

Protection of ATCOs and ATM Facilities in Conflict Areas**Summary**

Armed conflicts increasingly threaten ATCOs and the critical Air Traffic Management (ATM) infrastructure they rely upon. Recent attacks on ATC towers in Yemen, the Democratic Republic of Congo, Iraq, Libya, Sudan, Syria, and Ukraine highlight the vulnerabilities faced by ATCOs in conflict zones. These attacks not only endanger the lives of ATCOs but also disrupt global air transport, leading to rerouted flights and increased workload.

International Humanitarian Law (IHL) offers protections for civilian infrastructure, which includes ATM facilities.

This Working Paper explores the impact of armed conflicts on ATCOs and ATM facilities, examines the existing legal protections, and calls for measures to safeguard ATM infrastructure and personnel in conflict zones

1.0 Introduction

- 1.1 The signing of the Chicago Convention in December 1944, which contains the basic rules for civil aviation, had emphasised that the future development of international civil aviation could greatly help and preserve friendship and understanding among the nations and peoples of the world.
- 1.2 Over eighty (80) years later, this vision has become an evident reality, to such an extent that air transport is now accepted as a fundamental pillar of our global society. It is indispensable to our daily lives as food, medicine and telecommunications, and has proven to be essential for social progress and economic prosperity.
- 1.3 In 2023, 4.4 billion passengers were carried by the world's airlines (1.8 billion international passengers and 2.6 billion domestic passengers). The estimate for 2024 is 5 billion passengers. 67,300 routes were served globally. 1,138 airlines operated a fleet of 29,039 commercial aircraft in service, through a route network of several million km (ATAG, 2024)
- 1.4 ATCOs deploy their unique skills around the clock to facilitate the navigation of aircraft and management of the airspace from one point to another across the globe, safely and efficiently.
- 1.5 The Safety of ATCOs, the physical facilities, equipment and deployed technology that facilitate Air Traffic Management and Air Space Management is therefore critical for the continuous safety and sustenance of global air transport operations for the benefit of the peoples of the world.

- 1.6 Conflicts (Inter-State Wars, Civil War and Armed Conflicts) have occurred and continue to occur in various areas across the world. Their consequences are far-reaching resulting in human, economic, social and environmental costs.
- 1.7 ATCOs and the infrastructure that facilitate the provision of Air Traffic Control Services are often affected by conflict.
- 1.8 Two (2) Member Association (MA) States in the AFM Region (Congo DR and Yemen) have recently experienced tragic attacks on ATCOs and Control Towers. There are additional records of five (5) attacks on ATC towers since the turn of the century (Iraq, Libya, Sudan, Syria and Ukraine).
- 1.9 This Working paper examines the effect of these conflicts on the ATCO, ATM facilities and the safety and continuity of civil air traffic operations.

2.0 Discussion

- 2.1 Conflicts are disagreements or struggles between two or more parties, often involving opposing interests, values, or goals. Conflicts can range from minor disagreements to large-scale armed conflicts. (Britannica)
- 2.2 War is a sustained armed conflict between organized groups, often involving states or large factions, characterized by widespread violence, destruction, and mortality. (Britannica)
- 2.3 During violent armed conflicts, non-involved human life and civilian infrastructure that facilitates the sustenance of life are often destroyed. The provision of ATC Services to facilitate air transport is disrupted in the areas of conflict. This necessitates the activation of contingency arrangements, which often results in increased traffic workload over certain airspaces.
- 2.4 For instance, the conflict in Ukraine, particularly the airspace closures, has resulted in increased air traffic volumes over some areas of Europe as airlines have been forced to reroute their flights, leading to congestion and longer flight times. Similarly, conflicts in Libya, Niger and Sudan have also led to the rerouting of flights with longer trajectories. ATCO receiving the rerouted Traffic experienced an increased workload as a result of an unprecedented increase in traffic volumes.

International Humanitarian Law (IHL)

- 2.5 IHL is a branch of international law that aims to mitigate the humanitarian consequences of armed conflict, protecting persons who are not or are no longer participating in hostilities, and restricting the means and methods of warfare. IHL applies to armed conflicts and protects those who do not take part in the fighting, such as civilians and medical and religious military personnel. It also protects those who have ceased to take part, such as wounded, shipwrecked, and sick combatants, and prisoners of war.
- 2.6 IHL prohibits all means and methods of warfare which:
 - a) fail to discriminate between those taking part in the fighting and those, such as civilians, who are not, the purpose being to protect the civilian population, individual civilians and civilian property;
 - b) cause superfluous injury or unnecessary suffering; and

c) cause severe or long-term damage to the environment

- 2.7 Protocol additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (Protocol I), of 8 June 1977 under Article 48 prescribes for Parties “to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives”

Protective Status of ATCOs and ATM Facilities

- 2.8 Civil Aerodromes and the civilian infrastructure therein intended to be used or are being used for civilian purposes enjoy protective status as highlighted in Article 57 of the Additional Protocols to the Geneva Convention. ATCOs and ATM facilities therefore enjoy protective status from attacks from military operations.

Article 57 States:

“1. In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects;

2. With respect to attacks, the following precautions shall be taken:

(a) those who plan or decide upon an attack shall:

(i) do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects and are not subject to special protection but are military objectives within the meaning of paragraph 2 of Article 52 and that it is not prohibited by the provisions of this Protocol to attack them;

(ii) take all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects;

(iii) refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated;

(b) an attack shall be cancelled or suspended if it becomes apparent that the objective is not a military one or is subject to special protection or that the attack may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated;

(c) effective advance warning shall be given of attacks which may affect the civilian population, unless circumstances do not permit.

3. When a choice is possible between several military objectives for obtaining a similar military advantage, the objective to be selected shall be that the attack

on which may be expected to cause the least danger to civilian lives and to civilian objects.

4. In the conduct of military operations at sea or in the air, each Party to the conflict shall, in conformity with its rights and duties under the rules of international law applicable in armed conflict, take all reasonable precautions to avoid losses of civilian lives and damage to civilian objects.

5. No provision of this Article may be construed as authorizing any attacks against the civilian population, civilians or civilian objects.”

IFATCA Position

- 2.9 IFATCA, being an apolitical Federation of World Air Traffic Controllers, has one of its primary objectives to protect and safeguard the interests of the Air Traffic Control profession. Its members are ATCOs with civil licences as captured in ICAO Annex 1 and exercising the privileges of the license is intended for civil aviation. Therefore, ATCOs while carrying out their duties qualify for the protection as captured in Protocol (1) additional to the Geneva Convention of 1977 under Articles 48 and 57. This was echoed in its press release of 27th December 2024 following the airstrike on Sana'a Tower.
- 2.10 IFATCA equally referenced provisions of ICAO Annex 17 and United Nations Security Council Resolution 2286, which underscores the protective status of civilians and civilian facilities.

ICAO Perspective of ATM Security

- 2.11 The Primary objective of Aviation Security is captured in ICAO Doc 8973 (Aviation Security Manual) which is “ensuring the protection and safety of passengers, crew, ground personnel, the general public, aircraft, and airport facilities”.
- 2.12 ICAO Annex 17 (Security) 2022 twelfth edition recognises the role of the ATSP in aviation security. This is captured in 3.6 as follows:

“Each Contracting State shall require air traffic service providers operating in that State to establish and implement appropriate security provisions to meet the requirements of the national civil aviation security programme of that State”.

However, the emphasis of ICAO Annex 17 dwells more on unlawful interference in relation to international civil aviation.

ATM Security

- 2.13 ATM security concerns a broader range of issues than just aviation security. ATM Security is defined in ICAO Circular 330, Civil/Military Cooperation in Air Traffic Management, as:
- “The contribution of the ATM system to civil aviation security, national security and defence, and law enforcement; and the safeguarding of the ATM system from security threats and vulnerabilities.”
- 2.14 ATM system infrastructure protection through information and communication technology security, physical security, and personnel security is critical as it allows for the continuity of service during an emergency or disaster.

Distinction between Aviation Security and ATM Security

- 2.15 ATM security differs from aviation security in the sense that ATM security has dual requirements of protection of the ATM system against threats and vulnerabilities and the provision of ATM security services in support of organizations and authorities engaged in aviation security, national security, defence, and law enforcement. Thus, the ATM security role has a traditional internal role of **protection of the ATM system itself and an operational role in the support of certain aspects of aviation security as well as national security and law enforcement.**
- 2.16 ICAO emphasises the protection of Air Traffic Management (ATM) facilities in the Air Traffic Management Security Manual (Doc 9985), focusing on physical and electronic security, personnel security, ICT system security, and contingency planning, alongside ensuring ATM's role in preventing unlawful interference.

Refraining from the use of weapons

- 2.17 In the unanimous adoption by the 25th Session (Extraordinary) of the ICAO Assembly on 10 May 1984 of Article 3 bis to the Convention on International Civil Aviation, the Contracting States have recognized that "every State must refrain from resorting to the use of weapons against civil aircraft in flight."
- 2.19 Loss of ATM facilities could have severe implications on the safety and security of civil aviation operations. It is therefore necessary for Contracting States to recognise the necessity to refrain from the use of weapons against ATM facilities.

Goma Airport Attacks (Congo Democratic Republic)

- 2.20 Goma International Airport in the Congo Democratic Republic was attacked and subsequently captured by rebels on January 28, 2025, during their offensive on the city of Goma. (Reuters)
- 2.21 The control tower was vandalised. Fortunately, the ATCOs escaped due to the presence of the United Nations Mission at the airport. This led to the suspension of operations, which equally escalated humanitarian needs.



Fig. 1: Vandalised Goma Control Tower

Air Strike on Sana'a Control Tower (Yemen)

- 2.24 A devastating airstrike was carried out on the Sana'a air traffic control tower on 26th December 2024, injuring two air traffic controllers and completely destroying the tower cab.
- 2.25 Despite the destruction and imminent danger, the injured controllers at Sana'a Control Tower demonstrated remarkable bravery by continuing to provide essential air traffic control services to an arriving aircraft. Their commitment underscores the vital role air traffic controllers play in preserving lives and ensuring the integrity of aviation operations, even amidst crises.
- 2.26 IFATCA issued a strong statement condemning the airstrike and expressing solidarity with Yemen ATCOs. The Federation equally called for respect for international protocols, including ICAO's Annex 17, UN Security Council Resolution 2286, and Article 52 of Additional Protocol I to the Geneva Conventions, which mandates the protection of civilian personnel and infrastructure critical to public safety.



Fig. 2: Sana'a Control Tower showing the level of devastation

S/N	Facility	Location	Year	Remark
1	ATC Tower	Baghdad, Iraq	2003	Airstrikes damaged the tower
2	ATC Tower	Tripoli International Airport, Libya	2014	Tower Severely damaged during clashes between rival factions
3	ATC tower	Khartoum International Airport, Sudan	2023	Destruction of the tower and disruption of ATC operations during clashes between rival factions
4	ATC Tower	Aleppo International Airport, Syria	2016	Tower was targeted and destroyed by airstrike
5	ATC Tower	Sergey Prokofiev International Airport, Donetsk, Ukraine	2023	Tower was destroyed by multiple air and artillery strikes

Table 1. Records of Attacks on Air Traffic Control Towers

IFATCA Policy on the Protection of ATCOs and ATM Facilities

- 2.27 Conflicts though undesired, are a reality that humanity has to contend with. Where the scale of conflicts extends to wars, conflicting parties must operate within IHL.
- 2.28 The provision of ATC Services by ATCOs is significant in ensuring the continuity of operations and the facilitation of humanitarian efforts.
- 2.29 ATM facilities and indeed aerodrome facilities intended for civil aviation enjoy protective status under IHL. The direct attacks on the ATC towers provided in this WP illustrate violations of IHL.
- 2.30 IFATCA needs to advocate clearly and in specific terms, the protective status of ATM facilities such as ATC towers under IHL to protect ATCOs. Existing IFATCA policies do not capture this specificity.
- 2.31 The closest IFATCA policy that addresses the protection of ATCOs and ATM facilities is that of Unsafe Airspace and Aerodrome (WP 164, Kaohsiung, 2006) which states ***“IFATCA should issue a warning to airlines, air navigation service providers and all other relevant bodies concerning the aviation industry and users of the risk of operating in unsafe airspace when it is demonstrated that an airspace of defined dimensions poses a risk to the safety of air traffic”***.

- 2.32 This policy was recommended to be deleted by the PLC in a working paper presented at the Conference in Singapore, in 2024. (LM 7.5 – UNSAFE AIRSPACE/AERODROME)

The principal reasons cited were:

- it's not clear who should issue the warning;
- it's not clear to whom and in what format is the information issued;
- the definition of 'unsafe airspace' is not clear as it differs between the policy
- and the preceding sentence in the TPM; and
- Safety accountability and responsibilities

- 2.33 There is therefore the need for IFATCA to adopt a policy that specifies the protection of ATCOs and ATM facilities in conflict areas.

3.0 Conclusion

- 3.1 Airports and associated facilities including those essential for providing Air Traffic Services have been major military objectives in conflict areas.
- 3.2 The deliberate targeting of ATM facilities during armed conflicts severely disrupts civil aviation, endangers lives and violates established international protections.
- 3.3 It is impractical for civil ATCOs to have any control over sudden heavy military or armed group attacks such as airstrikes, artillery strikes and heavy gun battles, targeted at ATM facilities such as the ATC towers.
- 3.4 Similarly, the concept and scope of ICAO provisions in Annex 17 and Doc 9985 concerning security do not envisage the magnitude of military-styled attacks as illustrated in this WP.
- 3.5 Without decisive action, the continued targeting of ATM facilities will pose an increasing risk to ATCOs, global aviation safety and humanitarian efforts.
- 3.6 There is an urgent need to advocate for, at international forums, the protective status of Airports, the personnel and the facilities under IHL.

4.0 Recommendations

- 4.1 It is recommended that:
- a) IFATCA advocates for explicit recognition of ATCOs and ATM facilities as protected entities under international law;
 - b) IFATCA urges ICAO to promote international cooperation for the protection of essential ATM infrastructure during armed conflicts;
 - c) IFATCA encourages ICAO and international aviation organizations to develop specific contingency plans for ATC operations in conflict zones;
 - d) IFATCA urges ICAO to encourage member states to adopt national laws reinforcing the protective status of ATM facilities under international law;
 - e) IFATCA urges ICAO to establish reporting and monitoring mechanisms for attacks on ATM facilities and ATCOs in conflict zones, ensuring accountability and response actions; and

- f) IFATCA should collaborate with ICAO to define minimum operational safety standards for ATCOs in conflict zones, incorporating risk assessment protocols and emergency evacuation procedures; and
- g) IFATCA to develop a reporting mechanism for attacks on ATCOs and ATM facilities.

4.2 The following should be accepted as IFATCA policy and inserted into the TPM.

Policy proposal :

1. ATCOs working in conflict zones shall be recognised as neutral entities and be treated accordingly
2. Civil ATM Operations be classified as humanitarian work and shall be afforded protection by all parties to the conflict
3. All ATM infrastructure and any facilities used in the provision of civil air navigation be recognised and protected against destruction/interference by all parties to any conflict
4. ATCOs shall be accorded the protective status of humanitarian workers while operating in conflict areas

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