

Renewal Study of LoCa Between ATS RO Unit and Approach Combined With Tower Unit Perum LPPNPI Ternate

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Abstract— An Air Traffic Controller (ATC) can be easily disrupted by several factors. At the AirNav Ternate Assistant Branch Office, the author observed several factors that could disturb the performance of an ATC. These factors include the need for ATC to directly monitor the AFTN (Aeronautical Fixed Telecommunication Network) to discover flight plans and flight-related news. Each working unit must have good coordination. In the LOCA (Local Operating Control Area) between ATS RO (Area Control Center) and APP (Approach Control) combined with TWR (Tower), it is not clarified that ATS RO personnel inform the TWR unit about flight plans and flight-related news. Moreover, there is a lack of authority and responsibility for each unit, making it unclear what the exact authority and obligations of each unit are in carrying out their tasks. The research employed by the author involves qualitative observational research methods. The study led to the renewal of the LOCA between ATS RO and the APP combined with TWR in Ternate. This renewal includes the delineation of authority for each unit and the responsibilities that each unit must carry out. There is coordination regarding the notification of an aircraft's capabilities in using PBN (Performance-Based Navigation) or RNP (Required Navigation Performance) from the ATS RO unit to the APP combined with the TWR unit in Ternate. This coordination is achieved using available communication tools.

Keywords—LOCA, Coordination, ATS RO

I. INTRODUCTION

The Air Traffic Control Unit is established to provide air traffic services, flight information services, and emergency services within the control area, control zone, and aerodrome control tower or area control center. (PM 65 Tahun 2017, 2017)

In its implementation, an ATC must be able to maintain and facilitate flight efficiency, which is outlined in the 5 Primary Objectives of Air Traffic Services. These are: 1. Preventing collisions between aircraft in the air. 2. Preventing collisions between aircraft or aircraft and obstacles (obstructions) in the maneuvering area. 3. Facilitating and maintaining the orderly flow of air traffic. 4. Providing guidance and information for flight safety and efficiency. 5. Providing notifications (information) to relevant

organizations for search and rescue assistance and assisting those organizations when needed. (PM 65 Tahun 2017, 2017)

When an ATC is in control, it can sometimes be easily disrupted by several factors. At the AirNav Subsidiary Office in Ternate, the author observed several factors that can disrupt the performance of an ATC. These factors include the ATC having to monitor AFTN directly to find out about flight plans and other flight-related news.

Workload is a construct, i.e. a process or experience that cannot be seen directly, but must be inferred from what can be seen or measured. Research, theory, models and definitions of workload are inter-related and there are numerous reviews of workload and its measurement (Jorna 1991)

Workload is related to information processing theory. It is assumed that non-automated tasks require the allocation of resources and that workload reflects the overall level of demand for resources. The prevailing models define overload as an excessive demand on perceptual and cognitive resources (visual and auditory perception, memory and attention, among others) with respect to the processing capacities (Wickens 1984).

The number of aircrafts (N) a controller manages simultaneously at a given time has been the most used objective data to estimate his workload. Quite easy to record and closely linked to the "ideal" workload value, it has been proposed as a workload index in many studies. However, N is not a perfect index: how aircrafts are spread over space and time heavily bias this index (Cellier, De Keyser and Valot 1996).

The Air Traffic Service Reporting Office (ATS RO) unit, which is supposed to provide information related to flight news, is not performing its duties and functions comprehensively, which can disrupt the performance of the ATC.

Furthermore, every working unit should have good coordination, which allows each unit to understand its respective duties and responsibilities. However, the author found that there is a lack of task and duty distribution outlined



in the Letter Of Coordination Agreement (LOCA) between the ATC unit and ATS RO. Therefore, there is a need for an updated Letter Of Coordination Agreement (LOCA) that can clarify the tasks and responsibilities among these units.

Coordination is defined as the process of integrating the goals and activities of separate units within an organization to efficiently achieve the organization's objectives. (Hasibuan, 2001:85)

Coordination is the arrangement of relationships in joint efforts to achieve common goals. It is the process of organizing tasks from various individuals or groups into an integrated whole in the most efficient manner possible. (S.P. Siagian, 2001:23)

Coordination is a sequence of activities that connect and align each step of organizational activities to achieve swift and accurate movement toward predetermined objectives. (Syarifuddin 1996:22)

Air Traffic Service Reporting Office (ATS RO) is A unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure.(ICAO, 2018) One of the tasks of ATS RO is to ensure that the flight plan has been sent before the aircraft takes off.

The ATS RO has the authority and responsibility as follows: to provide information in a timely manner about aeronautical matters such as flight plans and other flight-related news to the Tower unit; to ensure that all flight administration processes are completed when transferring flight plan data to the Tower unit. Some of the messages that must be sent by an ATS RO include departure messages (flight departure information), arrival messages (flight arrival information), delay messages (flight delay information), cancel messages (flight cancellation information), NOTAMs (Notices to Airmen, announcements distributed to relevant flight operational parties containing information about conditions at the airport facilities, services, procedures, or known time-critical conditions), and flight plans.

All of this information must be conveyed by an ATS RO to the relevant units so that each related unit can be aware of the current conditions regarding facilities and services at an airport. A flight plan is specific information provided and communicated to the units providing air traffic services regarding the flight's destination, desired flight path, and various aspects of the flight to be conducted..

Unless repetitive flight plan procedures are being applied or current flight plan messages are being employed, filed flight plan messages shall be transmitted for all flights for which a flight plan has been submitted with the object of being provided with air traffic control service, flight information service or alerting service along part or the whole of the route of flight.(ICAO, 2016)

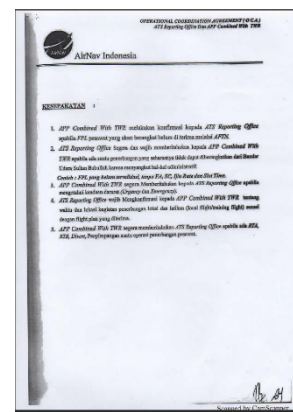
The flight plan consists of several items, ranging from items 1 to 19, each of which contains points needed by both ATC and the pilot in carrying out their responsibilities. For example, in item 7, it contains Aircraft Identification; item 13 covers Departure Aerodrome and Times; item 15 relates to the

flight route; item 16 includes Destination Aerodrome And Total Estimated Elapsed Time, Destination Alternate Aerodrome(s); item 10 pertains to aircraft equipment, such as PBN (Performance Based Navigation) approved equipment; and item 18 contains Other Information.

Item 18 contains additional information needed regarding the aircraft's status and its capabilities during the flight. One of the contents of item 18 itself is the specification of performance-Based Navigation (PBN), including RNAV (Area Navigation) and RNP (Required Navigation Performance) specifications. Performance Based Navigation (PBN) is RNAV and RNP specification. The meaning of PBN itself is, The performance-based navigation (PBN) concept specifies that aircraft RNAV system performance requirements be defined in terms of accuracy, integrity, availability, continuity and functionality required for the proposed operations in the context of a particular airspace concept, when supported by the appropriate navigation infrastructure. In that context, the PBN concept represents a shift from sensor-based to performance-based navigation. Performance requirements are identified in navigation specifications, which also identify the choice of navigation sensors and equipment that may be used to meet the performance requirements. These navigation specifications provide specific implementation guidance for States and operators in order to facilitate global harmonization.(ICAO, 2008)

In summary, PBN (Performance-Based Navigation) represents the performance of the RNAV (Area Navigation) system in terms of accuracy, integrity, availability, continuity, and functionality, all of which are essential for proposed operations within the context of specific airspace concepts. RNAV, on the other hand, is a navigation method that allows aircraft to navigate along desired paths within the coverage area of ground navigation stations (VOR, DME, and ADF).

The lack of detail in the LOCA (Letter Of Coordination Agreement) between ATS RO and the APP Combined with TWR Ternate unit is evident, particularly in the absence of a comprehensive explanation of the authorities, responsibilities, and the form of coordination among the relevant parties. In the previous LOCA, it was only mentioned that APP Combined with TWR is required to inform if there are FPLs (Flight Plans) that have not been received via AFTN, while ATS RO is obligated to notify if there are flights that cannot be dispatched due to unresolved administrative matters, among other things..



Picture 1 LOCA ATS RO dengan unit APP Combined with TWR Ternate

The author has found that the LOCA (Letter Of Coordination Agreement) lacks clear delineation of authorities and responsibilities between units, such as ATS RO's obligation to provide information regarding FPLs (Flight Plans), flight news, including delay messages, departure messages, arrival messages, and other necessary information.

As a result, with the RNP (Required Navigation Performance) procedure in place at the Airnav Ternate Subsidiary Office, controllers are constantly searching for which aircraft can use RNP PBN. Controllers must refer to the existing FPLs to determine whether an aircraft can use PBN RNP or not. It would be advisable for the ATS RO unit to provide information to the TWR unit regarding an aircraft's capability to use PBN RNP so that controllers can focus more on managing the traffic at hand and be more efficient in their operations without the need to constantly check FPLs to determine whether an aircraft is capable of using PBN RNP or not.

II. METHOD

The research methodology employed by the author involves qualitative observational research. Qualitative observation is used to understand the background with different functions, including objective observation, interpretative interaction, and interpretative grounded observation. (Gerdner C.B.,1988).

Observation in the concept of experience can arise suddenly, based on common phenomena, events, social phenomena, patterns, and specific types of behavior. Observation is the initial step toward a broader focus of attention, ranging from participant observation to practical observation as a method in its own right. This type of observation can be traced back to the theoretical foundations of interactionist-symbolic methods because, in gathering data, researchers can interact with their research subjects. (Denzin & Lincoln, 2009: 524).

Some qualitative researchers consider observation to be no more than the activity of collecting visual data. They see observation as a supporting activity with limited benefits and as an inappropriate method for obtaining information.(Hasanah, 2016)

Observation is described as the activity of recording a phenomenon with the assistance of instruments and documenting it for scientific or other purposes. Furthermore, it is said that observation is a collection of impressions about the surrounding world based on all the sensory perceptions of a human being. (Morris, 1973:906)

In its simplest form, observation can be defined as the act of examining an object or a focal issue. Therefore, observational methods can be seen as a learning method for students through the examination of an object or a focal issue presented or conveyed by the teacher through media or the surrounding environment.(Pujiyanto, 2021)

In conclusion, the technique employed by the author is to directly observe the deficiencies in the LOCA between the ATS RO unit and the APP Combined with TWR of Perum LPPNPI Branch Ternate. This method was chosen because the author was physically present at the location during the data collection process.

III. RESULT AND DISCUSSION

The LOCA (Letter Of Coordination Agreement) between ATS RO and the APP Combined with TWR Ternate lacks detailed clarity regarding the tasks and responsibilities of each unit. Therefore, there is a need for an update or reconsideration of this LOCA.

The proposed revision of the LOCA between ATS RO and the APP Combined with TWR Ternate includes the following:

a. Authorities and Responsibilities

i. The TWR unit informs the ATS RO unit if there are discrepancies in the received FPLs (Flight Plans).

ii. The ATS RO unit provides information on aeronautical matters, including FPLs and other flight-related news, to the TWR unit at the first opportunity.

iii. The ATS RO unit ensures that all flight administration processes are completed before transferring FPLs to the TWR unit.

b. Coordination

i. The TWR unit notifies if an aircraft is RTA/RTB (Ready Time of Arrival/Ready Time of Departure), diverting, or experiencing operational deviations.

ii. The TWR unit informs ATS RO personnel if an aircraft exceeds the slot time limit.

iii. The TWR unit communicates the ATA (Actual Time of Arrival) and ATD (Actual Time of Departure) of aircraft to ATS RO personnel.

iv. The ATS RO unit provides FPL data to the TWR unit at the first opportunity.

v. The ATS RO unit conveys any changes to FPL data (early, delayed, cancelled, etc.) to the TWR unit at the first opportunity.

vi. The ATS RO unit provides aircraft data to the TWR unit, including:

a) Call sign

b) Point of Destination

c) Route of flight

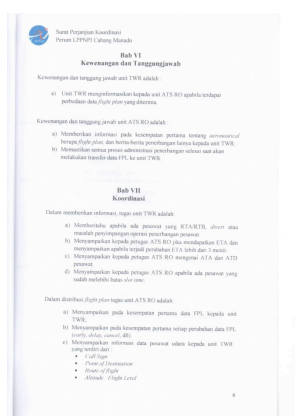
d) Altitude or flight level

e) ETD (Estimated Time of Departure)

f) Type of Aircraft

g) Any other relevant information (PBN RNP capability)

The coordination regarding the notification of an aircraft's capability to use PBN or RNP from the ATS RO unit to the APP Combined with TWR Ternate unit, communication is facilitated using available communication tools. This coordination streamlines the controller's work when they are not aware of an aircraft's capability to use RNP or PBN. Controllers are typically required to monitor FPLs, but with this coordination, they don't have to constantly monitor FPLs to determine an aircraft's RNP or PBN capabilities.



Picture 2 LOCA ATS RO dan TWR Manado

IV. CONCLUSION

In the LOCA between the ATS RO unit and the APP Combined with TWR unit, there is a lack of clarification regarding the ATS RO personnel notifying the TWR unit about FPLs and flight-related news. Additionally, there is no clear delineation of authorities and responsibilities for each unit, making it uncertain what each unit's authority and obligations are in carrying out their tasks.

The presence of PBN or RNP procedures at Airnav Ternate creates difficulties for controllers in identifying which aircraft can use PBN or RNP and which cannot. As a result, controllers must consult FPLs to determine an aircraft's capability to use PBN RNP. Therefore, there is a need for ATS RO personnel to inform the TWR unit about FPLs to facilitate the controller's focus on handling existing traffic.

By updating the LOCA between the ATS RO unit and the APP Combined with TWR Ternate unit, coordination and responsibilities between each unit can be clearly defined.

Coordination within an organization is an active arrangement, not a passive one that simply involves creating rules for every movement and activity and the performance of superiors and subordinates with interconnected duties, responsibilities, and authorities. This arrangement aims to prevent inconsistencies and overlapping activities that can result in waste and have a negative impact on morale and work discipline. (Juliawati Nia, 2012)

The benefits of coordination within an organization. (Sutarto 2015: 146-147), is :

- Avoiding feelings of detachment between organizational units or between officials within the organization.
- Preventing the belief that the organization or a particular position is the most important.
- Coordination helps prevent potential conflicts between organizational units or officials.
- Coordination can prevent disputes over facilities.
- Avoiding the possibility of overlapping responsibilities for an activity by organizational units or duplication of tasks by officials.
- Preventing the possibility of vacant responsibilities for officials.
- Fostering awareness among officials to assist each other, especially among officials within the same organizational unit.
- Fostering awareness among officials to inform each other of shared issues, thus avoiding harm to one official at the expense of others.
- Ensuring consistency in actions among officials.
- With coordination, there is an assurance of consistent actions among related units.

When updating the LOCA, additions were made regarding the tasks and authorities between units, such as ATS RO personnel informing about an aircraft's capability to use PBN RNP. This facilitates controllers management of existing traffic without the need to constantly refer to FPLs. Furthermore, coordination between the ATS RO unit and the APP Combined with TWR Ternate unit was elaborated upon.

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