

APPLICATION DEVELOPMENT FLIGHT CLEARANCE INFORMATION SYSTEM TO SUPPORT NATIONAL AIRSPACE SECURITY

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Abstract

Every country has full and intact sovereignty over the airspace within its territory, which serves as an important foundation for the regulation and management of airspace as an integral part of the state, including Indonesia. On one hand, the vastness of Indonesia's airspace presents opportunities for management and utilization to enhance the national economy. However, on the other hand, this condition also poses significant threats, particularly regarding the use of airspace by foreign aircraft, both civilian and military. These threats include acts of terrorism, unauthorized violations of air border administration, and misuse of permits while crossing, transiting, or staying in Indonesia. The Indonesian National Armed Forces (TNI), as a state apparatus responsible for maintaining national sovereignty, actively participates in safeguarding national airspace by being involved in the issuance of Flight Clearance for unscheduled foreign aircraft operating within national airspace. Since 2011, the licensing process for unscheduled foreign aircraft has been conducted online through a management information system known as the Flight Clearance Information System (FCIS). However, the development of the FCIS application has not been maximized due to several challenges related to Human Resources (HR), facilities and infrastructure, software, and data integration that still need improvement.

Keywords— Sovereignty, national airspace, Flight Clearance Information System, airspace security.

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INTRODUCTION

Securing national airspace is one of the main tasks of the Indonesian National Armed Forces (TNI). This task is very crucial considering that airspace is an integral part of a country's sovereignty (Abi Zaifa, 2024). With the vast airspace owned by Indonesia, which is spread from Sabang to Merauke, there are several forms of threats, one of which is violation of airspace by unscheduled foreign aircraft operating in Indonesia. One of the roles of the TNI in implementing national airspace security is to carry out supervision and control of unscheduled foreign aircraft flights through the issuance of Security Clearance as one of the requirements for issuing Flight Clearance. In issuing the Security Clearance,

the TNI collaborates with other ministries and institutions through an online application, namely the Flight Clearance application.

Clearance Information System (FCIS). FCIS is an application developed by the Ministry of Foreign Affairs, TNI and Ministry of Transportation to support the management of unscheduled foreign aircraft flight permits in national airspace to be more effective and efficient. This application was created with the aim of simplifying the process of granting flight permits, which previously may have required a long process because it was still manual.

In general, the FCIS application has been operating well and is very helpful in the process of identifying unscheduled foreign aircraft that will enter national airspace, however, in the implementation of flight supervision, problems are still often found in the form of differences in flight data submitted to FCIS with real flight data (Callsign, Registration Number, Route and Crew Name) which is caused by the lack of integration of Flight Clearance data on FCIS with Flightplan data on the Web Base Flightplan (WBF LPPNPI) so that the FCIS application needs to be further studied to be developed so that its role in the identification process in airspace security operations is even better.

This study aims to develop the FCIS application features so that its use can support airspace security more optimally by using qualitative methods and case study approaches. Thus, it is expected that the operation of the Flight Clearance Information System application in the future can be optimal and run well with the integration of data between FCIS and WBF owned by LPPNPI and the addition of a warning system feature if there is data that is not the same between FC and Flightplan so that it will greatly support the implementation of national airspace security operations.

RESEARCH METHODS

Method. The discussion of this manuscript uses a qualitative descriptive method by observing the condition of the Flight Clearance Information System (FCIS) application in order to support the implementation of national airspace security operations. The results of the observations will be analyzed using reference literature in the form of laws and regulations and related instructions.

Approach. The approach used in compiling this manuscript uses a case study approach with interviews with Paban-II/Hublu Sintel TNI staff officers to collect and seek information on problems that occur in FCIS operations to be able to find out the root of the problem and find problem-solving strategies for developing the Flight Clearance Information System (FCIS) application to be more effective and efficient in supporting national airspace security operations.

RESULTS AND DISCUSSION

Human Resource Management. From the results of interviews obtained from Paban II/Hublu Sintel TNI Staff officers, currently the FCIS operation at the TNI Headquarters has obstacles in Human Resources. FCIS which is only operated by one person when faced with workload conditions is far from ideal. In addition, the FCIS

Operator Position is also not yet in the TNI Sintel organizational structure so that it can affect the condition of human resource management. In terms of quality, personnel who operate the Flight Clearance Information System application at the TNI Headquarters also still need to improve their abilities considering that the current operator discipline does not have a specialization related to the FCIS application which is full of information technology. In terms of welfare, FCIS operators have not received rewards (special operator allowances) that are commensurate with the responsibility of work that requires 24-hour readiness. If associated with the theory Armstrong (2009:17) therefore, the quality, quantity and welfare of FCIS operators currently need to be improved.

Facilities and Infrastructure. Based on information obtained from the Paban II/Hublu Sintel TNI Staff officers, currently the facilities and infrastructure used to support the Flight Clearance Information System operations are still very minimal and sometimes become obstacles in the Security Clearance issuance process. The smooth operation of the Flight Clearance Information System application is not only greatly influenced by the quality of the human resources of the personnel who operate it, but also depends on the quality of the facilities and infrastructure as the main support for the operation of the application. The facilities and infrastructure required in the operation of the Flight Clearance Information System (FCIS) application consist of various components that enable this application to function effectively as follows:

Facilities. Facilities needed in developing FCIS applications include software in the form of a Database Management System to store and manage flight permit data and antivirus and network security to protect data and systems from cyber threats. In addition, FCIS also requires hardware such as computers or workstations used by staff to access and operate applications and communication devices including headsets, telephones, and radio devices for real-time communication with related agencies and authorities. Furthermore, something that is also very important in FCIS operations is an Internet connection and network, namely high-speed Internet to access and operate the system efficiently and an Intranet Network for internal communication between various departments related to aviation.

Infrastructure. Some of the infrastructure needed in the development of the FCIS application include the Operations Center or Control Room, which is a workspace equipped with the equipment needed to operate the system and the Backup Data Center, which is used to store copies of data in case of disaster or system failure.

Software. With software, the risk of errors can be reduced, business processes can be optimized, and personnel training can be easier because they have clear guidelines to follow (Athoillah & Putri, 2023). The Flight Clearance Information System (FCIS) application is operationalized based on several documents as guidelines, both in the form of laws, government regulations, joint agreement documents of related Ministries and Institutions, and technical guidance documents prepared by the TNI Headquarters. From several of these documents, it was found that there were still documents that had not been updated for 13 years (Joint Agreement between the Ministry of Foreign Affairs, TNI Headquarters and the Ministry of Transportation) regarding guidelines for using the

Flight Clearance Information System (FCIS) application which was prepared and signed in 2011. This document needs to be updated by involving LPPNI in the MoU as an Institution that is also active in using the final data/product (FC) produced by the Flight Clearance Information System (FCIS) application.

Application Integration with Other Agencies. In the implementation of national airspace security, there are several ministries and institutions that are responsible for issuing licensing documents, supervision and enforcement (Shodiq et al., 2023). So far, coordination between Ministries and Institutions has been running quite well, but in terms of supervision, there are still several obstacles, especially those experienced by LPPNI as an institution that also assists the TNI in monitoring and supervising foreign aircraft flights entering national airspace (radar and flightplan). Currently, LPPNI has a Web Flight Plan (WBF) system or application that is used by all domestic and international aircraft crews to provide information related to their flight plan data that passes through national airspace.

From the results of case studies in the field, the problem that often occurs is that the crew makes mistakes when inputting data into the flight plan, resulting in different data with the data entered by the flight operator in FCIS. According to the applicable regulations, the difference in data between the flight plan and Flight Clearance data is a form of administrative violation that can cause the flight of the aircraft in question to be delayed until the data is the same. If this happens, the flight operator is required to coordinate for the repair or change of data which of course will take quite a long time. This problem can be overcome by integrating the data from the FCIS process (FC that has been approved) with the aircraft flight plan data that has been inputted in WBF which can be monitored by all Ministries and Institutions competent in supervising flights in the national airspace, namely the TNI (Koopsudnas and its ranks), Ministry of Foreign Affairs, Ministry of Transportation and LPPNI.

CONCLUSION

Based on the research findings above, the following conclusions can be drawn:

- A. Conclusion. TNI Headquarters through TNI Hublu Sintel plays an important role in securing national airspace by issuing unscheduled foreign aircraft flight permit documents through the Flight Clearance Information System (FCIS). Although FCIS operations have been running well, improvements are still needed to optimize its use, including the arrangement of human resource management that mans the system. Improving personnel capabilities and adding FCIS Operator NCO positions are needed to support more efficient operations. In addition, FCIS requires adequate facilities and infrastructure, such as a special room and separate computer devices from other administrative activities. Renewal of the MoU between the Ministry of Foreign Affairs, TNI, and Ministry of Transportation is also important to involve LPPNI in flight supervision, as well as data integration

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between FCIS and LPPNI flightplan data so that flight supervision is more effective.

B. Suggestions. From the results of the discussion above, several suggestions are presented for the development of the FCIS application so that its role in supporting the implementation of national airspace security operations is maximized as follows:

- Validation of TNI Sintel Organization. In order to increase the quantity and quality of TNI Sintel Flight Clearance Information System (FCIS) operator personnel, it is necessary to validate a new organization by adding FCIS operator NCOs under the Foreign Aircraft Patrol function.
- Construction of FCIS operating room. The construction of Flight Clearance Information System (FCIS) operating room is very much needed to increase the capacity and efficiency of operator work.
- Initiating the Renewal of the Cooperation Agreement on Flight Clearance for Unscheduled Foreign Aircraft. The previous Cooperation Agreement was implemented by three Ministries and Institutions, namely the Ministry of Foreign Affairs, the TNI and the Ministry of Transportation. Considering that the Indonesian Air Navigation Service Provider (LPPNPI) is also a state institution that is directly involved in the supervision of unscheduled foreign aircraft flights, it is recommended that the TNI Headquarters initiate the preparation of a new cooperation agreement on Flight Clearance for Unscheduled Foreign Aircraft by involving LPPNPI in it so that efforts to integrate the system owned by LPPNPI with FCIS can run smoothly.

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