THE ANALYSIS OF SECURITY FACILITIES ON THE AIR SIDE TOWARD FLIGHT SAFETY AND SECURITY AT KALIMARAU BERAU CLASS 1 AIRPORT

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ABSTRACT
In the face of evolving security challenges, it is important to have effective and standard-compliant security measures in place to protect airport facilities and prevent threats to aviation safety and security. There needs to be security facilities on the air side such as perimeter fences as a barrier to the airport area to protect airport activities on the air side such as take-off and landing of aircraft. At the perimeter fence of Kalimarau Airport, there is a problem, namely the incompatibility of the perimeter fence with Ministerial Regulation 167 of 2015, an update to Ministerial Regulation 33 of 2015. This study used a correlational method with a quantitative approach whose data was obtained from observation data and questionnaire distribution. Respondents from this questionnaire are Aviation Security (AVSEC) officers and Movement Control (AMC) Apron personnel, then the results of the respondents' answers are calculated using the SPSS application. The results of the calculation found that standardization of security facilities on the air side (variable X) is correlated with aviation safety and security (variable Y). These results can be seen from the correlation test which shows a result of 0.01 which is smaller than 0.05 which means that X and Y variables have a correlation. The level of standardization of the perimeter fence of Kalimarau Class I Airport according to the regulations on perimeter fence standardization is not yet standardized and it can be seen in the observation data table that there are still many parts of the perimeter fence that are not standardized.

Keywords: Standardization, Security Facilities, Safety, Security

1. INTRODUCTION

Kalimarau Airport is an airport located in Teluk Bayur District, Berau Regency, East Kalimantan. It is necessary to have a perimeter fence as a barrier to the area under the control of the airport to protect airport activities on the air side such as the take-off and landing of aircraft. The existence of this perimeter can protect and avoid these operational activities from various disturbances that can endanger flights at the airport.

Perimeter is the perimeter fence, boundaries or outer boundaries of the airport. As for the standard perimeter fence for international airports according to [1] top update [2] namely: 1) can be a fence; 2) minimum height of 2.44 meters and equipped with barbed wire on top; 3) there are no gaps from the bottom to the top for people to infiltrate, including the provision of trellises for drainage or water drains; 4) visibility is provided around physical barriers; 5) equipped with lighting at a certain distance; 6) equipped with a monitoring camera system (Closed Circuit Television/CCTV); 7) equipped with other security equipment if necessary; 8) available inspection roads for patrols; 9) equipped with an emergency exit; 10) maintenance is carried out regularly. The land within the 2-m-high chain-link perimeter fence consists of 945 ha covered by buildings, pavement, and expansive grassy areas [3].

Airport personnel or a contractor should develop and implement a rodent monitoring protocol. This may require some trials with trap placement and potential palatable baits. Once an effective protocol is developed, it should be implemented in certain areas both inside and outside the perimeter fence. Care must be taken to ensure that traps, wire flags, and other materials used in the field for rodent management do not contribute to foreign object damage [4]. standardization is the process of establishing technical standards, specification standards, test method standards, definition standards, standard procedures/practices and others [5]. [6] define standardization "as the degree to which work rules,

policies, and operating procedures are formalized and followed".

According to [7] Aviation security personnel are licensed personnel who are assigned duties and responsibilities in the field of aviation security. The process of ensuring aviation security is implemented in strict accordance with the requirements for each procedure approved in accordance with the established procedure, ie it is a set of unified algorithms, each of which contains an exhaustive list of elements of professional activity of personnel sufficient to achieve the target function of ensuring security [8].

The condition of the Kalimarau airport perimeter fence is not up to standard, such as a gap under the perimeter which does not rule out the possibility for intruders to easily enter and carry out attacks on aircraft and air navigation equipment facilities and other important installations inside the perimeter fence. In addition, there are other things from this perimeter that are not in accordance with the standards as stated in [9] namely "Fences or barriers provided at an airport to maintain the security of international flights and their facilities must be illuminated at a minimum level of illumination. Airport administrators must conduct a study to determine the location of the lights so that the ground area on both sides of the fence or barrier, especially the access point, is visible. Of course the lighting must be placed at a certain point or in an area prone to intruders [10]; [11].

In addition to what was mentioned above, the unavailability of inspection road access for patrol Aviation Security (AVSEC) officers is also a problem in this study because it makes perimeter inspections only visible from the runway and results in not optimal checking of the perimeter area such as gaps under the perimeter and lots of vines on the perimeter.

To fulfill the objectives of this study, the following questions were asked:

1. What is the level of standardization of the Class I Kalimarau Airport perimeter fence with regulations?
2. Does the standardization of security facilities on the air side affect flight safety and security at Kalimarau Berau Class I Airport?

2. METHODS

2.1 Research Design

Research design can be interpreted as a strategy carried out by researchers to link each element in the research to be carried out including determining what tools and methods are suitable to be used to overcome problems that may arise in a study. The research method in this study is quantitative, which is a research method based on the philosophy of positivism, used to examine certain populations or samples, sampling techniques are generally carried out randomly, data collection uses research instruments [12]; [13]; [14]
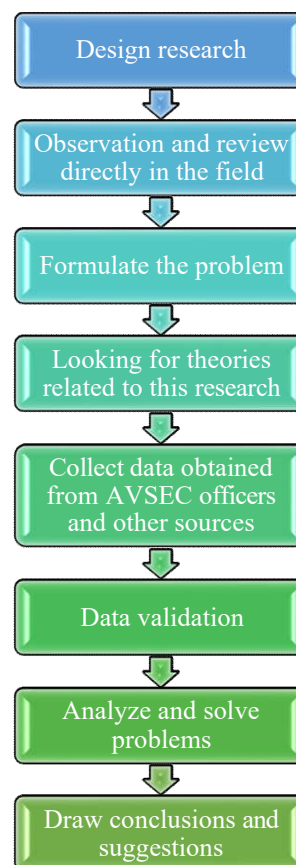

Figure 2.1 Research Design

2.2 Research variable

In this study the researchers used two research variables, namely the independent or independent variable (X) which is the variable that influences or causes the emergence of the dependent variable and the dependent or dependent variable (Y) which is the variable that is affected or which is the result of theindependent variable.
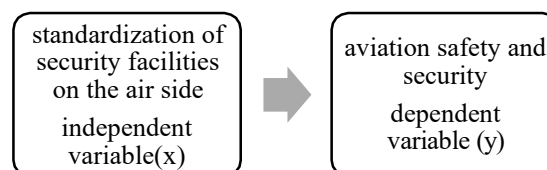

Figure 2.2 Research Variable

2.3 Research subject

A. Population

There are several opinions related to the meaning of population but basically the same, so researchers take the notion of population is a generalization consisting of certain objects or subjects that have certain qualities and

characteristics set by researchers to study and then draw conclusions.

In this study, the researchers took a population of 50 Aviation Security (AVSEC) officers and 5 Apron Movement Control (AMC) personnel with a total of 55 people.

B. Sample

According to [15] The sample is part of the number and characteristics possessed by the population. If the population is large, and it is impossible for the researcher to study everything in the population, for example due to limited funds, manpower and time, the researcher can use samples taken from that population. What is learned from the sample, the conclusions will be applied to the population. For this reason, samples taken from the population must be truly representative.

In this study, researchers took samples from Aviation Security (AVSEC) officers and Apron Movement Control (AMC) personnel at Kalimarau Berau Airport Class I, totaling 50 from Aviation Security (AVSEC) officers and 5 from Apron Movement Control (AMC) personnel. .

2.4 Data Collection Techniques and Research Instruments

A. Data collection technique

According to [16] data collection method in the form of a statement about characteristics, circumstances, certain activities and the like. Data collection is carried out to obtain the information needed in order to achieve research objectives.

1) Observation

   According to [17] Observation is defined as systematic observation and recording of the elements that appear in a symptom on the object of research. The purpose of this observation is to describe the setting being studied, the activities that take place, the people involved in the activity, and the meaning of the event seen from the perspective of those seen in the observed event. In this study, researchers made observations in the perimeter area of Class I Airport Kalimarau Berau while carrying out On the Job Training (OJT) activities on 9 January 2023 - 31 March 2023.

2) Survey

   Researchers used the survey method by distributing questionnaires as a data collection tool. A questionnaire is a list containing a series of questions regarding a problem or area to be studied, to obtain data

in the form of opinions from research subjects as outlined in a questionnaire to obtain results that can be assessed. The questionnaire used is a statement on the standardization of security facilities on the air side for flight safety and security at Class 1 Airport Kalimarau Berau.

B. Research Instruments

1) Observation sheet

   According to [18] research observation sheets function to obtain information on a relevant variable aiming at research with the highest possible validity and reliability. On this observation sheet, the researcher uses a checklist and a score that will be adjusted to the object to be observed.

2) Questionnaire

   According to [19] Questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to the respondent to answer. In this study, researchers used a questionnaire-based data collection method with the aim of obtaining relevant information related to this study. The questionnaire used was regarding the standardization of security facilities on the air side for safety and security at class I airport Kalimarau Berau. The questionnaire used is an attitude scale test which refers to the Likert scale.

Table 2.1 Scale Table Likert

No	Symbol	Information	Score
1	STS	Strongly agree	5
2	S	Agree	4
3	N	Neutral	3
4	TS	Don't agree	2
5	STS	Strongly Disagree	1

From the data obtained, it is then processed by multiplying each answer point with the weight that has been determined by 3able weight value, then the calculation results of the respondents' answers are as follows.

1. Respondents who answered strongly agreed (5) = 5 x n = n
2. Respondents who answered agreed (4) = 4 x n = n
3. Respondents who answered neutral (3) = 3 x n = n

4. Respondents who answered disagree (2) = 2 x n = n
5. Respondents who answered strongly disagreed (1) = 1 x n = n

Total Score = n, the value of n obtained from the respondent's answer to get the interpretation results must be known in advance the highest score (X) and the lowest score (Y) for the assessment item.

X = Highest Likert score x number of respondents (Highest Score 5)

Y = lowest Likert score x number of respondents (lowest score 1)

After finding the total score, the next step is to determine the assessment of the respondent's interpretation using the Index % formula.

$$\text{Index Formula } \% = \frac{\text{Total Score}}{X} \text{ x } 100$$

From the calculation data for the number of indexes above, it is then entered into the value presentation table, whether it is included in the category of the strongly agree scale or other than that scale.

Table 2.2 Value Category

Answer	Rating Category
0% - 19.99%	Very (Disagree, Bad, Dislike)
20% - 39.99%	No (Agree or Like) or Bad
40% - 59.99%	Neutral or Enough
60% - 79.99%	Agree, OK, Like
80% - 100%	Very (Agree, Good, Like)

2.5 Data analysis technique

A. Validity test

Validity test [20] is a test that functions to see whether a measuring instrument is valid (valid) or invalid. Measuring tools referred to here are the questions in the questionnaire. According to [21] validity test is used to determine the feasibility of the items in a list of questions in defining a variable.

The validity test technique in this study used the Corrected Item-Total Correlation formula using the SPSS For Windows Series 25 program. The value was then compared with the r table value at a significance level of 0.05. The significance value in the validity test obtained after being processed through the SPSS application can be seen to produce a significance value of 0.00 less than (<) 0.05. Then it needs further comparisons by looking at the Pearson Correlation results in the R table. After seeing the results of the data processed through the SPSS application where the results of the R count are greater (>) than the R table, namely 0.2656. Then the questionnaire submitted to the respondent can be said to be valid or valid.

B. Reliability Test

The reliability test is a questionnaire measuring tool that has indicators of variables or constructs. A questionnaire is declared reliable or reliable if a person's answer contains a statement that is consistent or stable from time to time a variable is made reliable if it gives a Cronbach's Alpha value > 0.6 [22]. Based on the output table generated from the SPSS application, it is known that the Cronbach's Alpha value for variable X is 0.7 and the Cronbach's Alpha value for variable Y is 0.7. After a comparison, it can be said that the proposed questionnaire proved to be reliable because the results obtained were greater than (>) 0.6.

C. Normality test

The normality test is used to determine whether the scores of the variables studied follow a normal distribution or not. To know whether the data distribution is normal or not, the normality distribution test is calculated. The technique used for normality testing uses the Kolmogorov Smirnov test through the SPSS 25 program. The rule used is if $p > 0.05$ then the distribution is normal and vice versa if $p \leq 0.05$ then the distribution is not normal.

D. Hypothesis testing

In testing this hypothesis using correlation analysis. This analysis is used to measure the relationship between variable X and variable Y. After knowing the coefficient value then, to determine the closeness of the relationship or correlation between these variables, the following values of the correlation coefficient are given as a benchmark, namely:

1. $0 < KK \leq 0.20$, very low correlation
2. $0.20 < KK \leq 0.40$, low correlation
3. $0.40 < KK \leq 0.70$, a fairly strong correlation
4. 5. $0.70 < KK \leq 0.90$, strong correlation
5. 6. $0.70 < HH < 1.00$, a very strong correlation
6. $KK = 1$, perfect correlation

3. RESULTS AND DISCUSSION

3.1 *Research result*

A. Perimeter Fence Standardization Level

In the perimeter area at Kalimarau Berau Class 1 Airport, East Kalimantan, Aviation Security (AVSEC) officers carry out patrols every morning at 8 am. When researchers participated in patrol activities carried out by Aviation Security (AVSEC) to check the perimeter area, they were only monitored from the runway which was quite far away because they did not yet have access to inspection roads for patrols. To monitor the perimeter more closely, you have to pass through the grass road between the runway and the perimeter.

Figure 3.1 There is a gap under the perimeter fence.

The bottom of the perimeter fence should be cast using cement so that there are no gaps or holes that can make it easier for people or animals to enter the airside area of the airport and can threaten aviation safety and security.
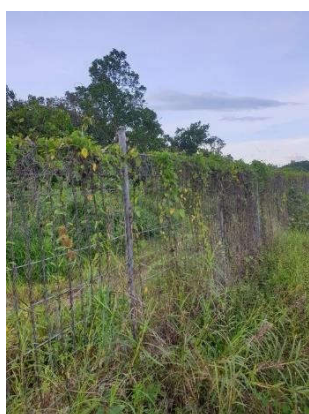
Figure 3.2 perimeter fence not equipped with barbed wire

Above the international airport perimeter fence, barbed wire must be attached to maintain safety and security at the airport and make it difficult for intruders or animals to climb the perimeter fence.

Figure 3.3 Perimeter fence covered with vines the need for maintenance on the perimeter fence and the surrounding area including drainage so that creepers do not grow and make it difficult for officers to carry out checks.

Table 3.1 Recapitulation of Field Observation Data

No.	Standard Perimeter	Current condition	Remarks
1	Minimum fence height of 2.44 meters	2,44 meters	Standard
2	Equipped with barbed wire	Some points are not attached barbed wire	Non Standard
3	There is no gap below to the top	There is a gap at one point of the perimeter	Non Standard
4	Fulfilled visibility of at least 3 meters	There are wild plants that cover the perimeter fence	Non Standard
5	Lighting installed	Not available	Non Standard
6	Equipped with CCTV monitoring cameras	Yes, but not working/damaged	Non Standard

No.	Standard Perimeter	Current condition	Remarks
7	There is an inspection road for patrols	Not available	Non Standard
8	There is perimeter maintenance	Lots of weeds on the perimeter fence	Non Standard
9	Equipped with an emergency exit	Available	Standard

B. Influence of Security Facilities on the Air Side on Aviation Safety and Security

Table 3.2 Summary of Questionnaire Results

Questionnaire	Score	Indeks (%)	Category
X1	230	84	Very Agree
X2	208	76	Agree
X3	208	76	Agree
X4	204	75	Agree
X5	235	86	Very Agree
Y1	228	83	Very Agree
Y2	261	96	Very Agree
Y3	229	84	Very Agree
Y4	255	94	Very Agree
Y5	256	93	Very Agree

After getting the results of the percentage of questionnaires that have been distributed to respondents, the next step is to test the results of the questionnaire with a normality test and hypothesis testing.

1) Normality test

The normality test was carried out to find out whether the data used was normally distributed or not. The test tool used in the normality test of this study is the Kolmogorov Smirnov test with the SPSS program. The data can be said to be normal when the significance is > 0.05. The normality test results in the table below $= 0.197$

(> 0.05), it can be concluded that all variables are normally distributed.

Table 3.3 Normality Test Results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		55
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.07256218
Most Extreme Differences	Absolute	.105
	Positive	.105
	Negative	-.074
Test Statistic		.105
Asymp. Sig. (2-tailed)		.197[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

2) Hypothesis test

In testing this hypothesis using correlation analysis. This analysis is used to measure the relationship between variable X and variable Y.

Table 3.4 Correlation Coefficient Test Results

Correlations

			X	Y
Spearman's rho	X	Correlation Coefficient	1.000	.451**
		Sig. (2-tailed)	.	.001
		N	55	55
	Y	Correlation Coefficient	.451**	1.000
		Sig. (2-tailed)	.001	.
		N	55	55

**. Correlation is significant at the 0.01 level (2-tailed).

After seeing the output of the SPSS application as shown in the table above, a correlation coefficient of 0.451 is obtained, which means that the correlation strength between the variable standardization of security facilities on the air side (X) and the aviation safety and security variable (Y) is 0.451 or strong enough. The correlation value is positive, which means that the standardization of security facilities on the air side affects flight safety and security.

3.2 Discussion of Research Results

A. Perimeter Fence Standardization Level

In accordance with the observation data mentioned above, there are still many non-standard sections of the perimeter fence. As shown in table 4.1 there is a comparison between the current condition of the perimeter fence in the field with the standards in ministerial regulation number 167 of 2015 renewal of ministerial regulation number 33 of 2015. In table 3.1 it can be seen that there are only two parts that conform to the standards of the nine

total perimeter fences. standard rules. It can be concluded that the level of standardization of the existing perimeter fence at Kalimarau Airport is still not standard with the rules. It is necessary for Kalimarau Airport to pay attention to the level of standardization of its perimeter fence in order to improve airport security, especially in the perimeter area and prevent acts against the law, the presence of intruders,

B. Effect of Standardization of Security Facilities on the Air Side on Aviation Safety and Security

The ten questionnaire statements obtained from the survey results by distributing questionnaires were measured using a Likert scale. The results of the questionnaire are calculated using the SPSS application which is used to measure the effect of standardization of security facilities on the air side on aviation safety and security.

Based on the results that have been mentioned, the variable standardization of security facilities on the air side (X) affects the variable flight safety and security (Y) at Kalimarau Airport. This is evidenced by the normality test and correlation coefficient hypothesis testing. in the normality test the result is $0.197 (> 0.05)$ which shows that all variables in this data are normally distributed. In the correlation coefficient hypothesis test, the result is 0.451 which is included in the fairly strong category. It can be concluded that variable X has an effect on variable Y or has a fairly strong influence.

4. CLOSING

4.1 Conclusion

From the discussion above it can be concluded namely the level of standardization of the Kalimarau Berau Class I Airport perimeter according to ministerial regulation number 167 of 2015 renewal of ministerial regulation number 33 of 2015, which is not yet standard and can be seen in the observation data table that there are still many parts of the perimeter fence that are not standard. As for the correlation relationship between the variable standardization of security facilities on the airside (X) and the variable aviation safety and security (Y) that has been tested by testing the hypothesis of a correlation coefficient of 0.451, which means it influences or has a fairly strong influence.

4.2 Suggestions

Based on the results of the research and conclusions above, the researcher provides several suggestions aimed at Kalimarau Berau Class I Airport for improvement, namely:
a) Build inspection road access for patrols. This must be realized immediately because the moment

researcher conducting On The Job Training at Kalimarau Berau Airport when Aviation Security (AVSEC) officers were conducting patrol activities on the perimeter, only monitoring was carried out from the runway, which distance was quite far, so the monitoring results were not optimal.
b) Install lighting in the perimeter area. because this can facilitate and clarify the area around the perimeter when it is dark or fog when doing patrols or monitoring through surveillance cameras (CCTV).
c) Reactivate and update surveillance cameras (CCTV). this can add to surveillance in addition to patrol activities and can also see and record events such as the entry of animals or intruders into the airport area.
d) Equal distribution of barbed wire installation and closing if there are gaps under the perimeter fence that could allow animals or intruders to enter. As was the case researcher when carrying out On The Job Training activities at Kalimarau Berau Airport, namely the entry of a dog into the middle of the runway when the plane was about to take off. If the gap under the perimeter fence is not closed immediately, it does not rule out the possibility that other similar animals can also enter the runway area and can cause incidents or accidents.
e) take care to avoid overgrowing the perimeter fence with vines that cause animals or intruders to climb so that it can disrupt flight activities and could cause an incident or accident.

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