JURNAL MEDIA AKADEMIK (JMA)
Vol.3, No.7 Juli 2025
e-ISSN: 3031-5220; DOI: 10.62281, Hal XX-XX
PT. Media Akademik Publisher
AHU-084213.AH.01.30.Tahun 2023

STUDY ON IMPROVING SUPERVISION OF THE APRON MOVEMENT CONTROL UNIT IN THE MAKEUP BREAKDOWN AREA OF FATMAWATI SOEKARNO AIRPORT IN BENGKULU

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Abstract. Airports are important infrastructure in supporting air transportation. Fatmawati Soekarno Bengkulu Airport plays a major role in the mobility of the community and logistics distribution in the surrounding area. However, supervision by the Apron Movement Control (AMC) Unit in the Make Up Breakdown Area still faces obstacles that hinder its effectiveness. This study aims to: (i) assess the current state of AMC supervision in the area, and (ii) identify strategies to enhance the effectiveness of supervision to support operational smoothness and safety. The method used is qualitative descriptive. The research findings indicate that supervision is still hindered by supporting facilities such as inactive CCTV systems and insufficient compliance with standard operating procedures (SOPs). These conditions result in weak supervision in this critical area. The conclusion of this study emphasizes the importance of optimizing surveillance technology, particularly ensuring that CCTV systems function optimally and are connected to the AMC control room.

Keywords: Apron Movement Control, Make Up Breakdown Area, Supervision, Aviation Safety.

Received June 28, 2025; Revised July 09, 2025; July 24, 2025
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Abstrak. *Bandara merupakan infrastruktur penting dalam mendukung transportasi udara. Bandara Fatmawati Soekarno Bengkulu memainkan peran signifikan dalam mobilitas masyarakat dan distribusi logistik di wilayah sekitarnya. Namun, pengawasan oleh Unit Apron Movement Control (AMC) di area penyusunan dan pembongkaran bagasi masih menghadapi berbagai hambatan yang mengurangi efektivitasnya. Penelitian ini bertujuan untuk: (i) mengevaluasi kondisi terkini pengawasan AMC di area tersebut, dan (ii) mengidentifikasi strategi untuk meningkatkan efektivitas pengawasan guna mendukung kelancaran operasional dan keselamatan penerbangan. Metode yang digunakan adalah deskriptif kualitatif. Hasil penelitian menunjukkan bahwa pengawasan masih terkendala oleh fasilitas pendukung yang terbatas, seperti sistem CCTV yang tidak berfungsi dan kurangnya kepatuhan terhadap standar operasional prosedur (SOP). Kondisi ini mengakibatkan lemahnya pengawasan di area yang krusial ini. Studi ini menyimpulkan bahwa optimalisasi teknologi pengawasan, terutama memastikan sistem CCTV berfungsi secara optimal dan terhubung ke ruang kontrol AMC sangat penting untuk meningkatkan efektivitas pengawasan.*

Kata Kunci*: Apron Movement Control, Area Penyusunan dan Pembongkaran Bagasi, Pengawasan, Keselamatan Penerbangan.*

INTRODUCTION

Airports are vital infrastructure that play an important role in air transportation, not only as a place for aircraft to land and take off, but also as the main gateway to the tourism and economic sectors, as well as for the mobility of the community, thus requiring quality and inclusive services to improve service [1]. This is emphasized by the International Civil Aviation Organization (ICAO), which states that everyone, including passengers with special needs, has the right to receive safe, comfortable, efficient, and affordable services at airports [2].

Fatmawati Soekarno Bengkulu Airport is one of the airports that plays an important role in supporting community mobility and logistics activities in the Bengkulu region and its surroundings [3]. With the increasing number of flights and passenger volume each year, operational management in the apron area has become increasingly complex. One area that plays a vital role in operational efficiency is the Make Up

Breakdown Area, where baggage and cargo loading and unloading processes are carried out before and after flights [4]. To ensure the smoothness and safety of operations in this area, the Unit (AMC) is responsible for supervising and controlling vehicle traffic and the movement of goods [5].

However, in practice at Fatmawati Soekarno Airport in Bengkulu, there are still various obstacles that can hinder the effectiveness of AMC supervision in the Make Up Breakdown Area. Some of the common issues include insufficient numbers of supervisory personnel, limited supporting facilities, and inconsistencies in standard operating procedures (SOPs). Additionally, compliance by on-site staff with safety and order regulations still needs to be improved to minimize the potential risks of accidents and operational delays.

If supervision in the Make Up Breakdown Area is not carried out in accordance with applicable procedures or SOPs, it will impact various aspects such as increased workplace safety risks, flight delays due to suboptimal baggage handling processes, and potential violations of aviation safety regulations set by the relevant authorities. Therefore, further study is needed on the effectiveness of AMC unit supervision in the Make Up Breakdown Area and strategies for improvement that can be implemented to optimize operational performance and safety.

Figure 1 Ground Support Equipment (GSE)

The image above shows a violation of order by Ground Handling personnel, namely the improper placement of Ground Support Equipment (GSE) vehicles. Due to the absence of an Equipment Staging Area (ESA) at Fatmawati Soekarno Airport, Ground Support Equipment (GSE) vehicles must be placed in the Equipment Storage Area (ESA). In this case, the Baggage Conveyor Loader (BCL) was left in the Breakdown Area without supervision from the Ground Handling personnel.

Through this study, it is hoped that appropriate solutions can be found to improve the effectiveness of Apron Movement Control (AMC) supervision in the Make Up Breakdown Area, both in terms of human resources, supporting technology, and the policies implemented. As a result, the management of the Make Up Breakdown Area at Fatmawati Soekarno Bengkulu Airport can be more optimal and in line with applicable aviation safety standards. Therefore, this study examines how to improve the supervision of AMC units in the Make Up Breakdown Area.

METHODS

This study uses a qualitative descriptive research method, beginning with mapping the phenomenon at the location through data collection such as information, opinions, and others. The researcher then analyzes the phenomenon and identifies the factors that influence the completion process.

The research at Fatmawati Soekarno Airport in Bengkulu focuses on supervisors/controllers of operational activities on the airside, including the surveillance and control system, which is expected to play an optimal role in supervising all activities on the airside, especially in the Makeup Breakdown Area, so that order on the airside can be created to support flight safety.

An airport is an infrastructure facility that functions as an air transportation hub, where aircraft take off and land and passengers and cargo undergo departure and arrival procedures. Airports are an important part of the aviation industry and play a central role in connecting various cities, countries, and regions around the world. Airports are at the heart of aviation and human and cargo mobility in this era of globalization. The primary function of an airport is to connect people from various locations and enhance

accessibility to broader regions, thereby accelerating economic growth and international relations [6].

According to PM 37 of 2021 on Technical Operational Guidelines for Civil Aviation Safety Regulations Part 139 – 11 (Advisory Circular CASR Part 139 – 11), Airport Personnel Licenses and/or Ratings state that Apron Movement Control (AMC) is a work unit responsible for regulating and supervising activities to prevent accidents involving aircraft, vehicles, personnel, and cargo, as well as managing traffic flow to ensure smooth operations in the apron area.

Improvement is a holistic concept that refers to the stages in a process that reflect the dynamics of change, addition, and achievement. Conceptually, improvement refers to efforts aimed at increasing the level, quality, and quantity of a phenomenon or object, and often involves developing individual skills and capacities with the goal of achieving more optimal results [7].

The improvement of Apron Movement Control (AMC) is an important step in strengthening the management and supervision of movement in the airside area of an airport. As a unit responsible for regulating vehicle and aircraft traffic on the airside, AMC is required to continuously improve its performance in line with the increasing intensity of flight operations. Improvements can be made through human resource development, updating standard operating procedures (SOPs), utilizing information technology for monitoring, and improving cross-unit coordination systems. The goal is to create a safer, more orderly, and efficient airside environment and to ensure that all movements in the area comply with safety standards and civil aviation regulatory requirements.

Supervision is an activity aimed at ensuring that plans are implemented effectively in accordance with initial provisions. Every organization has a plan to achieve predetermined objectives, and supervisory activities are important to ensure that these objectives are achieved [8].

The supervision of the Apron Movement Control (AMC) unit aims to ensure safety and smooth operations on the airside of Fatmawati Soekarno Bengkulu Airport. Supervision aims to identify and prevent violations that could increase the risk of accidents and threaten flight safety.

In addition, Apron Movement Control (AMC) supervises the movement of vehicles and personnel to prevent accidents and incidents, and ensures that all safety regulations and procedures on the apron are complied with. Apron Movement Control (AMC) also manages aircraft parking space allocation according to needs and conditions on the ground, and ensures that Ground Support Equipment (GSE) operating on the apron is in good condition and safe for use [9].

In carrying out its duties and functions, the AMC unit is expected to perform its tasks in accordance with established work procedures. The AMC unit must be able to act decisively in accordance with procedures in regulating, supervising, and controlling movement.

The make-up area is an area used to load passengers' luggage onto dollies (cargo carts) for subsequent transport and loading into the aircraft. Meanwhile, the breakdown area is a location on the airside where newly arrived passenger baggage is unloaded from dollies (cargo carts) and transported to the baggage claim area using a baggage conveyor belt [10].

To support all surveillance and monitoring activities optimally, Close Circuit Television (CCTV) facilities are required. This is very important because CCTV surveillance cameras are very helpful in monitoring and surveilling areas that are not visible from the air, such as loading and unloading passengers, loading and unloading cargo or mail, refueling, aircraft parking, and aircraft maintenance.

Additionally, CCTV facilities are highly effective in identifying incidents that occur on the airside that could compromise aviation safety and security. With CCTV monitoring facilities in the AMC unit’s workspace, all activities in the Makeup Breakdown Area can be easily monitored by AMC personnel, thereby ensuring the smooth operation of aviation activities at Fatmawati Soekarno Airport.

Based on observations made by researchers in the field, researchers found four problems in the makeup breakdown area that did not comply with established regulations.

RESULT AND DICUSSION

Flight safety is a crucial aspect, especially in the airside area. However, based on the results of random checks conducted by the Apron Movement Control (AMC) Unit in

the Make Up Breakdown Area of Fatmawati Soekarno Airport in Bengkulu, various non-compliance issues were still found in operational implementation in the field. Some findings include the condition of Ground Support Equipment (GSE) vehicles and operational vehicles that do not fully meet safety and operational standards. In addition to equipment conditions, violations were also found in terms of compliance by Ground Handling personnel with applicable regulations.

This situation reflects that the supervision conducted by the AMC Unit at the Make Up Breakdown Area still needs to be improved, particularly in terms of personnel discipline, compliance with Standard Operating Procedures (SOPs), and the effectiveness of operational reporting and documentation systems.

The following are some findings from the relevant unit during the Random Check of ground support equipment (GSE) and operational vehicles operating at Kualanamu International Airport that do not comply with existing SOPs/regulations: (1) Baggage Chart placed randomly by Ground Handling staff, (2) The Baggage Conveyor Loader (BCL) was left in the Breakdown Area without supervision from Ground Handling personnel, (3) Ground handling personnel do not use complete personal protective equipment (safety shoes), and (4) CCTV access to the Makeup Breakdown Area in the AMC Unit is not connected.

Mitigation Recommendation

1. Baggage Chart Placed Randomly by Ground Handling Staff;

Figure 2 Baggage chart

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In accordance with the standards set forth in the Director General of Civil Aviation Decision No. SKEP/140/VI/1999 on "Traffic Regulations in Movement Areas," Chapter IV, Article 28. There has been a violation of order by ground handling personnel, namely the improper placement of Ground Support Equipment (GSE) vehicles. Due to the absence of an Equipment Staging Area (ESA) at Fatmawati Soekarno Airport, Ground Support Equipment (GSE) vehicles must be placed in the Equipment Storage Area (ESA). The improper placement of baggage carts in the make-up area can disrupt the smooth operation of baggage handling at the airport.

When baggage carts are placed haphazardly, the work area becomes narrow and difficult to access by Ground Handling personnel, thereby slowing down the process of loading baggage into the aircraft. Additionally, irregular placement can obstruct the movement of operational vehicles such as Baggage Towing Tractors, increasing the risk of workplace accidents and collisions between equipment. If this situation is left unmonitored, it may lead to disorder in workflow processes and increase the likelihood of baggage being misplaced, left behind, or damaged due to delayed processing. Therefore, clear regulations regarding the parking points for Baggage Carts and strict monitoring are necessary to ensure that each unit is placed in accordance with established procedures.

Based on the issue of misplaced Ground Support Equipment (GSE), it is necessary to improve the monitoring function of AMC personnel with CCTV connectivity in the AMC office so that AMC personnel can easily monitor conditions in the makeup breakdown area.

The airport must provide a dedicated parking zone for baggage carts with clear markings and signs so that each unit can be placed in accordance with established procedures. This area can be marked with boundary lines on the floor or information boards indicating the correct parking location. With an organized parking zone, the movement of operational vehicles such as towing tractors and baggage loading and unloading activities will be smoother and safer.

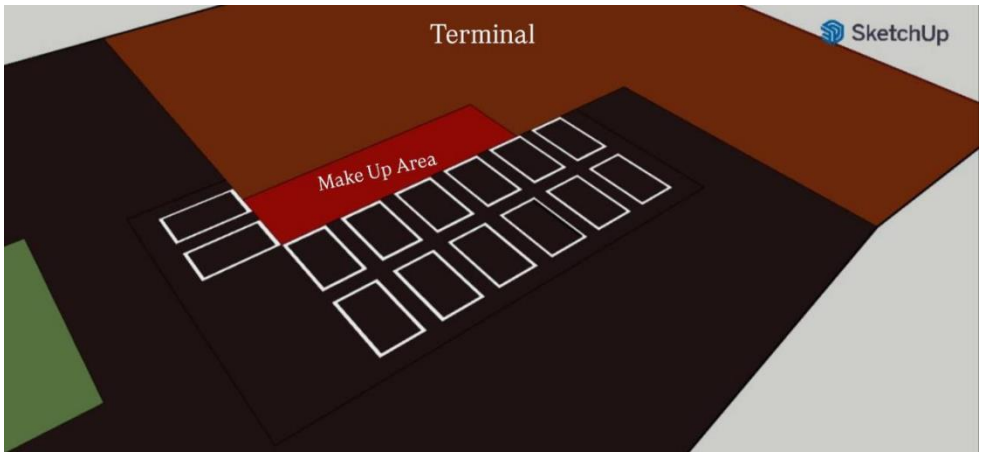

Figure 3 Layout Markings Baggage Chart

Regarding the issue of improper placement of Ground Support Equipment (GSE), strict action must be taken against violators. If the warnings issued by AMC personnel are not heeded, sanctions will be imposed in accordance with the Director General of Civil Aviation's Decision No. SKEP/140/VI/1999 dated June 29, 1999, regarding the Requirements and Procedures for Operating Vehicles on the Airside, Chapter VI, Article 63, paragraphs 1 to 4, which state: (1) The Driver's License may be revoked if the holder of the Driver's License violates the provisions of this article, (2) The revocation of the Driver's License as referred to in paragraph 1 shall be carried out through a written warning process conducted three times consecutively, with an interval of five working days between each warning, (3) If the warning referred to in paragraph 2 is ignored, it shall be followed by the suspension of the Driver's License for a maximum period of 1 (one) month [11]. The Baggage Conveyor Loader (BCL) was left in the Breakdown Area without supervision from Ground Handling personnel;

Based on observations at the Make Up Breakdown Area of Fatmawati Soekarno Airport in Bengkulu, it was noted that one Baggage Conveyor Loader (BCL) unit was left unattended by the Ground Handling personnel on duty. The placement of the Baggage Conveyor Loader (BCL) was not in accordance with the area designated in PR 21 of 2023 concerning the management of Ground Support Equipment (GSE).

This equipment should be under direct supervision to avoid potential operational disruptions and safety risks, especially since the placement location is in an airside area with a high risk level. The absence of personnel around the BCL could cause delays in baggage handling and pose hazards if the equipment is used improperly or

moves without control. This finding indicates the need for enhanced supervision by the AMC Unit over ground handling activities in the breakdown area, particularly regarding compliance with standard operating procedures (SOPs) and the work discipline of field personnel.

Figure 4 Baggage Convenyor Loader

2. **Ground Handling Personnel Do Not Use Complete Personal Protective Equipment (Safety Shoes);**

Figure 5 Ground Handling Personnel

The lack of discipline among Ground Handling personnel while in the Makeup Breakdown Area, specifically by failing to comply with existing regulations—namely, not using Personal Protective Equipment (PPE) such as Safety Shoes—constitutes a violation of the regulations set forth in SKEP/100/XII/1985, regarding Airport Regulations and Procedures, In Chapter II, Article 4, Paragraph (1), it states that “Anyone present at the airport must comply with airport regulations and procedures” [12]. Therefore, it is deemed necessary to conduct more intensive supervision in that area. Currently, AMC personnel have been conducting routine inspections every morning and afternoon, but this is still considered insufficient for actual supervision because AMC supervision is more focused on the apron area.Refueling in Conjunction with Passenger Movement.

3. **CCTV Access to The Makeup Breakdown Area in The AMC Unit is Not Connected**

Figure 6 CCTV Makeup Breakdown Area

Based on Civil Aviation Safety Regulation Part 139 (CASR Part 139) regarding Airports (Aerodrome), provisions regarding Apron Management Services have been established in Directorate General of Civil Aviation Regulation No. KP 038 of 2017, Article 6, Paragraphs 1 and 2, which stipulate that the implementation of Apron Management Services must be supported by facilities capable of monitoring all movements on the airside. Given the lack of supporting facilities and infrastructure, which results in inadequate monitoring and recording of flight data by the AMC unit,

there are non-technical challenges, including the failure to fulfill service and monitoring tasks in accordance with standard operating procedures (SOPs).

The image above shows the CCTV monitor screen display in the Apron Movement Control (AMC) monitoring room at Fatmawati Soekarno Airport in Bengkulu. It can be seen that most of the surveillance camera channels do not display visuals (blank), only showing access restriction icons or disconnected connections. Out of the eight camera channels that should be active to monitor various points in the Make Up Breakdown area, only two channels display real-time images of the airside area.This situation reflects technical challenges in the CCTV monitoring system, which directly impact the effectiveness of AMC Unit oversight of ground handling activities, GSE vehicle movements, and potential safety violations on the airside. The disconnection of most of these surveillance cameras indicates weak maintenance and monitoring of the technology-based security system, which should serve as the primary tool for anticipating operational risks and supporting quick decision-making on-site.

Problem Solving

1. Improvement of Supervision

The supervision carried out has covered important steps in maintaining the performance and operational safety of GSE in accordance with SOPs. However, the obstacles encountered indicate that supervision optimization has not been fully achieved. To improve the effectiveness of supervision, the following are required: (a) Routine Inspections and Internal Audits: Increase the frequency of routine inspections and internal audits to ensure compliance with SOPs. These audits must be conducted by an independent team to obtain objective results and identify areas that need improvement. (b). Training and Certification: Provide ongoing training and certification to supervisors and operators to improve their competence in supervising GSE movements on the apron. Training should cover technical aspects, safety, and compliance with the latest regulations.

Use of surveillance technology such as:

CCTV: Closed Circuit Television (CCTV) is a vital surveillance technology in enhancing security and operational surveillance effectiveness, including in the Make Up Breakdown Area at the airport. The installation of CCTV by the Apron Movement Control (AMC) unit in this area serves to monitor ground handling activities, baggage equipment movements, and potential violations of work safety procedures. With continuous visual recordings, AMC personnel can conduct real-time monitoring or review specific incidents, enabling them to respond quickly in the event of violations, workplace incidents, or procedural non-compliance. Additionally, CCTV serves as supporting evidence if needed during internal investigations. Therefore, the integration of an active CCTV system directly connected to the AMC Unit is a critical requirement for achieving more optimal supervision and preventing unwanted incidents.

Beyond its monitoring function, the presence of CCTV can also encourage improved discipline among operational staff on-site. Aware that their activities are being monitored, staff will be more motivated to work in accordance with standard operating procedures (SOPs) and maintain workplace safety. CCTV also enables better coordination between the AMC Unit and relevant parties such as ground handling and security, as the visual data obtained can serve as a basis for quick decision-making, especially in emergency situations. The application of this technology is not only reactive but also preventive, in order to create an orderly, safe, and structured work environment, especially in airside areas that pose high risks to flight safety and security.

GPS tracking: GPS tracking is a technology that uses the Global Positioning System (GPS) to monitor the location and movement of objects in real-time. In the context of monitoring Ground Support Equipment (GSE) on airport aprons, GPS tracking can be used for various purposes, such as enabling direct monitoring of the location of vehicles and GSE equipment. This helps ensure that GSE movements follow designated routes and do not violate restricted areas on the apron.

By knowing the exact location of each GSE, coordination between ground handling teams can be improved. For example, delivering equipment to a plane being prepared can be done more quickly and efficiently. GPS tracking helps improve safety by monitoring vehicle speed and ensuring that drivers comply with established

speed limits. Additionally, the system can issue warnings if a vehicle stops in an unauthorized area or deviates from the designated route. Data collected from GPS tracking can be used to create reports and analyses of GSE movement patterns. This information is very useful for operational evaluation and better decision-making in the future.

2. Improved Compliance With Sops

Compliance with SOPs and regulations is a key factor in maintaining safety and operational efficiency on the apron. Minor violations found in the field need to be addressed by: (a) Socialization and Education: Conduct intensive socialization regarding the importance of compliance with SOPs and PR 21 of 2023 and provide education about the risks and consequences of violations, (b) Regular Audits and Inspections: Conduct regular audits and inspections to ensure that all operational activities comply with applicable SOPs and regulations, (c) Imposing Sanctions and Awards: Implement a strict sanction system for violators of SOPs and regulations and give awards to units or personnel who comply with the rules. This will create a culture of compliance and increase personnel awareness of the importance of operational safety, and (d) Conducting a Ramp Safety Campaign: The objectives of the Ramp Safety Campaign include creating awareness among all personnel and service providers about the losses from incidents, including equipment and human casualties, and creating awareness that disruptions at the airport due to personnel working outside established procedures can threaten the safety of personnel in the Makeup Breakdown Area. By holding these seminars regularly and on a scheduled basis, it is hoped that personnel will understand safety in the airside area.

CONCLUSION

Based on the results of the research conducted, the following conclusions can be drawn; (1) The supervision carried out by the AMC Unit currently still faces various obstacles, such as inactive CCTV and a lack of compliance with SOPs by officers. This condition has an impact on the effectiveness of supervision in the Make Up Breakdown Area, which is a critical zone in airside operations. (2) Strategies to improve AMC unit supervision include: (a) optimizing technology such as CCTV and GPS tracking, (b)

improving personnel training and discipline, (c) strengthening inter-unit coordination, (d) conducting a Ramp Safety Campaign, and (e) implementing a periodic evaluation system. With these measures, supervision can be carried out more efficiently, safely, and in accordance with operational standards.

ACKNOWLEDGMENTS

The authors would like to express their deepest gratitude to all parties who have provided support and contributions in the implementation and preparation of this journal. The authors would like to express their gratitude to Fatmawati Soekarno Airport Bengkulu for giving permission and opportunity to conduct On the Job Training as well as collecting data needed in this research.

The author also expresses appreciation to the supervisors, lecturers, and colleagues who have provided direction, input, and motivation during the process of writing this journal. Last but not least, the authors would like to thank their families and all parties who cannot be mentioned one by one for all forms of moral support and prayers that have been given.

Hopefully this journal can provide benefits and positive contributions to the development of work safety in the airport environment.

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