



ICAO

CAPACITY & EFFICIENCY

Virtual FP Meeting on the implementation of an effective Civil – Military Cooperation in ATM

ICAO Civil Military Cooperation Manual - Doc 10088 – Highlights

Session 2

Keziah Ogutu/Serge Tchanda
Regional Officers – ATM & SAR (ESAF/WACAF)

Virtual / 14-15 June 2023





Presentation Outline

- Key Civil-Military Definitions
- ICAO Resolutions and associated policies and practices
- Examples of Civil-Military Air Accidents
- Civil Military Collaboration, Cooperation and Coordination
- Structures and Needs
 - Safety Considerations
- Liaison in Support of Cooperation:
(Examples of State Aircraft Roles and State Aircraft Constraints)





KEY CIVIL MILITARY DEFINITIONS



Key Civil Military Definitions

- **Airspace management cell (AMC).** A is a joint civil-military cell responsible for the day-to-day management and temporary allocation airspace
- **Appropriate military unit.** A military unit planning and/or executing –any type of– aerial activities, providing –any type of– control to aircraft, and or/having –any form of– responsibility in an airspace. For example, an appropriate military unit can be a military unit providing ATS, a combat control unit, a fighter controller unit, a ground defence control unit, range control unit, a wing, an airbase, a special operation unit operating UAVs or RPAS.
- **Approved agency.** A unit authorized by a State or AMC to request allocation of airspace to an AMC.



Key Civil Military Definitions

- **Conditional route (CDR).** A non-permanent ATS route or portion thereof which can be planned and used under specified conditions.
- **Cross-border area (CBA).** An airspace reservation or segregation established for specific operational requirements over international boundaries.
- **Military mission effectiveness.** Ability of the military to execute their operations and training (including the necessary exercises) in order to maintain their required operational skills to safeguard essential security or defence policy interests and achieve the political goals of their State.



Key Civil Military Definitions

- **Segregated airspace.** Airspace of specified dimensions allocated for exclusive use to a specific user(s), with operations that are not able to be safely integrated with other airspace users.
- **Special use airspace (SUA).** SUA is a generic term used for airspace volumes designated for specific operations such as military training, exercises and operations of a nature such that require limitations on airspace access may be imposed on other aircraft not participating in those activities. These may include, but are not limited to: restricted, danger and prohibited areas or temporary reserved areas (TRA).
- **Temporary reserved area (TRA).** An airspace that is temporarily reserved and allocated for the specific use of a particular user during a determined period of time and through which other traffic may or may not be allowed to transit under air traffic control clearance.
- **Flexible use of airspace (FUA).** An airspace management concept based on the principle that airspace should not be designated purely as civil or military, but rather as a continuum in which all user requirements are accommodated to the greatest possible extent.

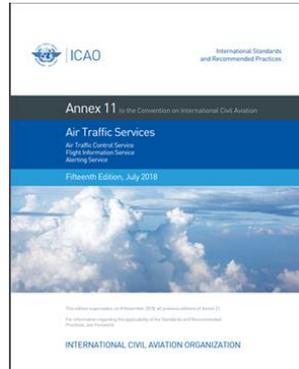


12th Air Navigation Conference

ICAO Headquarters
Montreal, Canada
19-30 November 2012



ICAO RESOLUTIONS AND ASSOCIATED POLICIES AND PRACTICES





ICAO Resolution A40-4

The Assembly resolves that:

1. the common use by civil and military aviation of airspace and of certain facilities and services shall be arranged so as to ensure the safety, regularity and efficiency of civil aviation as well as to ensure the requirements of military air traffic are met;
2. the regulations and procedures established by Member States to govern the operation of their state aircraft over the high seas shall ensure that these operations do not compromise the safety, regularity and efficiency of international civil air traffic and that, to the extent practicable, these operations comply with the rules of the air in Annex 2;
3. the Secretary General shall provide guidance on best practices for civil/military coordination and cooperation;
4. Member States may include, when appropriate, representatives of military authorities in their delegations to ICAO meetings; and
5. ICAO serves as an international forum that plays a role in facilitating improved civil/military cooperation, collaboration and the sharing of best practices, and to provide the necessary follow-up activities that build on the success of the Global Air Traffic Management Forum on Civil/Military Cooperation (2009) with the support of civil/military partners.



ICAO Resolution A40-4

Associated practices:

1. Member States should as necessary initiate or improve the coordination and cooperation between their civil and military air traffic services to implement the policy in Resolving Clause 1 above.
2. When establishing the regulations and procedures mentioned in Resolving Clause 2, the State concerned should coordinate the matter with all States responsible for the provision of air traffic services over the high seas in the area in question.
3. The Council should ensure that the matter of civil and military coordination and cooperation in the use of airspace is included, when appropriate, in the agenda of divisional and regional meetings, in accordance with Resolving Clauses 3, 4 and 5 above.



ICAO framework (Convention & Annex 2)

Obligations of Member States under the Chicago Convention relevant to civil-military issues include:

- a) to develop regulations governing aviation safety in compliance with Standards and Recommended Practices (SARPs) contained in the Annexes to the Chicago Convention (Article 37); and
 - b) to undertake, when issuing regulations for their state aircraft, that they will have due regard for the safety of navigation of civil aircraft (Article 3 d).
- Annex 2 — Rules of the Air includes provisions on the coordination with military authorities for State's territorial integrity and sovereignty, and air defence reasons



ICAO framework (Annex 2)

To facilitate this coordination with appropriate military units, a flight plan should be submitted for any flight:

- a) within designated areas;
- b) into designated areas; or
- c) along designated routes;

when so required by the appropriate air traffic services (ATS) authority to facilitate coordination with appropriate military units in order to avoid the possible need for interception for the purpose of identification.

Transparent and real-time data exchanges between civil ATS units and appropriate military units would facilitate this coordination.



ICAO framework (Annex 11)

Annex 11 — Air Traffic Services addresses the need for coordination with military authorities or units, depending on the **degree and level** to which state aircraft activities may affect civil operations or vice versa.

States to enable the safe and efficient coordination between civil and military stakeholders and facilitate the **participation of military authorities in civil safety risk assessment** for activities potentially hazardous to civil aircraft



ICAO framework (ATM)

- Air Traffic Management (PANS-ATM, Doc 4444), and the Regional Supplementary Procedures (SUPPs, Doc 7030) together with the Standards in Annex 2, govern the application of the rules of the air and ATS.
- The PANS-ATM contains procedures applicable to other in-flight contingencies; such as strayed or unidentified aircraft, that require coordination with military authorities; and procedures are detailed for the conduct of special military operations.
- Global Air Navigation Plan (GANP, Doc 9750) provides guidance on, and promotes the implementation of, the civil-military coordination measures and cooperation concepts embedded in the Global Air Traffic Management Operational Concept (Doc 9854) which defines seven components where the military and other state aircraft operators are recognized as part of the ATM community; interoperability with civil aviation systems and operation of military systems is an integral part of these elements



ICAO framework (Other ICAO Docs)

- The Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations (Doc 9554) describes the coordination that should take place between civil ATS and appropriate military units.
- The Manual Concerning Interception of Civil Aircraft (MICA, Doc 9433) consolidates all ICAO provisions and special recommendations relevant to the subject of interception of civil aircraft
- The Air Traffic Management Security Manual (Doc 9985) complements the Aviation Security Manual (Doc 8973) and provides guidance on security issues specific to ATM in order to assist States and air navigation services providers (ANSPs) in implementing appropriate security provisions.
- The ATS Planning Manual (Doc 9426) provides guidance on airspace management to achieve Civil Military Coordination.

CIVIL-MILITARY AIR ACCIDENTS

Korean Air Lines Flight 007



HL7442, the aircraft that was shot down,
landing at Zurich Airport in 1980.

Shootdown

Date September 1, 1983



Korean Air Lines Flight 902



The plane after landing in the Soviet Union,
with visible damage to its left wing

Shootdown

Date 20 April 1978

Civil-Military Air Accidents

Records as early as the 1930s indicate that civil aircraft has been shot down due to military activities

- **1955: EI AI Flight 402**

EI AI Flight 402, a Lockheed L-049 Constellation was a passenger flight from Vienna, Austria, to Tel Aviv, Israel, via Istanbul, Turkey, on 27 July 1955. The aircraft strayed into Bulgarian airspace, refused to land, and was shot down by two Bulgarian Air Force MiG-15 fighters several kilometers away from the Greek border near Petrich, Bulgaria. All 7 crew and 51 PAX on board the airliner died.

- **1978: Korean Air Lines Flight 902**

Korean Air Lines Flight 902 was scheduled flight from Paris, France bound for Seoul, South Korea with a stopover at Anchorage, Alaska operated by a civilian Boeing 707 airliner (registered HL7429) that was shot down by Soviet Air Force Sukhoi Su-15 fighters on 20 April 1978 near Murmansk, Soviet Union after it violated Soviet airspace and failed to respond to Soviet interceptors. Two passengers died in the incident. 107 passengers and crew survived after the plane made an emergency landing on a frozen lake.

EI AI Flight 402



4X-AKC, the aircraft involved, pictured in 1950

Occurrence	
Date	July 27, 1955
Summary	Shot down
Site	North of Petrich, Bulgaria 41°27'26"N 23°15'41"E

Korean Air Lines Flight 902



The plane after landing in the Soviet Union, with visible damage to its left wing

Shootdown	
Date	20 April 1978



Civil-Military Air Accidents

- **1983: Korean Air Lines Flight 007** - Korean Air Lines Flight 007 Boeing 747 civilian airliner shot down by a Soviet Air Force Sukhoi Su-15TM interceptor on 1 September 1983, near Moneron Island just west of Sakhalin Island, after it strayed more than 200 miles from scheduled flight path into Soviet airspace. All the 269 PAX and crew died; there were no survivors. An official investigation concluded that the course deviation was likely caused by pilot error in configuring the air navigation system.
- **1987: Air Malawi 7Q-YMB** - On 6 November 1987, an Air Malawi Shorts Skyvan was shot down while on a domestic flight from Blantyre, Malawi to Lilongwe. The flight plan took it over Mozambique where the Mozambican Civil War was in progress. The aircraft was shot down near the Mozambican town of Ulongwe. The 8 PAX and 2 crew on board died



Civil-Military Air Accidents

- 2014:** On 17 July 2014 Malaysia Airlines flight MH17 from AMS to KUL was brought down over eastern Ukraine during the Russia/Ukraine conflict, 298 lives lost.
- 2020:** Ukrainian International Airlines flight PS752 was shot down shortly after departure from Tehran in the early morning of 8 January 2020 enroute to Kyiv, 176 lives lost.
- 2020:** On 4 May 2020, an East African Express Airways on an air charter domestic flight from Baidoa carrying pandemic relief supplies crashed on approach to an airstrip in Berdale, initial claims indicated it had been shot down.

Malaysia Airlines Flight 17



9M-MRD, the aircraft involved, 2011

Shootdown	
Date	17 July 2014, 8 years, 10 months ago
Summary	Shot down by a Buk 9M38 surface-to-air missile transported from Russia on the day of the crash ^{[1][2]}
Site	Near Hrabove, Donetsk Oblast, Ukraine 48°08′18.1″N 38°38′21.3″E﻿ / ﻿48.1383611°N 38.6392500°E﻿ / 48.1383611; 38.6392500
Aircraft	
Aircraft type	Boeing 777-300ER
Operator	Malaysia Airlines
IATA flight No.	MH17
ICAO flight No.	MAS17
Call sign	Malaysian 17
Registration	9M-MRD
Flight origin	Amsterdam Airport Schiphol, Netherlands
Destination	Kuala Lumpur International Airport, Malaysia
Occupants	298
Passengers	283
Crew	15
Fatalities	298
Survivors	0

Ukraine International Airlines Flight 752



UR-PSR, the aircraft involved in the incident, pictured in October 2019

Shootdown	
Date	8 January 2020
Summary	Struck by two surface-to-air missiles (Tor M-1) fired by the Islamic Revolutionary Guard Corps ^[1]
Site	Shahriar County, Iran ^[2] 35°33′40″N 51°06′14″E﻿ / ﻿35.5611111°N 51.1038889°E﻿ / 35.5611111; 51.1038889
Aircraft	
Aircraft type	Boeing 737-8KV
Operator	Ukraine International Airlines
IATA flight No.	PS752
ICAO flight No.	AUI752
Call sign	UKRAINE INTERNATIONAL 752
Registration	UR-PSR
Flight origin	Imam Khomeini International Airport, Tehran, Iran
Destination	Boryspil International Airport, Kyiv, Ukraine
Occupants	176
Passengers	167
Crew	9
Fatalities	176 ^[2]
Survivors	0

2020 East African Express Airways Brasilia crash



5Y-AXO, the aircraft involved in 2014.

Airliner shootdown	
Date	4 May 2020
Summary	Allegedly shot down by Ethiopian National Defense Force
Site	Berdale, Somalia
Aircraft	
Aircraft type	Embraer EMB 120 Brasilia
Operator	East African Express Airways
Registration	5Y-AXO
Flight origin	Baidoa Airport, Baidoa, Somalia
Destination	Berdale Airfield, Berdale, Somalia
Occupants	6
Passengers	4
Crew	2
Fatalities	6
Survivors	0

Civil-Military Air Accidents

**Lack of cooperation
and Coordination or
collaboration leads to
Devastations**





CIVIL-MILITARY COLLABORATION, COOPERATION AND COORDINATION





Civil-Military Collaboration, Cooperation and Coordination

- To best accommodate the needs of both civil and military stakeholders, States should adopt the perspective that **airspace is a strategic resource** to be collectively managed in support of achieving national objectives.
- This resource would be best managed through civil- military cooperation, supported by coordination, which would allow for civil aviation to flourish and allow both civil and military aviation to operate safely and efficiently.
- the **joint management of airspace in an equitable and dynamic manner** has resulted in the efficient use of airspace, better responses to changing operational conditions (e.g. weather conditions, natural disasters), faster deployment of resources for contingency responses and enhanced safety for civil and military operations.
- This allows for **efficient flight paths, resulting in lower fuel costs, reduced emissions and the availability of alternative routings to circumnavigate adverse weather conditions, resulting in obvious financial, environmental and safety benefits, and optimizing mission time of military aircraft.**



Civil-Military Collaboration, Cooperation and Coordination

- States should initiate cooperation and potentially collaboration, on aviation aspects such as the design and management of the airspace, technical requirements, interoperability and system-wide information collection and dissemination.
 - This could be achieved through the establishment of effective civil-military cooperation and coordination processes to address present and future air transport demands for enhanced safety, national security and air navigation capacity and efficiency.
- A collaborative assessment of costs and benefits will allow States to meet the future demands of civil and military aviation with greater certainty.
- States will likely be encouraged to consider common requirements for technology, capabilities, performance and procedures to meet future ATM demands. This would also ensure sustainability for both civil and military operations and potentially enhance military mission effectiveness.



The use of military assets to support humanitarian assistance

- Essential in major natural disasters
- Military units are often well placed, sometimes mandated by States as first responders
- Bilateral and regional agreements on the use of external entities for disaster response (SAR)
- solid approach to civil-military cooperation becomes an essential tool for the humanitarian community, both strategically and operationally
- Civil-military cooperation is the essential link that enables the necessary dialogue and interaction between actors in humanitarian emergencies.



Civil-Military Collaboration, Cooperation and Coordination

- **Civil-military collaboration** is a strategic long-term (5 to 20 years) system-wide approach to achieving the goals of the State, encompassing the development of the future air navigation system.
- When considering developments related to modernization at the global, regional or national level, collaboration is the process by which civil and military authorities jointly ensure that the requirements of both airspace users are considered
- Civil-military collaboration is key to a seamless air navigation system
- Military operational requirements considered as new concepts and technical solutions are being developed, military airspace users ensure that their needs in terms of access to airspace, aircraft mobility, confidentiality and civil-military interoperability are taken into account
- helps to avoid potential adverse financial, security, efficiency and safety impacts and supports global interoperability”



Civil-Military Collaboration, Cooperation and Coordination

- **Civil-military cooperation** is the joint effort, supported by political will, undertaken to provide optimum solutions for all stakeholders, based on consensus and mutual understanding, **trust** and established communications.
- It encompasses all the actions, structures, exchanges, processes, dialog and procedures at strategic phase and further actioned at pre-tactical phase that enable efficient air navigation and civil-military coordination.
- Cooperation involves the participation of a wide range of stakeholders, including civil and military aviation authorities, appropriate ATS authorities, civil ATS units and appropriate military units.



Civil-Military Collaboration, Cooperation and Coordination

Effective civil-military coordination:

- includes all the processes, procedures and actions **conducted at the tactical phase** (and sometimes at the pre-tactical phase) between operational actors (usually civil ATS units and appropriate military units) that enable safe and efficient air activities for all stakeholders.
- Coordination is normally an action **initiated by one party**, providing the other party(ies) with critical information, in order to agree on safe operational activities.



Civil-Military Collaboration, Cooperation and Coordination

- Establishing effective civil-military cooperation at the appropriate governmental levels is of utmost importance.
- Decision makers at the **highest government levels** should agree on a harmonized high-level policy for civil- military cooperation and coordination, including airspace design development, airspace access requirements, long and medium-term planning, standardization of procedures, regulation, and deployment of new procedures, including support for ATS and interoperability planning.

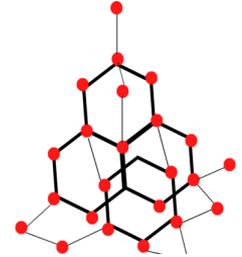
Note.— When defining this high-level policy, States should consider identifying the collaborative decision-making (CDM) responsibilities for civil and military aviation authorities (regulators), appropriate ATS authorities and appropriate military units, airspace managers, and airspace users.



COMMUNICATION: A Basic, Yet Often Overlooked Requirement

- **Communication** is an essential foundation for better collaboration, cooperation and coordination, civil and military stakeholders should meet regularly to understand the needs, constraints and challenges relating to communications that each operator and service provider faces while operating within the airspace concerned.
- interaction between civil and military stakeholders and ensures that civil-military airspace principles are understood by a wide range of personnel
- Establishing and enhancing effective lines of communication between military and civil aviation authorities provides mutual safety and efficiency benefits during times of normal operations.
- **supports mutual trust and understanding**, which, along with open lines of communication, could be the critical factor that ensures the safety of civil aviation **during situations requiring a military response.**

STRUCTURES AND NEEDS



Frame structure





Structures and Needs

- Organizational structures vary for civil and military entities.
- Civil aviation structures are generally similar around the world, military operators may be organized differently and are usually regulated by national military authorities, or other national security authorities operating state aircraft.
- Established civil-military cooperation and coordination processes address the challenges arising from organizational differences and ensure the effective involvement of civil- military stakeholders at all levels of administration and for all phases of activities
- civil aircraft aim to fly the optimum route at the most efficient flight level, military aircraft are mainly focused on executing operational requirements for both planned and contingency flights and therefore have different demands for airspace
- State authorities should take into consideration both types of needs.



Airspace Management Principles

Airspace management (ASM) is the process that allows the different needs of all airspace users to be met equitably.

In the context of civil-military cooperation, ASM should follow these guiding principles and strategies:

- airspace is a common resource to be used by all stakeholders and allocated as a result of coordination;
- all available airspace should be flexibly managed. Airspace boundaries should be adjusted to particular traffic flows and should not be constrained by national or facility boundaries;
- dynamic flight trajectories should be accommodated and optimum operational solutions provided;



Airspace Management Principles

ASM should follow these guiding principles and strategies:

- when conditions require different types of traffic to be segregated by airspace organization, the size, shape and time regulation of that airspace should be set to minimize the impact on operations;
- airspace use should be coordinated and monitored in order to accommodate the competing requirements of all users and to minimize any constraints on operations;
- airspace reservations should be planned in advance with requested changes accommodated dynamically whenever possible; and
- allow for the possibility to accommodate short-notice unplanned requirements, while being cognisant that the complexity of operations may limit the degree of flexibility.



STRATEGIC, PRE-TACTICAL and TACTICAL

- **Strategic** represents the long-term, high-level planning and support to achieve the goals of civil- military collaboration and cooperation, including the development of a national airspace policy providing a framework for airspace management and utilization, and the development of harmonized procedures and mechanisms to be applied during pre-tactical and tactical phases.
- **Pre-tactical** refers to an intermediate preparatory planning phase or timeframe whereby the decisions and objectives made during the strategic phase, as well as the procedures agreed during that timeframe are implemented, leveraging cooperation and collaborative decision making in order to meet the efficiency and safety objectives of the tactical phase.
- **Tactical** denotes the coordination mechanisms and exchanges between civil and military stakeholders, in real-time or within the immediate timeframe of the commencement of activities. It is the execution of actions for a narrow immediate objective.



EXPECTATIONS OF CIVIL AND MILITARY STAKEHOLDERS

- civil aviation expects States to provide a framework for airspace reservation, covering topics such as the modalities of activation, notification and safety buffers that will be used to ensure adequate separations.
- civil aviation plays in a State's economy and development, States should be mindful of the costs associated with delays incurred by civil operators due to their military operations and of the importance that adequate notice is given to ANSPs to allow them to adapt their airspace utilization plans.
- civil and military aviation authorities expect stakeholders to use the airspace efficiently, with an overall goal of ensuring the best use of the available airspace by all stakeholders.

SAFETY CONSIDERATIONS





SAFETY CONSIDERATIONS

- Safety is a common priority for all aviators and aviation authorities, however, civil and military aviation authorities may adopt different approaches for its achievement.
- military aviation authorities and operators plan and conduct their operations by assessing and mitigating risks using operational risk management methods to ensure safety.
- Civil aviation authorities and appropriate ATS authorities will apply the provisions contained in Annex 19
 - Safety Management, also supported by the Safety Management Manual (SMM, Doc 9859) for safety investigations related to safety management systems (SMS) application
- participation of military aviation authorities and/or appropriate military units in civil aviation SMS, and/or application of such system in the military environment, will enhance safety of the overall State aviation system.



SAFETY CONSIDERATIONS

- Operating in compliance with international, regional and State civil aviation legislation where practicable is an effective means of complying with Article 3 d) of the Chicago Convention
- ***the nature of defence and security missions can create unique situations that need special handling and considerations.***
- ***As required by Article 3 d), States should ensure that regulations, procedures and safety management principles provide an adequate framework to ensure the safety of civil aviation when state aircraft must operate outside of civil rules.***
- States should ensure that military authorities actively participate in the processes established by civil aviation authorities to coordinate activities potentially hazardous to civil aircraft as described Annex 11, 2.19.



SAFETY CONSIDERATIONS: Accidents and Serious Incidents

- Accidents and serious incidents involving civil aviation are reported and investigated in accordance with Annex 13 – Aircraft Accident and Incident Investigation.
- Detailed guidance for the conduct of such investigations is provided in the Manual of Aircraft Accident and Incident Investigation (Doc 9756), including for accidents and incidents involving both civil aircraft and state aircraft (which includes military aircraft).

LIAISON IN SUPPORT OF COOPERATION

T-49



Model Sukhoi T-49

Role

Interceptor aircraft





LIAISON IN SUPPORT OF COOPERATION

- Some States attach military personnel to civilian ATS units (ATSUs) where they are employed in operational and support positions.
- They may also be involved in research and development, including airspace planning.
- This type of arrangement supports consultation and cooperation in airspace planning and the development of new or revised procedures.
- Such an environment also fosters increased understanding and awareness of each other's needs, processes, procedures and aspirations.



LIAISON IN SUPPORT OF COOPERATION

Conversely, civil liaison personnel could be attached to appropriate military commands. These personnel should, as necessary:

- a) present and interpret the effect and purpose of civil aviation policy, regulations and procedures as they affect military operations;
- b) assist military personnel in the preparation, coordination and processing of arrangements for the movement of military traffic; and
- c) assist in the resolution of problems which arise out of misunderstanding of military operations, civil procedures, systems limitations, and other matters of controversial nature in relation to operations.



EXAMPLES OF STATE AIRCRAFT ROLES

The diversity of roles which state aircraft fulfil means that the types of aircraft can vary considerably, ranging from highly agile military air defence fighter aircraft to wide-bodied cargo and passenger aircraft, down to small manned or unmanned aircraft.

In all cases below, where military requirements make it impossible to follow civil aviation regulations, States are reminded of their obligation, under Article 3 d) to the Chicago Convention, to ensure their military aircraft operate with due regard for the safety of civil aircraft.



EXAMPLES OF STATE AIRCRAFT ROLES

- **Aerial firefighting:** The use of aircraft to combat wildfires and will often entail the establishment of a restricted area.
- **Aeromedical evacuation:** A specialized form of airlift for transporting ill or injured personnel under medical supervision to appropriate medical treatment facilities. It's possible for these flights to comply with civil aviation regulations and to be safely integrated with civil aviation operations.
- **Airborne military operations:** This activity is military-specific and involves helicopters or fixed-wing aircraft, possibly supported by air defence fighter aircraft and larger, multi-engine reconnaissance aircraft. It may take place in a known conflict zone or **create an environment that is potentially hazardous for civil aviation and may be impossible to provide forewarning** to civil aviation authorities.



EXAMPLES OF STATE AIRCRAFT ROLES

- **Airlift:** Aircraft enabling the movement and sustainment of forces anywhere in the world and across the entire range of operations and operations can be conducted by military aircraft or by commercial transport aircraft, and possible for these types of flights to fulfil most of their tasks while operating in compliance with civil aviation regulations and to be safely integrated with civil aviation operations. Adequate prior coordination should be affected to guarantee the safety of civil aircraft operations in case of airdrop.
- **Air power contribution to land and maritime operations:** Such activities include air interdiction, close air support, electronic warfare, anti-surface warfare, anti-submarine warfare and aerial mining. **Air assets involved in these roles are wide-ranging and can include helicopters, combat fighter/bomber jet aircraft, unmanned aircraft systems (UAS) and multi-engine wide-bodied aircraft. These types of operations cannot be safely integrated with civil aircraft operations.**



EXAMPLES OF STATE AIRCRAFT ROLES

Air-to-air refuelling (AAR): The process of transferring fuel from one aircraft to another in flight.

- AAR requires sufficient airspace for aircraft to manoeuvre in close proximity to the aircraft supplying the fuel.
- The aircraft supplying the fuel may remain between fixed locations, may travel in formation with the aircraft requiring fuel or may join aircraft in transit.
- In most cases, only minimal changes in aircraft attitude are possible during the refuelling process.
- Safe integration with civil aviation operations requires advance coordination between the military aviation authority and the ANSP to ensure adequate spacing is planned for and maintained between the AAR operation and non-participating aircraft.



EXAMPLES OF STATE AIRCRAFT ROLES

- **Counter-air:** The purpose of counter-air operations is to achieve a desired or necessary level of control of the airspace.
- Air policing, air defence and patrol missions are practiced and conducted with high priority to safeguard nations against threats.
- Usually conducted on short notice, e.g. to intercept unidentified or suspicious aircraft.
- During crisis situations, counter-air operations may involve the use of a variety of integrated weapons systems and sensors to counter threats
- military requirements of these operations may make it impossible to provide forewarning to civil aviation authorities



EXAMPLES OF STATE AIRCRAFT ROLES

Experimental/trials: Acceptance testing for new aircraft, aerodynamics and systems research on aircraft.

- These activities range in variety and ATM requirements and in most cases, these types of operations cannot be safely integrated with civil aircraft operations.

Geographic and hydrographic support: The measurement and description of the physical features and conditions of terrain, navigable waters and adjoining coastal areas, including oceans, rivers and lakes.

- Depending on the flight patterns required to achieve mission objectives, it may be possible to safely integrate these operations with civil aircraft operations.
- Humanitarian assistance. Providing personnel, equipment and supplies in response to natural disasters or other situations affecting a significant number of people or a large geographic area.
- Mission may also involve transporting people out of a disaster area and **particular attention to civil-military coordination is required if** these flights will operate in or near areas where **military operations are taking place.**



EXAMPLES OF STATE AIRCRAFT ROLES

Intelligence, surveillance and reconnaissance (ISR):

- The integration of capabilities from all military components and some non-military platforms, in order to provide awareness essential to the successful planning and conduct of operations, through the collection, processing, exploitation and dissemination of accurate and timely information.
- Air assets involve various manned and unmanned systems.
- Depending on the flight patterns required to achieve mission objectives, it may be possible to safely integrate these operations with civil aircraft operations.
- Security requirements of these operations may make it impossible to provide forewarning to civil aviation authorities.



EXAMPLES OF STATE AIRCRAFT ROLES

Maritime operations: State aircraft may have a requirement to train and operate over the high seas.

- Flights may vary in purpose, may originate from ships.
- Flight patterns required to achieve mission objectives mean that, in certain cases, these types of operations cannot be safely integrated with civil aircraft operations.
- Because it is not possible for airspace access to be denied for civil aircraft in high seas airspace, **the military flights should operate with due regard for the safety of navigation of civil aircraft** in accordance with Article 3 d) of the Chicago Convention.

Meteorological support. State aircraft may be employed in support of data collection and research.

- The nature of the tasks predominantly utilizes multi-engine, fixed-wing aircraft fitted with unique on-board meteorological equipment, although UAS offer increasing utility.
- May be possible to safely integrate these operations with civil aircraft operations



EXAMPLES OF STATE AIRCRAFT ROLES

Police/customs: Air operations in support of police operations and customs and border protection (CBP) services.

Aerial units tasked to assist in surface vehicle pursuits and surveillance.

Operations are generally conducted through the use of helicopters; however, multi-engine fixed-wing aircraft are also used

Support to CBP services may utilize helicopters for surveillance operations; however, given the larger scale and distances involved with their operations, the use of multi-engine aircraft and UAS may be more efficient.

may be possible to safely integrate these operations with civil aircraft operations



EXAMPLES OF STATE AIRCRAFT ROLES

Search and rescue (SAR). A humanitarian activity with the primary objective of saving lives.

- In many States, the military is responsible for SAR operations; however, non-military air assets can have either a shared or leading role in this vital capability.
- Aircraft types involved include helicopters and multi-engine aircraft, which during actual SAR missions will require priority handling and unrestricted access to appropriate airspace.
- Depending on the flight patterns required to achieve mission objectives, it may be possible to safely integrate these operations with civil aircraft operations.



EXAMPLES OF STATE AIRCRAFT ROLES

Space operations. States may sometimes wish to exploit space capabilities.

- Launches and recoveries of space vehicles may affect large volumes of airspace.
- In most cases, these operations cannot be safely integrated with civil aircraft operations.

Special air operations. Specially organized military units trained in unconventional applications of tactics against strategic and operational objectives.

- Requires the element of surprise and covert handling. Depending on flight patterns required to achieve mission objectives, it may be possible to safely integrate these operations with civil aircraft operations.



EXAMPLES OF STATE AIRCRAFT ROLES

Unmanned aircraft systems (UAS). UAS are an increasingly important air asset that offers flexibility and utility.

Originally operating in segregated airspace or within visual line of sight (VLOS),

UAS are more frequently operating on missions outside of segregated airspace, including beyond visual line of sight (BVLOS).

Depending on the flight patterns required to achieve mission objectives, it may be possible to safely integrate these operations with civil aircraft operations.



EXAMPLES OF STATE AIRCRAFT ROLES

Very important person (VIP) aircraft.

- Possible for these types of flights to fulfil their tasks while operating in compliance with civil aviation regulations and to be safely integrated with civil aviation operations.
- In some cases, however, the associated VIP status might require additional handling, separation and prioritization.
- Advance coordination between the military aviation authority and the ANSP will enable these requirements to be met without undue disruption to civil aviation operations.



STATE AIRCRAFT CONSTRAINTS

State aircraft can operate in a variety of contexts, with specific constraints in five general areas:

- **Institutional constraints.** State aircraft operations are non-profit and either serve a function or carry out a requirement. **Mandated to meet security and defence interests as demanded by governments**, they require easy access to training areas near their respective bases.
- **Financial constraints.** Aging fleets and budget constraints can hinder the implementation of new equipment on military aircraft, despite the growing need to evolve alongside new ATM initiatives.



STATE AIRCRAFT CONSTRAINTS

Operational constraints. State aircraft operations related to defence and security threats give rise to unique situations that require special handling and consideration, e.g. activities such as SAR, air policing/patrol, aerial firefighting and special air operations may demand the utmost priority and be unable to accommodate any delay or denied access to airspace.

An additional operational limitation is imposed by Article 3 c) of the Chicago Convention, which prohibits the operation of state aircraft of one State over the sovereign territory of another State without authorization.

This authorization may include restrictions on how and where such aircraft may operate. Accordingly, State aircraft may not be able to accept ATC clearances which change their flight-planned route and/or altitude while they are within the sovereign airspace of another State or would cause them to infringe on the sovereign airspace of another State where no authorisation has been given.



STATE AIRCRAFT CONSTRAINTS

Operational constraints. State aircraft operations related to defence and security threats give rise to unique situations that require special handling and consideration, e.g. activities such as SAR, air policing/patrol, aerial firefighting and special air operations may demand the utmost priority and be unable to accommodate any delay or denied access to airspace.

- Article 3 c) of the **Chicago Convention, prohibits the operation of State aircraft of one State over the sovereign territory of another State without authorization.**
- This authorization may include restrictions on how and where such aircraft may operate. Accordingly, **State aircraft may not be able to accept ATC clearances which change their flight-planned route and/or altitude while they are within the sovereign airspace of another State or would cause them to infringe on the sovereign airspace of another State where no authorisation has been given.**



STATE AIRCRAFT CONSTRAINTS

Technical constraints. Equipage of state aircraft is predominantly focused on the expected output and nature of the task. Physical space is not always available in such aircraft, because of limited space or conflict with mission essential systems and communications, navigation, and surveillance (CNS)/ATM equipment on board.

Sensitive information constraints. State aircraft conducting classified/sensitive operations may require special handling to preserve the integrity of the mission's classified nature. For example, tactical aircraft conducting counter-air operations may not meet surveillance or communications requirements, but still require ATS support to safely avoid civil aviation.



**Thank You
QUESTION?**





ICAO

CAPACITY & EFFICIENCY



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU