

# *Helicopter Entry Point Design At LPNPI Pontianak Branch Office*

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**Abstract** – This research aims to design the Helicopter Entry Point needed to support flights at Supadio International Airport. This research was conducted at the General Company of The Aviation Navigation Service Provider Agency (LPPNPI) Pontianak Branch in January to July 2020. The method used is research method Research and Development with research population is ATC (Air Traffic Controller) in charge of ATC Pontianak unit, and expert in the field of ATC education and expert in the field of designer. The results of this study, concluded that, the unavailability of helicopter entry point facilities make it difficult to regulate the movement of helicopters in the vicinity area. This is also supported by the statements of several ATCs working at Airnav Pontianak according to their experience. And according to the results of interviews with several ATCs in Airnav Pontianak also the manufacture of helicopter entry points is considered to improve safety and efficiency.

**Keywords** – *Research and Development, Holding Fix.*

## I. INTRODUCTION

Supadio International Airport, West Kalimantan is an airport that serves both domestic and international flights. In addition, Supadio International Airport serves unscheduled flights, such as military, local flights, and helicopters. Based on data obtained from the Statistics Book of the Ministry of Transportation in 2018, Supadio International Airport experienced an increase in the amount of traffic up to 67.8% in the five-year period from 2014 to 2018.

When the dry season comes, there are often forest and land fire disasters in the West Kalimantan (Lih) area. Appendix 5). Forest and land fires during the dry season cause smoke that resembles thick fog to cover some areas in West Kalimantan including Pontianak City. To solve this problem, the National Disaster Management Agency (BNPB) brought waterbombing helicopters at Supadio International Airport.

Waterbombing helicopters themselves are tasked with extinguishing fires in several areas around West Kalimantan. The movement of waterbombing helicopters in the airspace of Supadio International Airport is quite numerous. The area of this waterbombing helicopter is not fixed every day. Air traffic services provided to helicopters certainly also need to get special attention. Due to the uncertainty of the flight path to be traveled, it can affect the safety and efficiency in flight traffic services. While the unavailability of helicopter entry point facilities makes it difficult to manage the movement of helicopters.

In addition, the absence of an entry point will make the pilot's ambiguity about the helicopter's flight path. Because it has to continue to coordinate between the ATC and the helicopter itself causes the helicopter that will land to make its own decisions regarding the landing path, so that traffic to or from Supadio International Airport will also be disrupted.

## II. RESEARCH METHODS

According to Sugiyono (2015:40) research and development (R&D) methods, namely: research and development methods can be interpreted as a scientific way to research, design, produce and test the validity of products that have been produced. The lowest research and development (level 1) position is to do research but not continued by making products and not conducting field testing. In this case the research only produced a product design, and the design was validated internally (the opinion of experts and practitioners) but not in production or not tested externally (field testing).

## III. DATA COLLECTION METHODS

In this study the authors used 3 data collection techniques in collecting the necessary data, namely:

### 1. Literature

This data collection technique is done to find the necessary theoretical basis and gather information relevant to the problem being studied. Data sources used in the form of Annexes, documents, journals, laws, regulations, and other written sources.

### 2. Interview (Unstructured)

In this study the author used unstructured interviews to obtain detailed information from flight data both in the field and documents. Unstructured interview according to Sugiyono (2015:233) is a free interview in which researchers do not use interview guidelines that have been systematically and completely arranged for data collection. The interview guidelines used are only outlines of the issues asked.

In research one and two, the author conducted interviews with three personnel of Air Traffic Controller Perum LPPNPI Pontianak Branch Office who have varied work experience. While in the third study, the authors conducted interviews with experts in the field of procedure design, ATC education experts and ATC practitioners.

### 3. Documentation

Documentation studies are data collection techniques that are not directly shown to research subjects. The documents studied are various, not necessarily official documents but biased in the form of diaries, personal letters, reports, rapt minutes, case notes and others (Aminarno, 2019)

With this technique the authors performed data collection that was not directly shown to the study subjects. The author is looking for research supporting data sourced from Standard Operating Procedure (SOP) Perum LPPNPI Pontianak Branch Office, Aeronautical Information Publication (AIP).

## IV. DATA ANALYSIS METHODS

### 1. Data reduction

Of all the data obtained, the authors summarize, select the main things, and focus on the things that matter, as well as the transformation of the "rough" data that emerged from the written records during the study. Thus the reduced data will give a clearer picture.

### 2. Data Presentation

After the data is reduced, then the author then if the data is in the form of text that is description, if needed assisted with charts, Tables, charts, etc. Thus allowing the author to draw conclusions and take action.

### 3. Verification

Verification is done by the author to know the truth of the design that has been made by the author according to experts in each field that has been determined. Thus, the design made can be tested.

### 4. Using reference materials

In addition to the three data analysis techniques put forward by Miles and Huberman, the authors also use reference materials as support to prove the data that has been discovered by the author. The data used is in the form of documents to support research.

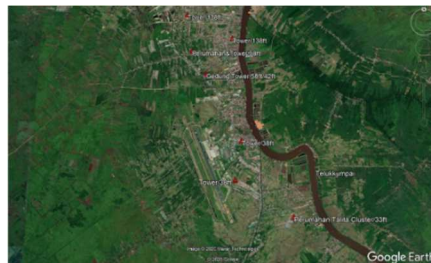
## V. DISCUSSION

Based on the data the authors obtained from literature studies, interviews and documentation. So the author tries to find common views, thoughts and opinions, but does not eliminate opinions from different sides.

Based on observations during on the job training and interview results with ATC at LPPNPI Pontianak Branch Office. The result that the author obtained is that there is no entry point helicopter used for the provision of sufficient separation for aircraft arrival with departure arrival aircraft in the vicinity area. Thus causing efficiency and safety in providing flight traffic services at Pontianak International Airport is disrupted.

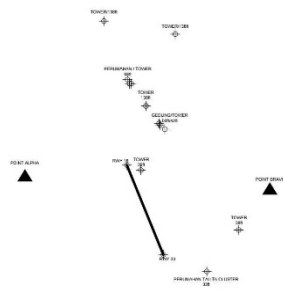
In the manufacture of helicopter entry point design, the stages performed by the author refer to ICAO, Document ICAO 8168 Aircraft Operation as a guideline for manufacture. The process of designing the author's helicopter entry point using Google Earth and AutoCad 2018 applications using geo-coordinate WGS84. As for obstacles, the author uses GlobalMapper to analyze obstacles located in the area of Pontianak Supadio Airport to be designed. Here are the stages in the process of making helicopter entry point:

1. In Document 9426 / ATS Planning Manual, Part 1-2, Chapter 4-3.3, the point to be designed should be in a geographical location and easily visually identifiable by reference to landmarks. In this stage the author uses the GoogleEarth application to determine the landmark or ground refrence that will be used as the entry point.



**Figure 1. Supadio International Airport**

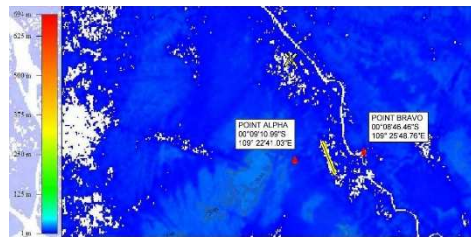
2. Determine the helicopter entry point by analyzing obstacles using Autocad 2018. Valid data such as obstacle coordinates, Runway, VOR, Point that will be designed in input into geo co-ordinal excel WGS84. Then the data will automatically change to the format required in Autocad. After that the data is moved to Autocad application and will appear as shown below:



**Figure 2. Analyze obstacles using Autocad 2018 application**

3. To ensure the point to be designed is far from obstacle, the author uses the GlobalMapper application to know the contours of the soil around the international airport supadio and the point to be designed. In this case, the author has obtained the required

soil contour data. After that the author matched the coordinates of the points used in analyzing obstacles in the Autocad application into the GlobalMapper application itself. The results of this stage can be seen in the picture below:



**Figure 3. Analyze obstacles using the GlobalMapper application**

4. In the document ICAO Annex 11 ATS Appendix 2-3.4, naming at a point must use five letters, easy pronunciation and pronunciation, and do not contain ambiguous meanings. Based on this, the point that the author designed will be named Point ALPHA and Point BRAVO.

In the process of designing the helicopter entry point, the author conducted three stages of research. In the first and second phase of research that has been explained by the previous author, then for the third stage of research, namely validation of the design that has been made to experts in their fields. The author asked for validation to Mr. Maulana Chairul Muchlisin as an expert in the field of design, then Mr. Djoko Jatmoko as an expert in the field of ATC education and ATC experienced in Perum LPPNPI Pontianak Branch Office.

Based on data obtained from literature studies, documentation and interviews, the author created a helicopter entry point to improve flight safety by following the existing regulations. So, below is a design that the author successfully designed.



**Figure 4. Entry point helicopter after being validated**

a. Point Alpha

Point Alpha is in the West and at radial 175 as far as 3.8 NM (nautical mile) from pnk VOR and the point is used for helicopters coming from the Northwest, West, Southwest, and South. The helicopter that flew visually, Point Alpha is the building of SMA Negeri 4 Pontianak.

Arrival procedure at alpha point is the helicopter that comes must go to Point Alpha, The helicopter will descend to circuit altitude, after established at Point Alpha then the helicopter joins to right downwind runway 15 or downwind runway 33 or according to the instructions of the ATC.



**Figure 5. Visual Point on Point Alpha**

### b. Point Bravo

Bravo Point is in the East and at radial 140 as far as 5.2 NM (nautical mile) from PNK VOR and the point is used for helicopters coming from northeast, east, and southeast. The helicopter that flies visually, Point Bravo is the curve of the Kapuas River in the shape of the letter U.

Arrival procedure at bravo point is a helicopter that goes to Point Bravo Helicopter will descend to circuit altitude, after established at Point Bravo then the helicopter joins to downwind runway 15 or right downwind runway 33 or according to instructions from the ATC.



**Figure 6. Visual Point on Point Bravo**

## VI. CONCLUSION

Based on the discussion and analysis in the previous chapter, the author concluded, that the nature of the five-year period of 2014-2018, Supadio International Airport experienced a 67.8% increase in traffic. Therefore, in the Air Traffic Service Planning Manual (ATS Planning Manual – Doc 9426) to ensure flight safety, flight safety, and maintain the regularity and smooth flow of flight traffic at an airport, a helicopter entry point is required at an airport. In this case, Supadio International Airport does not have helicopter entry points.

According to interviews with several sources, concluded that, the unavailability of helicopter entry point facilities makes it difficult to regulate the movement of helicopters in the vicinity area. This is also supported by the statements of several ATCs working at Airnav Pontianak according to their experience. And according to the results of interviews with several ATCs in Airnav Pontianak also the manufacture of helicopter entry points is considered to improve flight safety and security, as well as create efficiency in flight.

As a solution to the problems faced should be made the design of entry point helicopter at Supadio International Airport in accordance with the applicable provisions, namely in Document ICAO Annex 11 Air Traffic Service and Document ICAO 9426 ATS Planning Manual, and Document ICAO 8168 Aircraft Operation.

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