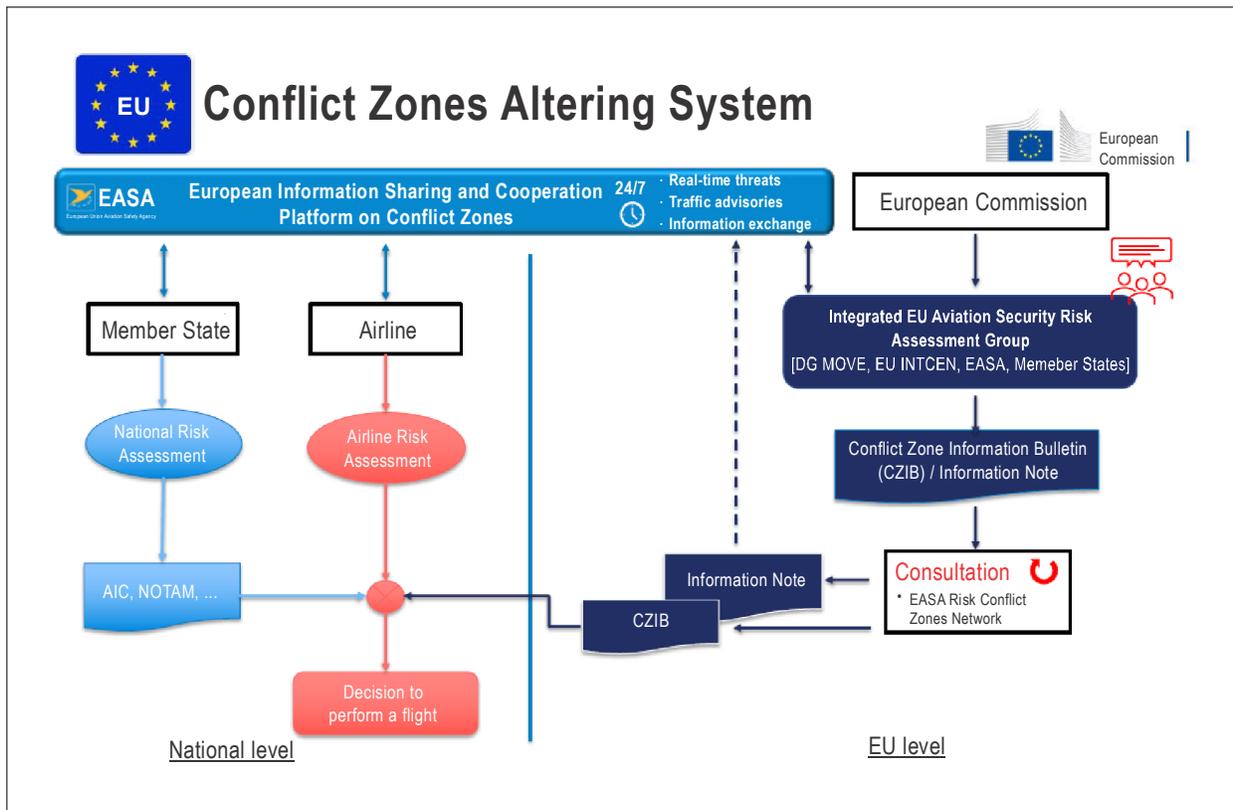


Figure D-1. EU Conflict Zones Alerting System
[source: European Commission]

*Example 3: Voluntary Civil Aviation Threat Information Sharing Agreement***VOLUNTARY CIVIL AVIATION THREAT INFORMATION SHARING AGREEMENT**

Voluntary agreement between *[name State, operators, and other parties]* to ensure at the national level that threat information is shared between the government and *[national]* operators so that the operators can carry out a thorough risk analysis based in part on this information in order to ensure the safety of their flight operations.

Parties:

- a) The State *[name]*, represented in this matter by: *[name(s) of person(s) involved]* hereinafter referred to as “the government”.
- b) *[name of operator(s)]*, represented in this matter by *[name of person]*,
- c) *[name of operator(s)]*, represented in this matter by *[name of person]*,
- d) Etc.

hereinafter referred to as “the operators”.
- e) optional: *[national airline pilot association]*, represented in this matter by *[the president]*

hereinafter jointly referred to as the Parties.

Considering:

- a) that the operators are responsible for determining their own flight routes;
- b) that it is of great importance that the operators have access to useful, accurate and relevant threat information so that flights can be operated as safely as possible, in particular during rapidly emerging conflict situations;
- c) that the government works to ensure that the International Civil Aviation Organization (ICAO) and *[name(s) of other (regional) civil aviation organization(s)]* explicitly include “flying over conflict zones” in the risk assessment, which is part of the safety management system that operators are required to have in place under international regulations;
- d) that the operators cannot, through their own investigations, gain access to all non-public threat information that is relevant to civil aviation;
- e) that the government, specifically the Intelligence and Security Services, does not have a legal duty (and consequently has no special powers) to carry out independent investigations into the flight safety of foreign airspace with regard to civil aviation or into the safety of flying to and from foreign airports;
- f) that the government parties participating in the agreement could have relevant threat information;
- g) *[any relevant regulatory national obligations regarding the Intelligence and security services]*;
- h) that it is important in such cases for the aircraft operators to receive the information, or a summary or analysis thereof, so that they can include it in their risk analysis for the safe operation of flights;
- i) that it is also important for the operators to be able to share information from their own sources with each other and with the government;

- j) that the Parties consider it important to secure their agreements regarding the exchange of available threat information relevant to civilian aviation between the government and the operators;
- k) that the government and the aircraft operators have a good working relationship;
- l) that the Parties ensure that they have at their disposal the capacity and resources needed to implement the voluntary agreement;
- m) [optional: that the national airline pilot association, as the professional association of pilots, considers a proper information exchange, at least as laid down in this voluntary agreement, essential for its members to be able to practice their profession];
- n) that the national airline pilot association has an interest in an efficient sharing of information for the safety and security of aviation, but has no operational responsibility for the actual exchange of information];
- o) that regular consultations should take place between the Parties for the purpose of exchanging threat information;
- p) that the Parties wish to lay down further arrangements concerning their cooperation in this voluntary agreement.

Agree as follows:

**Article 1
(Definitions)**

The following definitions are used in this voluntary agreement:

- 1) Threat information: personal information, relevant in the context of this voluntary agreement, to which the Parties have access and which, on the basis of analysis, they believe points to a situation that poses a risk to civil aviation;
- 2) Expert group: the “civil aviation threat information” expert group;
- 3) Steering group: the “civil aviation threat information” steering group.

**Article 2
(Aim of this voluntary agreement)**

The aim of this voluntary agreement is to ensure at a national level that the government and the operators share threat information so that the operators can carry out a thorough risk analysis, based in part on this information, in order to ensure the safety of their flight operations outside [State] airspace.

**Article 3
(Establishing a civil aviation threat information steering group and expert group)**

- 1) The Parties agree to establish a civil aviation threat information steering group. Each party appoints a representative to participate in the steering group.
- 2) The government and the operators agree to establish a civil aviation threat information expert group. Each participant appoints one or more representatives to participate in the expert group. In light of the confidential nature and classification level of the information, all representatives must be in possession of a declaration of no objection for civil aviation, or must have been screened at a comparable or higher level.

Article 4
(Working method)

- 1) The steering group is tasked with ensuring that the voluntary agreement is implemented properly and making adjustments if there is reason to do so.
- 2) The expert group is tasked with sharing and discussing non-public threat information that is relevant to civil aviation in a confidential setting. This applies to both acute and specific threat information and non-acute and non-specific threat information.
- 3) In order to carry out the task referred to in article 4(2), the operators provide the expert group with any threat information they have and share information about the choices they make concerning flight routes over conflict zones on the basis of their safety management system. It is an obligation for all participating operators to share information regarding their actual route networks.
- 4) To the extent possible, aircraft operators shall share specific route information and any applicable restrictions within this route network in the expert group periodically and at the request of expert group participants.
- 5) In order to carry out the task referred to in article 4(2) and on the basis of, inter alia, the information referred to in articles 4(3) and 4(4), the government provides the expert group with relevant (threat) information regarding aviation security that is available from various sources.
- 6) The expert group also:
 - a) deals with policy matters that are relevant in the context of the voluntary agreement, including methods for sharing information and coordinating input in international forums/expert groups (*[names of forums/expert groups]*);
 - b) discusses contingency plans and submits non-urgent questions and/or findings; and
 - c) requests specific information from operators, for example, about certain regions or airports.
- 7) As soon as the security services have concrete information about a specific and immediate threat to civil aviation, the operators will be informed at once through or in consultation with *[name of responsible national entity]*. The expert group can then call an ad hoc meeting to further discuss this threat information.
- 8) The Parties provide the expert group with the threat information and information about the choices they make on the basis of it, but the Parties are not responsible for ensuring the information shared is correct, reliable or complete. Other Parties use this information at their own risk and responsibility.

Article 5
(Meetings)

- 1) Steering group and expert group meetings are chaired by the *[name of responsible national entity]* and co-chaired by the *[name of responsible national entity]*.
- 2) The steering group meets at least once a year.
- 3) In principle, the expert group meets once every three months and can hold ad hoc meetings at the request of any of the participants.

**Article 6
(Confidentiality)**

The Parties undertake to keep the information shared in the context of this voluntary agreement confidential and to refrain from disclosing any part or all of it to third parties, unless they are required to do so by law, court judgment or this voluntary agreement.

**Article 7
(Enforceability)**

This voluntary agreement is not legally enforceable.

**Article 8
(Disputes)**

All disputes between Parties relating to the present agreement are settled in close consultation between the Parties without the involvement of the courts.

**Article 9
(Amendments and termination)**

- 1) If circumstances arise that could warrant amendments to the present agreement, including expanding the number of Parties, the steering group will discuss whether amendment is necessary.
- 2) Amendments to the present agreement must be approved by the Parties in writing.
- 3) Any Party can terminate the present agreement with immediate effect by informing the chair of the steering/expert group in writing.
- 4) If one Party terminates the agreement, it will remain in effect for the other Parties in so far as the substance and spirit of the agreement do not dictate otherwise.
- 5) The provisions in Article 6 of this voluntary agreement continue to apply after termination.

**Article 10
(Entry into force and duration)**

- 1) This voluntary agreement enters into force for a period of five years from the date of signature by the last Party.
- 2) The Parties will evaluate the implementation and effectiveness of this voluntary agreement every year, starting one year after it enters into force.
- 3) The Parties agree to hold consultations about continuing the voluntary agreement no later than three months before the end of the period referred to in article 10(1).
- 4) The provisions in article 6 of this agreement continue to apply after termination.

**Article 11
(Publication in the [name of governmental source])**

- 1) The text of this voluntary agreement will be published in the [name of governmental source] no later than one month after the agreement enters into force.

- 2) If this voluntary agreement is amended, article 11(1) applies mutatis mutandis.
- 3) If this voluntary agreement is terminated, notice will be given in the *[name of governmental source]*.

Article 12
(Final provisions)

This voluntary agreement may be cited as “Voluntary agreement on sharing information regarding threats to civil aviation”.

Agreed and signed on *[date]* respectively by the Parties to this agreement.

Appendix E

RISK MITIGATION INVENTORY FOR FLYING OVER OR NEAR CONFLICT ZONES

INTRODUCTION

This inventory provides States and other civil aviation stakeholders with references on best practices to mitigate the risks conflict zones pose to global civil aviation operations. For ease of reference, it is broken down into categories based on target groups: pilots, industry, States and ANSPs. The inventory is intended as a tool for stakeholders looking to build a stronger posture regarding conflict zone risk mitigation. While the inventory does not detail each individual item, it is meant as a reference to jump start research into mitigations chosen. Stakeholders are invited to review the listing of possible mitigations and choose the most appropriate mitigation(s) to respond to a situation. The mitigations can also be adapted to suit various factors, such as the type of threat or the aircraft's performance.

I. PILOTS/FLIGHT OPERATIONS

a) Flight preparation:

- 1) take note of existing NOTAMs and other aeronautical publications in force on planned route.

b) In agreement with ATS:

- 1) choose altitudes according to threat;
- 2) change reporting points;
- 3) change runway direction for landings and take-offs; and
- 4) change entry and exit points and turning direction.

c) Other defensive measures:

- 1) apply appropriate climb rates to exit the risk area as quickly as possible;
- 2) consider appropriate rates of descent to travel through the risk altitudes as quickly as possible;
- 3) apply non-levelling descents to reduce the thermal/infrared signature against a MANPADS shot;
- 4) use thrust reduction procedures for take-offs to reduce the thermal/infrared signature against a MANPADS shot;
- 5) depending on the situation, and provided that flight safety is not at stake, turn on the landing lights as late as possible, or be as visible as possible in order to avoid misidentification;

- 6) apply ATC/ATS instructions in case of unexpected events;
 - 7) establish short-notice information arrangements with ATC, station management or local airport security;
 - 8) adjust flight times (day/night);
 - 9) reduce ground time; and
 - 10) bring additional fuel on the aircraft to be prepared for ad hoc changes.
- d) In case of an emerging conflict:
- 1) plan alternative overflight routes to bypass the risk area; and
 - 2) ensure that diversion sites are available outside the area of the emerging conflict.
- e) Diversion planning:
- 1) consider the use of an aircraft communications addressing and reporting system (ACARS) for diversion planning; and
 - 2) avoid landing in a risky area and choose diversion airfields outside conflict zones as dictated by the situation, the position of the aircraft and the flight parameters.
- f) In-flight procedures:
- 1) routing / approach / landing / take-off (as in the ICAO *Aviation Security Manual* (Doc 8973 – Restricted), Appendix 27, Surface-to-Air Missiles, In-flight procedures/ATS procedures).
 - i) In-flight procedures - Aircraft, when over areas known to be at risk from attacks with surface-to-air missiles, should:
 - maintain an altitude of not less than 7 500 m (25 000 ft) AGL for the maximum time possible;
 - make spiralling ascents or descents over designated safe areas for landing or take-off;
 - use the minimal power required for a safe landing or take-off;
 - operate without lights at night in order to obscure the target at which the missile operator must aim; and
 - operate electronic countermeasures equipment.
 - ii) ATS procedures - ATS staff should be provided with current operational security information so that:
 - safe ascent and descent areas can be pre-planned; and
 - flight crew may be briefed on the safest approach and take-off areas and operating procedures to use.

II. INDUSTRY

- a) Risk assessment in preparation of a flight:
 - 1) State instructions:
 - i) take into account directives of your appropriate authority;
 - ii) in case of doubt or questions, contact your appropriate authority; and
 - iii) consult the aeronautical documentation in force for the route in question;
 - 2) consult all available information for the route in question, the destination and diversion airfields and the States overflown from open-source information; and
 - 3) select route, alternative routes and diversion sites:
 - i) route selection should take into account any risk analysis and guidance from your appropriate authority;
 - ii) alternative routes should be provided for unplanned events; and
 - iii) diversion sites should be selected based on technical elements (ETOPS) and should consider risk areas.
- b) Develop knowledge on threats to operations over or near conflict zones:
 - 1) participate in seminars and working groups to gain knowledge on civil aviation safety/security and threats to civil aviation;
 - 2) participate in international forums (e.g. ICAO and any other relevant organization) to exchange best practices in civil aviation safety/security; and
 - 3) participate in training to improve knowledge on civil aviation safety/security.
- c) Responsiveness in case of an incident during a flight:
 - 1) provide pilots in-flight with information on an alternative route or diversion in the event of a major change;
 - 2) provide pilots with appropriate information in real time, allowing them to decide to Go/No Go; and
 - 3) an emergency plan could be put in place to send an ACARS message up to one hour before the arrival of an aircraft at the aerodrome in question.
- d) Information-sharing and exchanges with national authorities and partner stakeholders:
 - 1) regular or emergency exchanges should be set up with the appropriate authority; and
 - 2) exchanges between airline partners on common subjects or any relevant event should be held or set up, notably through information sharing platforms (as some airline associations or other entities have) or through informal exchange groups.

- e) ICAO *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones* (Doc 10084):
 - 1) become familiar with this documentation on risk assessment, ICAO guidelines and best practices for overflight of conflict areas; and
 - 2) share this information with flight crews and any other relevant personnel.
- f) Safety and security exercises:
 - 1) implement safety and security exercises;
 - 2) set up adapted exercise scenarios, based on realistic situations; and
 - 3) ensure regular training of crews on the basis of those realistic situations.

III. STATES (CIVIL AVIATION AUTHORITIES)

- a) Securing the airport perimeter and approach/departure air routes for the airport:
 - 1) refer to Annex 17 – *Aviation Security — Safeguarding International Civil Aviation Against Acts of Unlawful Interference* and take the necessary risk reduction measures;
 - 2) refer to the ICAO *Aviation Security Manual* (Doc 8973 – Restricted) – Chapter 11.2.2, Airport perimeter protection;
 - 3) refer to the ICAO *Aviation Security Manual* (Doc 8973 – Restricted) – Chapter 15.2.2, Protection of aircraft;
 - 4) refer to *Man-Portable Air Defence Systems (MANPADS) - Information and Airport Vulnerability Assessment Guide* (ICAO, 2015); and
 - 5) raise awareness among airport security personnel and security forces.
- b) Civil-military deconfliction:
 - 1) refer to the ICAO *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088); and
 - 2) refer to the ICAO *Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations* (Doc 9554).
- c) Risk assessment considering weapon ranges to obtain the best mitigation measures and limit the affected airspace:
 - 1) refer to the ICAO *Aviation Security Manual* (Doc 8973 – Restricted) – Chapter 15.2.3, Risk assessment for civil aircraft operations over or near conflict zones;
 - 2) information/training on the different types of ground/air and ground/ground weapons and their operation;
 - 3) exchanges with intelligence services and civil aviation partners;
 - 4) assessment of the weapons potentially or actually used in or near conflict zones;

- 5) evaluation of the training and the capacity of the actors involved, as well as their intentionality; and
 - 6) nature of the conflict (intensity, potential targets).
- d) Best practices:
- 1) knowledge of the ICAO *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones* (Doc 10084);
 - 2) knowledge of the ICAO *Aviation Security Global Risk Context Statement* (Doc 10108 – Restricted);
 - 3) communication with airlines prior to issuing a restriction, or after issuance in emergency situations;
 - 4) government/industry partnership for risk awareness;
 - 5) collaboration with States where diplomatic relations exist;
 - 6) dialogue with air navigation services and authorities to promote safety and security;
 - 7) be both proactive and reactive in mitigating risk: notices, restrictions, bans, aeronautical publications (NOTAM, AIC, AIP, etc.);
 - 8) mentoring between States and civil aviation authorities to share experiences and knowledge;
 - 9) keep updated on aeronautical publications (NOTAMs, AIC) issued by other States;
 - 10) regular safety and security exercises; and
 - 11) maintenance of national safety documentation.

IV. ANSPs

- a) Knowledge of:
- 1) civil-military deconfliction: ICAO *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088);
 - 2) identification/deconfliction of civil flights from military flights: ICAO *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones* (Doc 10084);
 - 3) Annex 11 - *Air Traffic Services*;
 - 4) *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444); and
 - 5) ICAO *Manual on Collaborative Air Traffic Flow Management (ATFM)* (Doc 9971).
- b) Best practices:
- 1) early and swift warning to airspace users;
 - 2) planning, training and practicing for contingency ATC actions in response to threat incidents;

- 3) foster cooperation with military entities (using Letters of Agreement, for example) and implement proper procedures in case diversions around a given airspace become necessary (could involve going through military areas);
 - 4) include conflict zones management in refresher/recurrent training, ab initio training and unit training, where applicable;
 - 5) ensure enhanced visibility of conflict zones related NOTAMs to controllers, team supervisors, shift/line managers, etc.;
 - 6) ensure such NOTAMs are stored/displayed (paper or electronic) at a location where they won't be deleted/overlooked by accident, given the prolonged nature of these NOTAMs; and
 - 7) establish an efficient line of communication between State, military, ANSPs, operational staff, etc., and rehearse (if necessary) scenarios where diversions could become necessary.
- c) In-flight procedures - in-flight / approach / landing / take-off (see the ICAO *Aviation Security Manual* (Doc 8973 – Restricted), Appendix 27, Surface-to-air missiles, In-flight procedures/ATS procedures for additional information):
- 1) choice of altitudes according to the threat in agreement with ATS;
 - 2) change of reporting points in agreement with ATS;
 - 3) change of runway for landing and take-off in agreement with ATS;
 - 4) change of entry and exit points and direction of turn in agreement with ATS;
 - 5) apply non-levelling descents to reduce the thermal/infrared signature in the face of a MANPADS shot;
 - 6) apply the necessary climb rates to exit the risk area as quickly as possible;
 - 7) turn on landing lights as late as possible, provided flight safety is not at stake; and
 - 8) use thrust reduction procedures for take-offs to reduce the thermal/infrared signature in the face of a MANPADS shot.
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Appendix F

COMPENDIUM OF GUIDELINES FOR INFORMATION SHARING¹

INTRODUCTION

The Safer Skies Consultative Committee (SSCC) developed guidelines and a methodology to improve information sharing of aviation security risk concerns related to emerging conflicts or steady state operations. The goal is to foster greater understanding of risk concerns and to help inform public and private sector risk analysis and mitigation planning, in order to better safeguard civil aviation operations. Below is foundational information on initiatives that present best practices across the aviation sector. These guidelines provide States with an opportunity to further enhance the international aviation community's awareness of, and timely reaction to, information from air operators, regulators, and other aviation stakeholders.

INFORMATION SHARING IN RESPECT TO CONFLICT ZONES

Recognizing the need for, and benefit of, ongoing collaboration by aircraft operators and States to address conflict zone threats, a methodology to periodically share threat information affecting civil aviation operations in or near conflict zones was established. The methodology is intended to support threat awareness and risk assessment planning prior to, and during, a crisis.

The Safer Skies Initiative identified the need for improved information sharing across States and the private sector to reduce strategic surprise, limit unplanned disruptions and inform risk mitigation planning across the broader aviation sector.

METHODOLOGY

- 1) On a periodic basis, IATA will host a call to discuss emerging risks, and /or share baseline risk concerns and emerging trends. In addition, on an ad hoc basis SSCC members may request the initiation of a baseline information sharing call.
- 2) IATA hosts a presentation/update of aviation risk concerns prepared by pre-identified Strategic Partners. The information shared will contain data on emerging conflict risks affecting civil aviation operations over a potential or ongoing conflict zone/topic(s). SSCC members, as well as other invited stakeholders, will have the option to add associated threat and/or mitigation information. Information provided by airlines includes input from their respective risk determinations, aircrew observations or experiences operating in the affected airspace.

1. Provided by the Safer Skies Consultative Committee (SSCC)

- 3) The 'baseline forums' are designed to facilitate greater information sharing across the aviation sector to support State and industry risk determinations. Improved regular dialogue will foster greater trust and rapport across the aviation sector before a crisis hits.
- 4) Although the calls are not open to media or the public, all SSCC participating States and SSCC member associations will be invited to participate in the information sharing call.

USE OF NOTAM/AICs

NOTAM/AICs are publicly available and therefore should not be restricted or disallowed to be distributed via an alternate communication method. Distribution should be carried out as detailed below:

- 1) NOTAM/AICs and/or related threat information must be transcribed in their original complete form, with no change or interpretation, with a direct weblink to its source, and date of issue.
- 2) New/updated NOTAM/AICs and/or related threat information will be reported without delay to ensure information is current and relevant.
- 3) NOTAM/AICs must be factual and no alternate information should serve to contradict or negate NOTAM/AICs.
- 4) NOTAM/AICs that are out of date and no longer applicable should be purged.
- 5) NOTAM/AICs must be clearly identified as such.
- 6) NOTAM/AIC and/or related threat information must be clearly marked and delineated from other official communication from IATA, another NOTAM/AIC issuing operator, ICAO or another State.

RAPID INFORMATION SHARING IN RESPECT TO CONFLICT ZONES

The goal to provide the sharing of information on conflict zones, in a rapid manner, was confirmed by the SSCC. The rapid sharing of information should be leveraged by utilizing capabilities of existing platforms. These platforms would be used to help rapidly distribute NOTAM, AIC or other formatted threat-related information. These tools are needed to help improve the speed and spread of emerging aviation risk information across the international aviation sector. These systems should allow States to deliver upon ICAO obligations and promote the safety and security of civil aviation for all citizens and States. This effort is voluntary and must be an alternate method to supplement a States' own communication and dissemination framework of information.

Purpose and context

The platform would be utilized as a matter of best practice for States and/or airport operators. The platform would not develop the data/notices. The data would be acquired and then promulgated in a rapid manner. The term alternate is used in the sense that the Rapid Information Sharing methodology is not intended to replace the primary and/or existing State or airport dissemination methods that are in accordance with national regulatory requirements and operational frameworks. The information recommended to be distributed may include:

- a) raw format NOTAM(s), AIC and/or threat-related information;
- b) updates to originally posted NOTAM, AIC or other information; and

- c) a unique message/indicator that digitally communicates new (change detected) information at a specific website location, issued by a State or airport for a location or flight information region of interest.

In this context 'rapid information' means information distributed in an urgent manner in the form of either a NOTAM, AIC and/or any other format determined appropriate by a State or Airport Operator, within a 72-hour window of an event or planned activity.

Appendix G

GUIDELINES FOR HARMONIZATION OF RISK ASSESSMENTS AND RISK COMMUNICATION

INTRODUCTION

Harmonized governmental risk assessment processes and risk communication for civil aircraft operating over or near conflict zones provide aircraft operators a better understanding of the risks that have been assessed and enable the conflict zone assessment units in different States to work more effectively and transparently together. This appendix describes a systematically coordinated risk assessment and risk communication model that can be used by governments.

COMMON USE OF RISK LEVELS AND COMMUNICATION

The model consists of three (3) risk levels with correlating governmental security measures expressed in a consistently structured risk communication text (including content, sequence and vocabulary):

a) Risk Levels:

- 1) Level 1: medium risk
- 2) Level 2: high risk
- 3) Level 3: critical risk

b) Security Measures

The risk levels mentioned above correlate with the security measures below, through the publication of advice, recommendations or flight prohibitions. These notices are published in English.

1) Level 1: Information (general advice):

- “Civil aircraft operators are advised to take potential risk into account”

2) Level 2: Recommendation / Restriction (operational):

- “Civil aircraft operators are recommended not to enter” or “Civil aircraft operators are requested not to enter”

3) Level 3: Prohibition (for States with a legal basis to prohibit):

- “Civil aircraft operators are prohibited to enter”

4) Level 3: Strong recommendation (for States without a legal basis to prohibit):

- “Civil aircraft operators are strongly recommended not to enter”

c) Risk Communication Template (content, structure and vocabulary):

- 1) Conflict Zone safety bulletins entries start with the following disclaimer in capital letters:

“SECURITY – HAZARDOUS SITUATION IN [COUNTRY/COUNTRIES]”

- 2) Operators of the respective country are to be mentioned as follows:

“[COUNTRY OF OPERATOR] CIVIL AIR OPERATORS”

- 3) The risk level identifier is to be mentioned as follows:

Level 1: “ARE ADVISED TO TAKE POTENTIAL RISK INTO ACCOUNT WITHIN”

or

Level 2: “ARE RECOMMENDED NOT TO ENTER / ARE REQUESTED NOT TO ENTER”

or

Level 3 (for States with a legal basis to prohibit): “ARE PROHIBITED TO ENTER”

or

Level 3 (for States without a legal basis to prohibit): “ARE STRONGLY RECOMMENDED NOT TO ENTER”

- 4) The definition of the risk area is to be mentioned as follows:

“FIR [XXXX] “

or

“THE AIRSPACE OF [COUNTRY]”

or

“THE TERRITORY AND AIRSPACE OF [COUNTRY]”

or

“THE PART OF FIR [XXX] or [COUNTRY] DEFINED BY [GEOGRAPHICAL COORDINATES, WAYPOINTS, POLITICAL REGION, BOUNDARIES ET AL.]”

- 5) If possible, vertical limitations of the threat are to be mentioned as follows:

“BELOW FL [XXX] / [XXX] AGL”

- 6) The description of the threat is to be mentioned in a second sentence as follows:

“POTENTIAL RISK FROM [THREAT, e.g. ANTI-AVIATION WEAPONRY]”

- 7) If applicable, exceptions of airways, areas or airports within the mentioned airspace are to be mentioned in a third sentence as follows:

"EXCLUDED FROM THIS ADVICE/RECOMMENDATION/PROHIBITION ARE/IS
[AIRWAY/REGION/AIRPORT (ABOVE FL XXX/XXXAGL)]"

Table G-1. Examples of common use of risk levels and communication

Level 1	Information	<p>SECURITY – HAZARDOUS SITUATION IN [COUNTRY]</p> <p>"[COUNTRY OF OPERATOR] civil aircraft operators are advised to take potential risk into account within FIR [XXXX] / within the territory and airspace of [COUNTRY] (below [FLXXX/XXXAGL])."</p> <p>"Potential risk from [THREAT]."</p> <p>"Excluded from this advice [...]"</p>
Level 2	Recommendation/ Restriction	<p>SECURITY – HAZARDOUS SITUATION IN [COUNTRY]</p> <p>"[COUNTRY OF OPERATOR] civil aircraft operators are recommended/requested not to enter FIR [XXXX] / the territory and airspace of [COUNTRY] (below [FLXXX/XXXAGL])."</p> <p>"Potential risk from [THREAT]."</p> <p>"Excluded from this recommendation [...]"</p>
Level 3	Prohibition (for States with a legal basis to prohibit)	<p>SECURITY – HAZARDOUS SITUATION IN [COUNTRY]</p> <p>"[COUNTRY OF OPERATOR] civil aircraft operators are prohibited to enter FIR [XXXX] / the airspace of [COUNTRY] / the territory and airspace of [COUNTRY] (below [FLXXX/XXXAGL])."</p> <p>"Potential risk from [THREAT]."</p> <p>"Excluded from this prohibition [...]"</p>
Level 3	Strong recommendation (for States without a legal basis to prohibit)	<p>SECURITY – HAZARDOUS SITUATION IN [COUNTRY]</p> <p>"[COUNTRY OF OPERATOR] civil aircraft operators are strongly recommended not to enter FIR [XXXX] / the territory and airspace of [COUNTRY] (below [FLXXX/XXXAGL])."</p> <p>"Potential risk from [THREAT]."</p> <p>"Excluded from this strong recommendation [...]"</p>

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