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AUTHOR(S)	Boldbaatar Chogdon
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ESTABLISHING AN INTEGRATED MILITARY AND CIVIL NETWORK FOR MONGOLIA'S AIR RANGE CONTROL AND COMMAND

Boldbaatar Chogdon
Ph.D., Associate Professor, National Defense University, Mongolia

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ABSTRACT

Mongolia's strategic location at the intersection of major air routes connecting developed countries positions it favorably for the future growth of its aeronautical service system. With increasing international intercontinental flights, the air traffic density is expected to rise significantly. To ensure air traffic safety, it is crucial to enhance airspace control and air traffic management services in Mongolia. This includes upgrading primary and secondary radars and establishing a unified management network for airspace control and utilization. These improvements will streamline air border control, eliminate delays in air traffic data reporting, enhance civil and military air traffic control operations, and bolster flight safety measures.

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INTRODUCTION.

Following the 2001 terrorist attacks in the United States, the International Civil Aviation Organization (ICAO) recommended member countries enhance cooperation between military and civil aviation organizations. This led to the establishment of a unified network and the creation of various documents such as Doc 10088 "Military-Civil Aviation Cooperation Manual", Doc 9763 "Asia, General Plan for Air Traffic Services in the Pacific Region", Doc 9854 "Global Air Traffic Management Operation Concert", and Circular 330 AN/189 "Civil/Military Cooperation in Air Traffic Management". Today, countries like the United States, Russia, China, the EU, and many others in Asia, Africa, and Latin America manage their airspace through the "Military and Civilian Airspace Control Network".

Collaborative Decision Making" (CDM) is a coordinated approach to improving air traffic management. It involves collaboration between ICAO member states to enhance confidence in aviation organizations, exchange operational information, coordinate decision-making, and achieve harmonized air traffic management through joint decision-making.

There are numerous firms, companies, and factories that produce radar equipment for defense and military purposes. However, in terms of tactics and technical specifications, countries like Russia, the United States, France, Germany, and Italy are known to utilize reliable and effective equipment in combat situations.

To enhance Mongolia's air border and space management, reduce air time and data delays, optimize civil and military air traffic control, and ensure flight safety, there is a need to establish a unified civil aviation network. Collaboration and knowledge sharing with neighboring and other countries on unified airspace control systems are essential for effective airspace management in Mongolia.

Since the late 20th century, countries worldwide have started to make efforts to enhance airspace and flight safety. However, various incidents have demonstrated the ineffectiveness of

individual efforts by countries, military, and civil organizations. Drawing from these experiences, the International Civil Aviation Organization has advised that cooperation between military and civil aviation organizations should prioritize national interests and security, urging for its implementation.

LEGAL FRAMEWORK FOR THE CREATION OF AN INTEGRATED MILITARY AND CIVILIAN NETWORK FOR AIR TRAFFIC CONTROL AND MANAGEMENT IN MONGOLIA.

The Government and Parliament have established a legal framework to safeguard Mongolia's air border and airspace, forming the basis for a unified defense system.

The Air Force (AF) of the Armed Forces is defined in Article 3.1.9 of the Law of Mongolia "On the Armed Forces" as the military forces responsible for controlling and protecting the inviolability of the country's air border and airspace. The AF is tasked with monitoring and securing Mongolia's air border and airspace, as well as ensuring compliance with flight regulations. This responsibility is carried out through the organization and execution of duty.[1]

In the realm of airspace law, flights that traverse the airspace of one country and enter another are classified as international flights. These flights must be carried out using specified international flight routes with the approval of the countries through which they pass. Typically, national governments determine international flight routes, and authorization for these flights is granted by the General Staff of the Armed Forces and the ***Air Force Commander*** via the Ministry of Foreign Affairs. This process is necessary to regulate international flight paths. In our country, this principle is upheld by law.

In accordance with Mongolia's laws on military and civil aviation security and cooperation:

Section 9.1 of the "Usage of Airspace for Aviation" Law (May 30, 2003) states that the General Directorate of Civil Aviation, as the supreme authority of military professional management, is responsible for activities that may pose a risk to flight safety due to shooting, explosions, or rocket launches for military purposes in Mongolia's airspace. Section 9.2 clarifies that this provision does not apply to missile launches and shooting for defensive purposes against air attacks. In the event of illegal actions against an aircraft in Mongolian airspace, the head of the highest military professional management organization has the authority to: demand the landing of the aircraft at the nearest airport, assign tasks to civil aviation management and air traffic service departments, ensure the safe landing of the affected aircraft, provide assistance to foreign aircraft in danger, and take necessary measures to prevent further consequences if the aircraft does not comply with landing requirements. Section 10.1 of the law addresses the transfer of aircraft to the Armed Forces of Mongolia during a state of war, regardless of ownership, and specifies that such transfers will be regulated by the Law on Mobilization.[2]

Mongolia's national security concept was updated and endorsed by Resolution No. 48 of 2010 of the Great Khural of Mongolia. The document emphasizes that safeguarding and enhancing Mongolia's independence, sovereignty, and unity are essential for ensuring national security.[3].

Furthermore, as outlined in the document "Basics of Mongolia's Defence Policy" approved by Parliament Resolution No. 85 of 2015, Mongolia's defense policy is grounded in the core national interests defined in the Constitution of Mongolia and the national security concept of Mongolia. The prevailing circumstances serve as the foundation for establishing the objectives, principles, and orientation of defense. Measures have been put in place to enhance collaborative efforts with neighboring countries, promote the development of military trust in the region, ensure the ***integrity of airspace*** and air borders, and establish a cohesive defense and security information system. Additionally, the coordination of operations between military and civilian aviation organizations is reinforced, further ensuring safety and efficiency.[4]

Articles 8.1 and 8.2 of Chapter 8 of the document "Basics of Defence Policy of Mongolia" outline the responsibilities of the Armed Forces during peacetime, along with their primary functions. Article 8.2.2 of Chapter 8 specifies the Air Force's role in "airspace and air border control and protection of inviolable immunity."

[1] Law of Mongolia "On Armed Forces", UB., 2016
[2] Law of Mongolia "On Use of Airspace for Aviation". UB. 2003;
[3] Resolution No. 48 of 2010 of the Great Khural of Mongolia;
[4]"Basics of Mongolia's Defense Policy" document approved by Parliament Resolution No. 85 of 2015.

Furthermore, Article 8.3 of Chapter 8 of the document outlines the development areas for the Armed Forces, with Article 8.3.10 specifically mentioning the establishment of a unified defense information system. This system is designed to establish a legal framework that promotes the involvement of government agencies and citizens in defense and security efforts.

Mongolia has been a member of the International Civil Aviation Organization (ICAO) since 1989 and consistently engages in the organization's events. The country actively cooperates with ICAO and has ratified 9 conventions and 6 protocols related to international civil aviation.

The International Civil Aviation Organization (ICAO) Annex 11 outlines the framework for information exchange cooperation between military and civil aviation organizations.

It covers general requirements for cooperation in airspace organization and air traffic control operations, as well as the establishment of a ***"National Airspace Management Committee"*** to facilitate collaboration between military and civil aviation entities. The document also addresses the development of rules and regulations for cooperation between military and air traffic service organizations, with a focus on exchanging information to ensure flight safety.[1]

With the ongoing development of International Air Law (ILA), regulations have been put in place regarding the use of airspace for civil purposes such as services, trade, and transportation. It was previously thought that military aviation regulations were separate from those governing civil aviation. However, recent analysis shows a growing trend towards establishing a unified legal framework that encompasses both civil and military flights in countries like the United States and Russia.

Due to the growing volume of air traffic, countries worldwide have implemented measures to enhance airspace and flight safety, as well as improve control and management. In September 2003, the International Civil Aviation Organisation (ICAO) developed a document known as "Doc 9426" during conferences in Montreal and Warsaw, recommending cooperation between military and civilian aviation organizations to safeguard national interests and security. This document urged countries to enhance their airspace utilization, regulate and manage air traffic in alignment with safety standards, and establish state policies to ensure airspace and flight safety in accordance with national security.

In the "Air Traffic Service General Plan" of the International Civil Aviation Organization (ICAO) for the Asia-Pacific region, specific areas of focus in organizing the appropriate use of airspace for military and civil aviation purposes in the region are outlined. These include: Item 360, Civil Military use of Special Use Airspace (SUA), Item 370, Strategic Civil Military coordination, Item 380, Tactical Civil Military coordination, Item 390, Civil Military system integration, Item 400, Civil Military navigation joint provision, Item 410, Civil Military common training, Item 420, Civil Military common procedures (joint military-civilian operations). This highlights that collaboration between military and civil entities and joint management in ensuring airspace security is now the "Basic Policy" of ICAO.

METHODS FOR CREATING AN INTEGRATED NETWORK FOR AIR TRAFFIC CONTROL AND MANAGEMENT IN MONGOLIA.

The airspace of a nation is a valuable strategic asset. The Asia-Pacific region is emerging as a significant market for international aviation. The expansion of this market is expected to continue in the foreseeable and long-term future.

The Air Force of the Armed Forces is responsible for radar control for the majority of flights in Mongolia's airspace, with 78-85 percent of flights monitored from 22 points. The remaining 15-20 percent is managed by air traffic dispatchers through the Air Traffic Service Department of the Civil Aviation Directorate. Mongolia sees traffic from 50 airlines representing over 20 countries on 18 international routes, 15 gates, and 37 local routes. In recent years, the country has seen an average of over 130,000 airplanes in its airspace annually. The number of international flights decreased in 2020 due to the "Covid-19" pandemic, but is expected to rise again. The Air Force also plays a role in protecting the national air border, ensuring airspace safety, and enforcing flight rules to prevent violations using anti-aircraft missile complexes and combat aircraft.

The regulation and management of airspace by military and civil aviation entities adhere to specific air laws, rules, and regulations. However, it is essential to integrate air traffic management

[1] Item 360, Civil Military use of SUA (Usage of military-civilian special-purpose airspace).

activities under a unified policy and regulation framework. Global practices demonstrate that the separate operation of these entities leads to economic and technical challenges.

The Mongolian government's General Department of Civil Aviation began executing international projects and programs in 2009 in alignment with ICAO recommendations. Progress has been made in implementing indicator-based management for international flights. Currently, six "Indra" surveillance radar units are operational.

Since 2010, there have been technical and technological advancements in civil aviation, focusing on airspace utilization and capacity enhancement. By reducing the vertical flight distance from 600m to 300m and the horizontal distance from 90km to 30km in Mongolia's upper airspace, the airspace penetration rate has improved, providing favorable conditions for airlines to operate at optimal flight altitudes.

In 2005, a workshop was held by the Ministry of Defense, the Air Defense Forces of the Armed Forces, and the General Directorate of Civil Aviation to discuss ***The establishment of a national unified network of airspace control and air traffic management in Mongolia"***. In 2008, a meeting was organized by the working group of the Ministry of Defense and the Ministry of Road Transport, along with the General Directorate of Civil Aviation, to address cooperation and the establishment of a unified network for military and civil aviation organizations. The meeting focused on mutual exchange of information and amending legal documents related to air defense.

Based on experience and research, there have been multiple efforts to implement and structure automated control systems within the Air Force of the Armed Forces. However, for various reasons, these attempts were unsuccessful. Upon analysis by the researcher:

Since 1998, as part of the Armed Forces reform policy, the ***"Screen"*** project was implemented to create an automated airspace control system in Mongolia. The P-37 model radar station's analog information on air traffic status was converted into a digital system, allowing for transmission to users, computers, and Air Attack information. The installation and use of System-600-type transceivers in all branches of the Defense Military Command Headquarters marked the initial phase of modernizing airspace control equipment and technology, providing an advanced technical solution for automating the airspace control management system.

Since 2008, the project "Automated airspace control and management system KM-2008" has been under development. It has successfully implemented automated processes for acquiring, receiving, processing, and transmitting airtime information at the administration headquarters, various departments, and radio engineering branches. The project's technical solution enables the acquisition of data from different radar devices with digital operating systems and their transmission to the control room without manual intervention.

In the future, it is essential to maintain or enhance the capacity to gather, analyze, and share air weather data, as well as implement an automated system for managing units and branches within the Armed Forces Air Command.

The establishment of a military-civilian "Integrated Airspace Control and Management Network" aims to achieve the following outcomes.

- In the advancement of airspace control techniques and technologies, collaboration between military and civil aviation organizations will adhere to international standards. The introduction of the first and second combined Radio Locator Station in Mongolia will not only result in cost savings but also align with Mongolia's national security and defense priorities.
- The implementation of the "State Civil Aviation Sector Policy" document, as approved by State Great Khural Resolution No. 18 of 2013, emphasizes the establishment of a unified network for sharing information on state and civil aviation flight traffic. This will elevate the level of cooperation between military and civil aviation organizations, fostering mutual understanding and respect.
- Organizations operating within Mongolia's airspace will now follow a unified policy and coordinate their operations in accordance with relevant laws, regulations, and guidelines.
- The establishment of the "Military-Civil Unified Network of Airspace Control and Management" in Mongolia will enable the integration of actual airspace control radar data from the Armed Forces with observation data from civil aviation air navigation services. This will facilitate the exchange and joint utilization of information.

- The discrepancy in information regarding the "number of international flights" resulting from separate airspace control duties performed by military and civil aviation will be eliminated. This integration will lead to increased revenue from aeronautical fees for Mongolia.
- Overall, the collaboration between military and civil aviation organizations in developing airspace control techniques and technologies in alignment with global standards will not only enhance national security and defense interests but also yield economic benefits and savings.

Proposal to establish a unified network for military and civil administration.

Despite ongoing discussions and recommendations from the International Civil Aviation Organization, as well as relevant laws and regulations in Mongolia, the collaboration, security, and integration of military and civil aviation organizations have not been effectively implemented in our country. As a researcher, I propose the following steps to address this issue.

Firstly, a working group should be established with representatives from the top-level ministries, the National Security Council, the General Department of Civil Aviation, and the Armed Forces Air Force Command. This working group will be responsible for implementing measures to enhance cooperation and coordination between military and civil aviation entities.

Secondly, coordinating a range of training programs and courses in collaboration with members of the Armed Forces Air Force Command and the General Directorate of Civil Aviation. These include air traffic controller training, basic military courses, aviation engineering and technical training, Joint Command Staff Training, Strategic Command Staff Field Training, and more.

CONCLUSION.

To ensure the effective functioning of Mongolia's airspace control and air traffic control network, there is a need for significant enhancements in current policies and operations, gradual equipment upgrades, and a substantial improvement in civil-military cooperation.

REFERENCES

1. Law of Mongolia "On Armed Forces", UB., 2016.
2. Resolution No. 48 of 2010 of the Great Khural of Mongolia.
3. "Basics of Mongolia's Defense Policy" document approved by Parliament Resolution No. 85 of 2015.
4. Item 360, Civil Military use of SUA (Usage of military-civilian special-purpose airspace).
5. Law of Mongolia "On Armed Forces". UB. 2003.
6. Law of Mongolia "On Use of Airspace for Aviation". UB. 2003.
7. Dugersuren M. Hosbayar O. International law. UB. 1999. 436 p.
8. Sukhbaatar A. Bayarbaatar S. International Law and War.,UB. 2009.199p., ISBN-978-99929-873-2-4.
9. Brown J. Chuluunbat V. Fundamentals of National Security Theory. Ulaanbaatar, 2012, ISBN 978-99962-1-587-2, 269 p.
10. Workshop on the need, requirements, and implementation methods of establishing a national integrated airspace control and air traffic control network in Mongolia, UB., 2005. 43 p.
11. Cir 330 AN/189 “Cooperation between civil and military authorities in air traffic management” ICAO 2011, ISBN 978-9231-900-7.