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Overview of the Implementation of Flight Watch in Flight Traffic Services with Flight Operators

1st Muhammad Aditya Ramadhan
Cadets of Indonesia Aviation Polytechnic Curug
Tangerang, Indonesia
muh.adityar99@gmail.com

2nd Nunuk Praptiningsih
Lecture of Indonesia Aviation Polytechnic Curug
Tangerang, Indonesia
nunukstpi@gmail.com

Abstract— **On the Job Training activities are one of the activities that must be carried out by cadets. One of those who received this On the Job Training (OJT) activity was the Tarakan Branch of LPPNI, which is one of the airports that serves various types of flights, including pioneer, domestic, international and local flights. The data taken by the author is real data that the author obtained when carrying out OJT activities from September to August 2022. There were several obstacles that the author encountered when carrying out On the Job Training activities. One of them is inadequate communication from several aircraft because they do not carry High Frequency (HF) radio equipment. So that the aircraft that should be able to communicate with Balikpapan Info on the HF radio channel cannot communicate. And there is no sending of departure messages and arrival messages to the Tarakan APP which can cause disruption to the separation that is being implemented, because planes coming from the pilot area will suddenly appear on the controller's radar. By implementing the Flight Watch procedure, it is hoped that this incident can be minimized, as well as reviewing aircraft that do not carry equipment as stated in the Flight Plan as appropriate.**

Key Word : Aviation, Navigation, Air Traffic Services

I. INTRODUCTION

The world of aviation is closely related to the performance of an Air Traffic Guide. An Air Traffic Controller (ATC). An ATC is fully responsible for the safety of flight operations. In practice, an ATC is required to go through certain training as stated in the Minister of Transportation Regulation Number PM 14 of 2019[1] concerning Aviation Safety Regulations section 69 concerning License, Rating, Training and Aviation Navigation Personnel Proficiency will obtain a rating for the first time in an aviation traffic service unit and must carry out On the Job Training. High quality human capital can increase productivity and ultimately have an effect on encouraging[2] cadets to become competent individuals from various experiences, both in work and in society which are obtained directly from the field. In this program, cadets are required and trained to apply the theories acquired during their education, at airports that have been determined by the study program, one of which is Juwata International Airport, Tarakan.

In Juwata International Airport, specifically at the Approach Control Procedural (APP) Unit of the Tarakan Branch Aviation Navigation Service Provider Corporation or better known as Airnav Tarakan Branch. Juwata Airport is located in Tarakan City, North Kalimantan province. The airport is located only about 3 km from the city center. Juwata International Airport Tarakan, North Kalimantan, with a runway length of 2250 meters x 45 meters[3]. The Approach Control Procedural (APP) unit of Airnav Denpasar Branch has the responsibility of providing Approach Control Services at the Juwata International Airport Control Zone. Based on the Standard Operational Procedure (SOP) [4], the Tarakan APP area has a range of 100 Nm centered from "TRK" VOR / DME and has an extension of the traffic corridor centered from "BRZ" VOR / DME to point MABOT, so that the Tarakan APP airspace has a range of 182 Nm centered from "TRK" VOR / DME.

In the implementation of air traffic services it is felt that there are still existing problems, for example is aircraft operating in the Uncontrolled Airspace area which is not the jurisdiction area of the Tarakan APP/TMA.

As is known at this time the area of responsibility for the logging traffic service in Tarakan can be described horizontally and vertically as follows:

- 0 NM – 30 NM "TRK" VOR/DME = 0 – 6000 ft with CLASS C airspace classification
- 30 NM – 60 NM "TRK" VOR/DME = 6000 ft – FL 150 with CLASS B airspace classification
- 60 NM – 100 NM "TRK" VOR/DME = FL 150 – FL 245 with CLASS B airspace classification
- Corridor Traffic Level = Along the line between "BRZ" VOR/DME to MABOT on W-18. 10 NM to the left and 10 NM to the right W-18 = 6000 ft – FL 245 with CLASS B airspace classification

The Tarakan APP unit handles very diverse traffic every day including departure, arrival, local training, as well as overflying traffic with various types of aircraft operating, both fixed wing and rotary wing, from types B737, AT72, C208, KODIAK, C212, DHC6 etc. . Which consists of VFR and IFR flights which make the control zone area and the terminal controlled area of Tarakan quite complex. Meanwhile, all of the traffic is regulated by the APP unit which provides air traffic services in the form of a Procedural Approach Control. As for flights outside the Tarakan area, APP is in the Uncontrolled Airspace area which is the responsibility of the Balikpapan FSS area. The uncontrolled airspace itself is airspace that is provided with flight traffic

services in the form of flight information services, alerting services and air traffic advisory services[5]. .Since ATC is not actively controlling aircraft in uncontrolled airspace, there are no separation standards between aircraft. [6]

For several flight routes, Tarakan APP did not receive information on departure or arrival aircraft from airports in the area. For example, planes flying to the south west area of Tarakan APP outside the Tarakan APP area. Where planes that should be able to coordinate with Balikpapan Info do not carry out two-way communication, this is because the planes flying to the area do not have HF radio equipment to be able to communicate with Balikpapan Info. The flight information service provides flight and other information that may affect safety. FIS does not ensure separation of aircraft, but can provide information about other air traffic near the aircraft [7]. On the other hand, for communication processes that require longer distances, HF communication equipment is a better choice as they can cover up to 10 decameters. Airlines also utilize it for their necessary communication with the ground stations [8]. This causes aircraft flying into the area to not get air traffic services from the Balikpapan FSS ATS Unit, as well as to the absence of arrival and departure information (departure messages and arrival messages). Where it can greatly interfere with planning of control service planning from the ATC on duty.

Events in the field show that the arrival aircraft flying from the area will only communicate with the Tarakan APP unit

Examples of cases that the author found while carrying out On The Job Training are as follows:

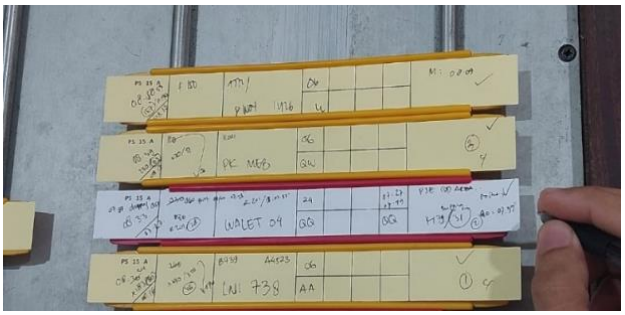

Fig. 1. FPS (Flight Progress Strip) example case

- WON 1426 with type AT72 from Balikpapan (WALL) to Tarakan. Tarakan APP received data transfer from the Balikpapan radar with an altitude of FL 150 and the aircraft made first contact at 08.13 UTC with position R190, 157 NM TRK VOR/DME. ETA 08.53
- Then the second aircraft with type B739 from Makassar to Tarakan with an initial altitude of FL 265, Tarakan APP received data transfer from Ujung Pandang and the aircraft made first contact at 08.16 UTC with a position at crossing radial 183, 80NM TRK VOR/DME ETA 08.24
- Meanwhile, at that time there was a WALET 04 aircraft that was carrying out a local flight around the Tarakan area at an altitude of 3000ft and would maneuver around Tarakan as stated in the NOTAM below
- Then at the same time the PK MEB aircraft with the KODIAK type of aircraft that flew from Long Sule to Tarakan did not receive a data transfer estimate from any unit, and succeeded in first contact at 08.17 at position R220, 63 NM TRK VOR/DME with a height of 110ft with ETA ARR Tarakan 08.39

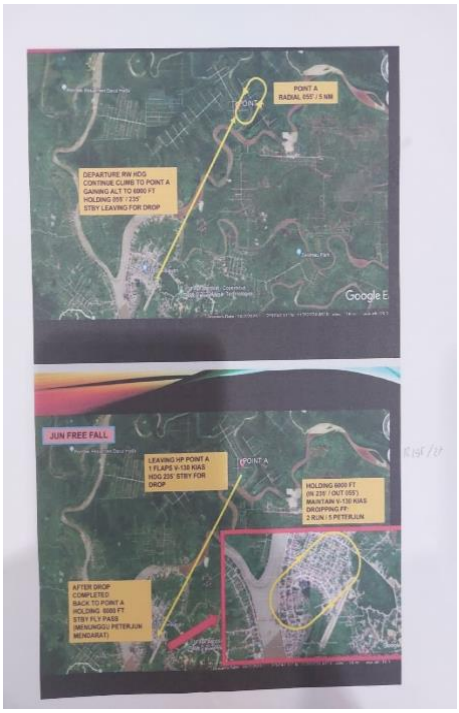

Fig. 4. NOTAM of the WALET 04 aircraft

The PK MEB aircraft is considered to be able to disrupt the control plan of an ATC. This unexpected traffic has actually often occurred in Tarakan. Specifically, the plane aims to fly towards South West Tarakan. Airplanes flying to the South West Tarakan TMA area outside the Tarakan TMA area usually do not send information on departure or arrival from the respective flight operators.

According to the LOCA written between BPN FSS and Tarakan APP, this traffic should be controlled and handled by the Balikpapan FSS unit[9], but the fact is that in the field many planes do not carry HF radios when flying to this area, so they cannot carry out two-way communication between the pilot and Balikpapan. FSS. In the field, aircraft flying to the South West Tarakan area will continue to monitor their respective traffic on radio frequency 122.4, which will make it easier for them to monitor the position of other aircraft in the area.

This is considered to be dangerous for aircraft flying to this area, because aircraft that specifically fly to the South West Tarakan area outside the Tarakan TMA are not handled by any unit, this is also added to the fact that there is no arrival or departure news sent by the operator. to Tarakan APP. So if there is something undesirable, the ATS unit responsible for the flight cannot carry out Alerting Service actions for aircraft flying to the South West Tarakan APP area outside the Tarakan TMA area

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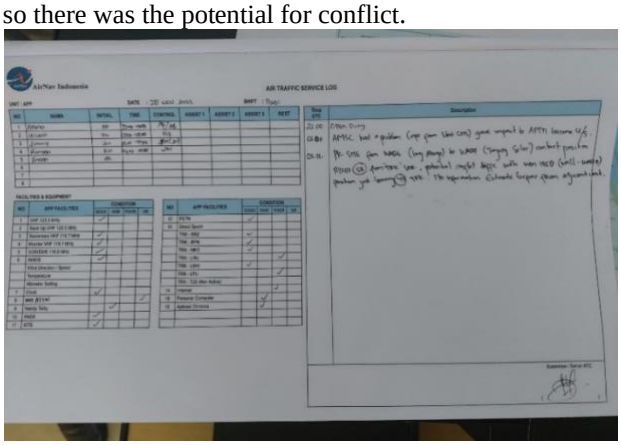

Fig. 4.13 ATS Log November 28, 2022

At that time the WON 1358 aircraft from Balikpapan (WALL) – Tanjung Selor (WAQD) received a transfer estimate from BPN Radar and successfully made first contact at 01.59 UTC and was positioned at 49 Mabot maintain FL 150. At that time the controller on duty had given instructions Next, WON 1358 will descend to an altitude of 6000ft taking into account that there is no traffic conflict with the aircraft.

However, at 02.10 UTC the PK SNE Long Alongo (WAQE) – Tanjung Selor (WAQD) maintaining A110 aircraft did not receive a transfer estimate from any adjacent unit so the aircraft became unexpected traffic. The plane also did not make prior contact with the Tarakan APP, but the controller on duty at that time saw traffic on ADS - B (Automatic Dependent Surveillance – Broadcast) which appeared to be heading towards Tanjung Selor (WAQD) and took the initiative to call the plane. .

After the aircraft successfully carries out two-way communication with the controller, an estimate can be obtained from the aircraft. After this, the WON 1358 aircraft, which had previously been given instructions to descend, was then given a re-clear to then descend to FL 120 initial first and wait until the traffic with PK SNE was truly declared separate.

This could have a very dangerous impact if the ADS - B facility in Tarakan is not operational. The departure message from the Long Alongo area (WAQE) was also not sent by the previous flight operator. Making the flight's arrival unpredictable in the Tarakan APP area

II. METHOD

To carry out some of this writing, of course the author has made various observations. Observation itself is the activity of observing, accompanied by sequential and detailed recording, regarding the elements that appear in the phenomenon or object being studied. [10]

For this study, a qualitative descriptive approach has been chosen as the best way to conduct the research. This approach is a good fit when the main goal is to provide a simple and clear explanation of something.

The qualitative descriptive method is a research method based on the philosophy of postpositivist used to research the conditions of natural objects (as opposed to experiments) where the researcher is the key instrument. Data collection techniques are carried out using triangulation (combination), and data analysis. is inductive/qualitative, and the results of qualitative research emphasize meaning rather than generalization[11].

With a qualitative descriptive approach, researchers focus on understanding the basic details. To know things who was involved, what happened, and where it all took place. This approach is great for getting a clear picture of things.

A qualitative descriptive approach needs to be the design of choice when a straight forward description of a phenomenon is desired. It is an approach that is very useful when researchers want to know, regarding events, who were involved, what was involved, and where did things take place [12].

This research uses observational data collection techniques which are defined as the activity of recording a symptom with the help of instruments and recording it for scientific purposes or other purposes. It is further said that observation is a collection of impressions about the world around them based on all the capabilities of the human senses. [13].

By adopting the qualitative approach and utilizing observational data collection, it will give a deeper understanding, and solutions. This method allows the researcher to dig beneath the surface and gain a profound understanding of the subject matter.

III. RESULT AND DISCUSSION

Based on the problems that have been explained, there are still many aircraft that do not carry the equipment listed in the Flight Plan. Where the Flight Plan that has been sent must actually contain information about an aircraft, in this case the equipment carried by each aircraft. if the data content is incorrect then there will be problems with flying permits aircraft and identification if it occurs problem with the plane [14] .Airplanes flying to uncontrolled airspace areas, especially those flying to the South West Tarakan Area, must continue to be provided with alerting service by the AFIS Balikpapan Info Unit. On the territory of FIR, the Flight Information Service (FIS) and the Alerting Service are provided [15]. .By not carrying the equipment listed in the flight plan, the plane usually only monitors its own traffic with other planes that also fly to the area using radio frequency 122.4. This is not entirely wrong because planes that fly can still maintain separation between planes that also fly into the area. However, planes flying to this area do not receive one of the Air Traffic Services, namely alerting services, which every plane should still receive this service. It is feared that when a plane flying to this area experiences flight problems or even an incident or accident, no unit will know this information, because the plane cannot carry out two-way communication between Balikpapan Info and other units.

Furthermore, planes flying to the south west Tarakan TMA area also do not send arrival and departure

messages to the Tarakan APP. This could have endangered the separation that had been applied by the ATC on duty. Because aircraft that do not send departure and arrival messages can appear at any time at a height that might endanger separation. In the data that has been taken in the field, this incident actually happened when the author carried out On the Job Training at Perum LPPNPI Tarakan. At that time there happened to be a NOTAM from the WALET 04 aircraft which was going to carry out a local flight in the Tarakan area at an altitude of 3000 ft. at the same time there were also several planes that had received the estimated time of arrival from Balikpapan Radar and Ujung Pandang Control. However, there are planes that do not send ETA to Tarakan APP that fly from Long Sule to Tarakan. So when this happened, the PK MEB plane from Long Sule to Tarakan disrupted the existing separation because the plane made contact and appeared suddenly without any data being received beforehand.

With several existing problems, the author suggests several procedures that might be a consideration that can be implemented. One of them is the application of Flight Watch that can be applied. Flight Watch is an extension of the process of operations control, which allows this process to be more proactive. Active monitoring by ground based personnel, of all things which may affect the planned completion of an en route flight, allows up-to-the-minute tactical planning. It also allows the Aircraft Commander to inform the operator of changes of intention such as, for example, an intention to land at an alternative destination for technical reasons, so that the operator can make appropriate handling arrangements and seek clearances.

With this flight watch tone, planes flying to the south west area of Tarakan APP can send messages to the nearest AFIS units, so that later AFIS units that have received estimated arrival can send and forward the message to Tarakan APP

The author feels that there are several suggestions that might be one of the considerations for the future to be implemented:

- Re-assessment regarding the equipment carried by each aircraft by the responsible parties. So that information about the equipment carried by each aircraft contains real information
- Review the implementation of flight watch by making procedures with AFIS units around Tarakan TMA.

IV. CONCLUSION

The author can conclude that there are still many flights specifically flying to Uncontrolled Airspace areas that do not receive the Alerting service they should. Where when the plane flies to the South West Tarakan area outside the Tarakan APP area, the plane which should be delegated to Balikpapan FSS cannot carry out two-way communications, but instead the plane continues to monitor the traffic of each plane on frequency 122.4.

This is considered to make it easier for pilots to maintain their separation from other aircraft that also fly into the area. The plane flew to this area which could not carry out two-way communication with the Balikpapan FSS because the plane did not carry HF radio facilities, making the plane fly without being held by any unit. This means that aircraft that have completed the flight plan do not receive the alerting service that should be provided by the ATS unit.

When the plane flies to the South West area outside the Tarakan APP area, the flight operator does not send a departure message or arrival message to the unit in charge, so sometimes the plane can disrupt the control plan of the ATC on duty.

It is necessary to review the Flight Watch service in providing Air Traffic Services and create additional LOCA (Letter of Operational Coordination Agreement) for operators so that it can be implemented as well as possible. With this Flight Watch, it is hoped that special flights for aircraft flying to uncontrolled airspace areas outside the Tarakan area will be more proactive. The flight watch method itself is a method for sending departure and arrival news which can be done by pilots by sending news to the nearest AFIS airport. After that, the nearest airport can send the information to the related adjacent unit.

Furthermore, there needs to be another study carried out by the Directorate of Aviation Navigation regarding aircraft flying to the FIR (Flight Information Region) area. To be adjusted accordingly. The author still finds that currently many aircraft that fly do not carry supporting facilities such as HF radios, where the radio functions to carry out two-way communications with units that provide Flight Information Services in Uncontrolled Airspace areas. So that the LOCA that has been written in this case the Balikpapan FSS and Tarakan APP can be implemented optimally.

REFERENCES

[1] Peraturan Menteri Perhubungan Nomor PM 14 Tahun 2019 tentang Keselamatan Penerbangan bagian 69 tentang Lisensi, Rating, Pelatihan dan Kecakapan Personel Navigasi Penerbangan

[2] Marlina, L. (2015) Pengaruh On the Job Training Terhadap Kualitas Human Capital Serta Implikasinya Pada Pendapatan Karyawan. Universitas Pendidikan Indonesia

[3] AIM Indonesia. 2022. WAQQ Aeronautical Information Publication (Vol II). AIP Indonesia.

[4] AirNav Indonesia. 2019. Approach Control Service Standard Operating Procedure (APP). Tarakan : Perum LPPNPI Tarakan Branch.

[5] Peraturan Menteri Perhubungan Nomor PM 55 Tahun 2016 pasal 15 Tentang Tatanan Navigasi Penerbangan Nasional

[6] Christoper D. Lowe, (2014) Predicting Pilot Intent and Aircraft Trajectory in Uncontrolled Airspace

[7] Galant, M et. all (2019) Risk Assessment for Flight In Uncontrolled Airspace Under Visual Flight Rules

[8] Wasi. M, (2018) The needs of aircraft avionics' radio line replaceable unit repair center at UniKL MIAT

[9] LOCA *(Letter of Operational Coordination Agreement)* antara Balikpapan FSS dan Tarakan APP tanggal 15 Januari 2020

[10] Umi Narimawati. 2008. Metodologi Penelitian Kualitatif dan Kuantitatif, Teori dan Aplikasi. Bandung : Agung Media

[11] Sugiyono, 2016. Metode Penelitian Kuantitatif, Kualitatif, R&D. Bandung : IKAPI

[12] Lambert, V. a., & Lambert, C. E. (2013). Qualitative Descriptive Research: An Acceptable Design. Pacific Rim International Journal of Nursing Research, 16(4), 255–256.

[13] Morris, S., & Shin, H. S. (2007). Optimal communication. *Journal of the European Economic Association*, *5*(2-3), 594-602
[14] Pravitasari. B, (2021) Pengaruh Pengisian Data Flight Plan oleh Flight Operator Officer (FOO) Terhadap Workloads Personel ACO Di Perum LPPNPI Cabang Makassar Air Traffic Service Center (MATSC)
[15] Laurentiu. B, (2020) the 15th International Scientific Conference "DEFENSE RESOURCES MANAGEMENT IN THE 21st CENTURY" Brașov, November 12th -13th 2020