



Airport Perimeter Security System Readiness Analysis (Case Study At Budiarto Curug-Tangerang Airport)

Endang Sugih Arti¹, Nunuk Praptiningsih², Rinsa Ari Widagdo³, Dini Wagini⁴

¹Politeknik Penerbangan Indonesia Curug, email: endang@gmail.com

²Politeknik Penerbangan Indonesia Curug, email: nunuk.praptiningsih@ppicurug.ac.id

³Politeknik Penerbangan Indonesia Curug, email: rinsaariw@gmail.com

⁴Politeknik Penerbangan Indonesia Curug, email: diniwagini@gmail.com

Corresponding Author: nunuk.praptiningsih@ppicurug.ac.id

Abstract: *This study aims to determine how the perimeter conditions and solutions to the obstacles that exist in the Budiarto Airport Management Unit (UPBU). The study used a descriptive method and data collection used was the method of interviewing, observing and documenting. The data analysis technique used is data reduction, data display, and concluding drawing. This study used several respondents as a sample, one airport security officer and four village/sub-district officials in four villages surrounding the Budiarto Airport Management Unit (UPBU). This research shows that the perimeter security system at Budiarto Airport is still not ready and tight, because avsec (aviation security) is only located or standing guard at the gate only, the results of interviews with the surrounding village chief also showed that there are still many residents who are still approaching the airport security area because they still do not understand the meaning of warning signs on the perimeter.*

Keywords: Perimeters, Entrance Control, Surveillance, Airport Safety Systems.

INTRODUCTION

Flight traffic density at Budiarto Airport before the COVID-19 pandemic was reported in the last two years amounted to 200 movements per day. According to records from the log book recorded by the Flight Traffic Control Officer at Budiarto Airport, there were nine reports or incidents of aircraft reporting that there were several dogs roaming at the time of landing and rolling. In 2020 based on data from Perum LPPNPI Curug Sub-Branch Office during the Covid-19 pandemic the amount of traffic decreased by an average of 40 movements per day and there were no pilot reports regarding the presence of animals in the manoeuvring area. These 40 movements only came from private Flying School, because PPI Curug cadets during the 2020 pandemic did not carry out flight training.

Based on data from UPBU Budiarto, the number of communication facilities for coordination is still lacking, even because of these limitations, fuel fillers on the apron do not communicate with officers at the Budiarto tower when performing their duties. There is also no backup communication equipment, so far if there are obstacles that must be removed from

the movement area, the officer at Budiarto tower only uses or sounds the siren to drive away the obstacle.

Collisions between wildlife and aircraft are of serious concern for both economic and safety reasons. Wildlife strikes cause >580,000 hours of aircraft downtime each year and cost the civil aviation industry >\$556 million per year (Cleary et al. 2006 in Human-Wildlife Conflicts 2(2):240-247, Fall 2008).

Furthermore, >350 people have died in wildlife attacks worldwide since the inception of aviation 100 years ago (Sodhi 2002 in Human-Wildlife Conflicts 2(2):240-247, Fall 2008). Unfortunately, the likelihood of wildlife strikes is expected to increase as (1) air travel increases, (2) wildlife populations grow, and (3) commercial airlines replace 3- and 4-engine aircraft with quieter, more efficient 2-engine aircraft that are more prone to catastrophic strikes (Cleary et al. 2006 in Human-Wildlife Conflicts 2(2):240-247, Fall 2008).

PM 33/2015 on access control to restricted security areas at airports.

PM 80/2017 on the National Security Program. In point 5.2 regarding the protection of limited security areas. Points 5.2.1 and 5.2.2 state that UPBU and BUBU units must supervise and control limited security areas at the airport. While in point 5.2.4 and point 5.2.5 states that limited security areas must be physically protected to prevent the entry of people, vehicles, luggage, cargo, post and animals so as not to endanger airport operations. It also states that the UPBU or BUBU is responsible for determining the entrances to the restricted security area and ensuring that they have adequate physical protection of at least the same quality as the physical barriers.

Document 4444 Air Traffic Management point 7.1.1.2 states that an aerodrome controller must (shall) keep a constant watch on all flight activities in the vicinity of the airport and in the airport movement area by direct sight or through surveillance equipment if available. Item 7.5.3.2.2.1 states that all vehicles and pedestrians must give way when aircraft are landing, taxiing and taking off, except that aircraft in an emergency are given priority to enter the aircraft movement area.

Annex 11 of 2018 states that the purpose of flight navigation services is safe, secure, smooth, orderly, organized, comfortable and efficient.

According to Minister of Transportation Regulation Number PM 33 of 2015 and PM 167 of 2015, it is stated that the physical barrier or perimeter of domestic and international airports must meet the provisions.

LITERATURE REVIEWS

Security

PM 33/2015 concerning access control to limited security areas at airports in article 4 paragraph 1 points a, b, c, d, e, f, g contains requirements on the perimeter of domestic airports that must be met, namely from the fence to the emergency exit. Article 2 states the technical/physical requirements for international airports. Article 5 paragraphs 1, 2 and 3 contain additional security measures when the requirements in article 4 cannot be met. Paragraph 2 explains that additional security measures (mitigation plan) for domestic airports must have more intensive patrols and sign boards to remind residents around the airport not to enter restricted security areas including herding their livestock. PM 80/2017 on the National Security Program. In point 5.2 regarding the protection of limited security areas. Points 5.2.1 and 5.2.2 state that UPBU and BUBU units must supervise and control limited security areas at the airport. While in point 5.2.4 and point 5.2.5 states that limited security areas must be physically protected to prevent the entry of people, vehicles, luggage, cargo, post and animals so as not to endanger airport operations. The point also states that UPBU or BUBU is responsible for determining the entrances to the restricted security area and ensuring that the doors have adequate physical protection of at least the same quality as the physical barriers.

Safety

Document 4444 Air Traffic Management item 7.1.1.2 states that an aerodrome controller shall keep a constant watch on all flight activities in the vicinity of the airport and in the airport movement area by direct sight or through surveillance equipment if available. Item 7.5.3.2.2.1 states that all vehicles and pedestrians must give way when aircraft are landing, taxiing and taking off, except that aircraft experiencing an emergency are given more priority to enter the aircraft movement area.

According to Annex 14 in the definition, the meaning of maneuvering area is the part of the aerodrome used for take off, landing, taxiing excluding the apron.

Annex 11 of 2018 states that the purpose of flight navigation services is safe, secure, smooth, orderly, regular, comfortable and efficient.

Access Control

According to Minister of Transportation Regulation No. PM 33/2015 and PM 167/2015, it is stated that the physical barrier or perimeter of domestic and international airports must meet the following provisions:

Domestic Airports

1. Can be a fence
2. Minimum height of 2.44 meters and equipped with barbed wire on the top
3. There are no gaps from bottom to top for people to infiltrate, including the provision of trellises on drainage or sewerage channels
4. There is visibility around the physical barrier
5. Lighting is provided at certain points or places prone to infiltration
6. Inspection road available
7. Equipped with emergency exits

It is also stated that for safety and operational reasons, at the take-off and landing areas at the end of the runway the physical barriers on the perimeter may be less than the required height subject to additional safety measures (mitigation plan), namely:

Domestic Airports:

1. More intensive patrols
2. Warning sign board

In Annex 14 Aerodromes, Chapter 9 Aerodrome Operation Services, Equipment and Installation, ICAO provides recommendations on the importance of fencing the perimeter of an airport as follows:

Recommendation. - Fences or other suitable barriers should be provided at aerodromes to prevent the entry of animals large enough to endanger aircraft.

Recommendation - Fences or other suitable barriers should be provided at aerodromes to prevent accidental or planned access by unauthorized persons to non-public areas of the aerodrome. Recommendation - Suitable means of protection should be provided to prevent accidental or planned access by unauthorized persons to ground installations and facilities essential for the safety of civil aviation located outside aerodromes.

The free definition of the above statement is that an airport must be fenced or barred to prevent large animals and unauthorized persons from entering or approaching the aircraft movement area because it can endanger flight safety. In addition, to protect important facilities and installations in the airport.

METHOD

Research based on facts at the location uses triangulation of sources, the author compares the data from observations along the perimeter of Budiarto airport with the results of the author's interviews with Budiarto airport officials / resource persons.

Triangulation of techniques, the author collected data on the condition of Budiarto airport using a variety of different techniques, for example through interviews, field observations and from the Budiarto airport AIP.

Time Triangulation The author checks the data on the condition of the perimeter and manoeuvring area of Budiarto airport at different times in stages so that the data is produced as expected.

Data Collection Methods

The data collection process is carried out by observing the object of research and seeking information from competent sources, then the information that has been obtained in the field will be analyzed accordingly.

The process begins with visiting UPBU Budiarto management to see the location around the airport to complete the research data (fence survey). Conducting interviews with airport security officers or those responsible for expelling animals or unauthorized people from entering restricted areas including aircraft movement areas. Visit the officer responsible for collecting data that occurred during the current 1 (one) month. The primary data search will also involve Perum LPPNPI Budiarto Branch as personnel directly involved as the person in charge of flight safety at the airport. Conduct interviews with sub-district/village officials and community leaders of 4 (four) villages surrounding UPBU Budiarto. Also ascertain whether there is socialization to residents around the airport or signs/announcement boards that the fenced airport area is not a public area that is free for activities other than for the benefit of aircraft movements.

Data Analysis Method

In this study, researchers used qualitative data analysis techniques, where this technique was carried out when researchers used data collection methods in the form of interviews, observations and documentation studies (Sugiyono: 2016). In carrying out data analysis activities, the author does several things, namely.

Data Reduction Reducing data means summarizing, selecting key things, focusing on important things. Thus the data that has been reduced will provide a clearer picture, and make it easier for researchers to carry out further data collection.

Data Display (Presentation of Data) By presenting the data, it will make it easier to understand what is happening, plan further work based on what has been understood. In this case the author presents the data using narrative text, tables, and graphs.

Conclusion Drawing/ Verification The third step is conclusion drawing and verification. The initial conclusions put forward are still temporary and will change if no strong evidence is found that supports the next stage of data collection.

RESULTS AND DISCUSSION

Budiarto Curug Tangerang Airport is one of the airports managed by the government and is under the Directorate General of Civil Aviation which functions as a place for civil aviation education and training activities.

Budiarto Curug Tangerang Airport is located in Serdang wetan Village, Legok District, Tangerang Regency, Banten province, with an area of 469.09 hectares covering 4 villages namely Serdang wetan, Rancagong, Palasari and Kemuning villages at coordinates 060 17' 46.088 "LS and 1060 34' 30.471" BT with an elevation of 45 meters.

In collecting data, researchers used interview techniques which took 7 (seven) sources, namely the Head of Serdang Wetan Village, Serdang Kulon, Palasari, Kemuning, Head of UPBU Budiarto, Directorate of Airport Security, and ATC Officer at Perum LPPNPI Curug Branch, but in practice researchers only got 5 (five) research cover letters from PusPPM PPI

Curug, namely the Head of Serdang Wetan Village, Serdang Kulon, Palasari, Kemuning, and Head of UPBU Budiarto.

Researchers feel that the sample taken is sufficient for the data needed in this study. From interviews with 5 (five) resource persons, the following results were obtained: Head of Serdang Wetan Village, Head of Serdang Kulon Village, Head of Palasari Village, Head of Kemuning Village, and Head of UPBU Budiarto.

No.	Dimensions	Indicator	Question Item	Results
	Airport Security Area (PM 33/2015 Article 2 Paragraph 2 & 3)	Operational Area	Is there a map at Budiarto Airport depicting areas of operational interest?	Budiarto Airport has a map of the Airport Operational Area.
			Has UPBU Budiarto ever conducted socialization about the airport security area to the surrounding village community?	Socialization has been done but not regularly and not thoroughly
			Do local communities know about the security areas around Budiarto Airport?	The surrounding community only knows that there are boundaries in the form of fences, but for airport security areas, they do not know yet.
	KKOP (Law No. 1 Year 2009 Article 1)	KKOP	Has the village ever conducted socialization about the Flight Operation Safety Area to the community?	Some villages have carried out socialization from UPBU about KKOP, but only "not allowed to cross the guardrail because it is dangerous".
	Physical Barriers (PM 167/2015 Article 4 Paragraph 1 & 3)	Perimeter	Do the physical barriers at Budiarto Airport meet the standards according to PM 167/2015 Article 4 (1)?	There are several areas that still use walls as physical barriers, so they are not in accordance with the rules.
			Are the physical barriers at Budiarto Airport maintained regularly?	UPBU conducts periodic maintenance every year
	Additional Security (PM 33/2015 Article 5)	Mitigation Plan	Does Budiarto Airport have a mitigation plan for perimeters that do not meet the standards such as at the take off & landing area (end of runway)? *If so, what kind of mitigation plan?	Currently there is no mitigation plan
	Warning Signs (PM 33/2015 Article 3 & 6)	Sign Board	Is there a warning sign at the physical barrier of Budiarto Airport?	Lack of warning signs, due to outreach and lack of security personnel.
			Are the warning signs on the physical barrier in accordance with the standards of PM 33/2015 Article 6 (2)?	Already in accordance with the rules of PM 33 Year 2015
			Do villagers know and understand the meaning of the warning signs on the perimeter/physical boundary of Budiarto Airport?	No, the community only knows that the area inside the perimeter is not allowed to be entered.

Driveway Control (PM 33/2015 Chapter III)	Access Control	How is the operational area entry control system at UPBU Budiarto?	UPBU Budiarto places guards at the main gate of the airport entrance, it is still very vulnerable because everyone with the excuse of being a resident of the complex must be given permission to enter without checking their identity, etc.
---	----------------	--	---

Documentation to strengthen the results of this research is about airport security monitoring that found wild animals entering the aircraft movement area.



Figure 1. Wild animal discovery

As for the physical barriers whose conditions are inadequate / lack of maintenance and do not meet the standards of PM 167/2015 regulations, starting from the absence of barbed wire at the top of the fence, the height of the fence is still less than the standard, and the physical barrier fence is open, and this area is very far from the reach of airport security, flight traffic guides, and plus the absence of warning signs (sign boards) along the perimeter and CCTV that are not yet available.



Figure 2. Discovery of perimeters with no barbed wire installed



Figure 3. Discovery of a sloping perimeter due to lack of maintenance



Figure 4. Open perimeter discovery

This situation really needs attention because the UPBU Budiarto environment is directly adjacent to the community and is also a flying training center for prospective civil aviators who should prioritize the safety of prospective aviators in this case the Curug PPI cadets and private parties.

CONCLUSION

From this research it can be concluded that the perimeter security system at Budiarto Airport is still not very strict, because avsec is only located or on guard at the gate, the results of interviews with surrounding village heads also show that there are still many residents who still approach the airport security area because they still do not understand the meaning of warning signs on the perimeter. In addition, socialization to the surrounding village community is also less comprehensive, this is evidenced by the fact that there are still many residents who do not understand and know the sign board installed on the perimeter.

Perimeter security at Budiarto Airport is in accordance with PM 167 Year 2015 standards including fences, which are 2.44 meters high with barbed wire, no gaps, available inspection roads and visibility, but UPBU Budiarto still lacks lighting at certain points prone to intrusion and for warning signs or sign boards have not been installed thoroughly along the perimeter with certain distance intervals.

REFERENCE

- Annex 14. Aerodromes, Chapter 9 Aerodrome Operation Services, Equipment and Installation. International Civil Aviation Organization: 2018.
- David J. Glista, Jacob E. Kubel, Olin E. Rhudes, dan Travis L. Devault. 2008. Mammalian hazards at small airports in Indiana: impact of perimeter fencing. *Human– Wildlife Conflicts* 2(2):240–247, Fall 2008.
- Direktorat Jendral Perhubungan Udara, Surat Keputusan Direktur Jendral Perhubungan Udara Nomer KP 601 Tahun 2015 tentang Standar Pagar untuk Daerah Keamanan Terbatas.
- Direktorat jendral perhubungan udara, Surat keputusan Direktur Jendral perhubungan udara Nomor SKEP/40/II/1995 tentang Petunjuk pelaksanaan KM Nomor 14 Tahun 1989 tentang Penertiban Penumpang, Barang dan Kargo yang di Angkut Pesawat Udara Sipil Departemen perhubungan.
- Document 4444 Air Traffic Management Sixteenth Edition. International Civil Aviation Organization: 2016.
- International Civil Aviation Organiza-tion, Annex 17: Security, safe-guarding, Inter-national Against acts of Unlawfull Interference, Ten Editional, Montreal ,2017
- Peraturan Menteri Perhubungan Nomor PM 51 Tahun 2020 tentang Keamanan Penerbangan Nasional.
- Peraturan menteri perhubungan RI PM Nomor 11 Tahun 2010 Tentang Tatanan Kbandaraudaraan Na-sional.
- PM 33 Tahun 2015 tentang Pengendalian Jalan (Access Control) ke Daerah Keamanan Terbatas di Bandar Udara.

- PM 55 Tahun 2016 tentang Tatanan Navigasi Penerbangan.
- PM 80 Tahun 2017 tentang Program Keamanan Penerbangan Nasional.
- PM 167 Tahun 2015 tentang Perubahan atas Peraturan Menteri Perhubungan Nomor PM 33 Tahun 2015 tentang Pengendalian Jalan (Access Control) ke Daerah Keamanan Terbatas di Bandar Udara.
- Undang – Undang Republik Indonesia Nomor 1 Tahun 2009 tentang Penerbangan.
- Undang- Undang Pemerintah Republik Indonesia Nomor 3 Tahun 2001 tentang Keamanan dan Keselamatan Penerbangan.
- Sugiyono. 2018. Metode Penelitian Evaluasi. Bandung: Alfabeta.
- Wahab., SA, (2004), Analisis kebijaksanaan; Dari formulasi ke implementasi kebijakan negara, Sinar Grafika, Jakarta.
- Amanda Nurma Hariyanti, Satiti Utami, Herman Susanto. KAJIAN PENGAMANAN PERIMETER DALAM MENUNJANG KE-AMANAN PENERBANGAN DI BANDAR UDARA INTER-NASIONAL ADI SOEMARMO SURABAYA .
<https://journal.ppicurug.ac.id/index.php/jurnal-ilmiah-aviasi/article/view/190>
- Hariyanti, et al. “Kajian Pengamanan Perimeter dalam Menunjang Keamanan Penerbangan di Bandar Udara Internasional Adi Soemarmo Surakarta”. Journal Politeknik Penerbangan Indone-sia
- Irfan. “Kinerja Keamanan dan Keselamatan Penerbangan di Manouvering Area Bandara Udara Juwata Tarakan”. Jurnal Keselamatan Transportasi Jalan 2019
- Rahayu, Sri, et al. “Penegakan Hukum terhadap Orang yang melakukan Aktivitas Bercocok Tanam di Kawasan keselamatan(Perimeter) Penerbangan Bandar Udara Sultan Aji Muhammad Sulaiman Sepinggang Balikpapan”.
- Sri Rahayu, et al. “Penegakan Hukum Terhadap Orang Yang Mela-kukan Aktivitas Bercocok Tanam di Kawasan Keselamatan dan Keamanan (Perimeter) Pener-bangan Bandar Udara Sultan Aji Muhammad Sulaiman Sepingan Balikpapan.” LEX SUPREMA Jurnal Ilmu Hukum, 2020 Sugiarto, Eko. 2015.
- Stolka, O. (2014). The Development of Green Logistics for Implementation Sustainable Development Strategy in Companies. *Procedia-Social and Behavioral Sciences*, 151, 302-309.
- Setijadi. (2015a). *Fungsi dan Aktivitas Pergudangan (Warehousing)*. Supply Chain Indonesia.
- Setijadi. (2015b). *Introduction to Logistics Management*. Supply Chain Indonesia. Setijadi.
- (2015c). *Manajemen Persediaan*. Supply Chain Indonesia.
- Setijadi. (2015d). *Transportasi*. Supply Chain Indonesia.
- Skulmoski, G. J., Hartman, F. T., & Krahn, J. (2007). The Delphi method for graduate research. *Journal of information technology education*, 6, 1.