

OPTIMIZATION OF APRON MOVEMENT CONTROL (AMC) SERVICES AT THE APRON OF HANG NADIM INTERNATIONAL AIRPORT BATAM

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ABSTRACT

Hang Nadim Batam International Airport is an airport managed by PT BIB which is located in the city of Batam, Riau Islands. In operational activities on the apron, AMC officers still experience problems in the form of fuel/oil spills from aircraft and groundhandling GSE vehicles. The spill made the apron dirty. So it is necessary to improve services or optimize operations on the apron so that the apron is always maintained in a clean condition.

The method in this research uses descriptive qualitative using data collection techniques in the form of interviews, observation and documentation. Data analysis techniques include data collection, data reduction, data presentation, and drawing conclusions.

The results of this research concluded that AMC's operational services on the apron were in the form of aircraft parking plotting, apron cleanliness, aerobridge services, and follow-me car services. Efforts made by AMC to address existing obstacles are creating a Service Level Agreement (SLA) so that AMC services on the apron of Batam's Hang Nadim International Airport are optimal.

Keywords : service, optimization, apron, Hang Nadim Batam International Airport

1. INTRODUCTION

Hang Nadim Batam International Airport is an international airport located in Batu Besar Village, Nongsa District, Batam City, Riau Archipelago Province. The airport features a runway that is 4,025 meters long and 45 meters wide, making it the longest runway in Indonesia and the second longest in Southeast Asia. The airport handles between 70 to 80 flights per day, making it one of the busiest airports in Indonesia.

According to data from the October 2023 Traffic Dashboard, the number of passengers for that month reached approximately 273,000 (PT BIB Monthly Report, 2023). This substantial number of passengers necessitates efficient and effective handling of services at Hang Nadim Batam International Airport. The large volume of passengers significantly affects the number of flights. Based on the same Traffic Dashboard data for October 2023, the number of flights was 2,341 (PT BIB Monthly Report, 2023). This high volume requires careful management and coordination to regulate aircraft movements on the apron and airside for the personnel involved.

According to the Directorate General of Civil Aviation Regulation No. SKEP/77/VI/2005 regarding technical operational requirements for airport facilities, the apron is defined as the airside facility provided for

aircraft activities such as boarding and deboarding passengers, handling cargo, fueling, parking, and aircraft maintenance.

The supervision and operational services on the apron fall under the responsibilities of Apron Movement Control (AMC). Based on Directorate General of Civil Aviation Regulation No. KP 41 of 2017 concerning Technical Operational Guidelines for Civil Aviation Safety Regulations Part 139, AMC personnel are licensed and rated to oversee the orderliness and safety of traffic on the apron, including aircraft parking and the regulation of aircraft entering or exiting the apron.

AMC operates according to the Standard Operating Procedures (SOPs) that have been established. The SOPs for AMC outline all procedures related to supervision and operational services on the apron. In performing these tasks, AMC personnel do not work alone but coordinate with relevant stakeholders in service activities. The sequence of operational services on the apron and coordination procedures between AMC and stakeholders is set out in the Letter of Operation Coordination Agreement (LOCA). LOCA serves as a guideline for all parties involved in operational coordination and communication regarding aviation safety at the airport. Compliance with LOCA is mandatory for both parties.

Despite the regulations and SOPs in place for AMC duties and responsibilities, there are still areas where AMC service has not been optimal. According to reports from AMC at Hang Nadim Batam International Airport, several incidents involving spills of fuel, oil from GSE vehicles, and Foreign Object Debris (FOD) on the apron have occurred. On January 5, 2024, a spill of fuel from GSE vehicle number GPU No. 201 was detected by AMC personnel during a patrol on the apron, resulting in contamination around AD7. Similar incidents occurred on January 10 and 12, 2024, involving fuel and oil spills from GSE vehicles that caused contamination at areas AE4 and AE6. These incidents were caused by GSE vehicles from related stakeholders, highlighting that such events should not be taken lightly by AMC.

Ensuring apron cleanliness is not only the responsibility of AMC but also of all personnel operating in the apron area. The apron must be free from hazards to ensure optimal flight safety. To maintain cleanliness, AMC personnel at Hang Nadim Batam International Airport conduct routine and random inspections to ensure the apron is clean and free from hazards. However, AMC personnel frequently encounter violations by staff or related entities operating in the apron area.

Based on incidents in the apron area, the majority involve fuel/oil spills and FOD. These issues are attributed to personnel or stakeholders operating in the apron. Frequent violations by these parties lead to suboptimal performance of AMC duties. According to the SOPs, AMC personnel are supposed to ensure that operating staff or stakeholders maintain apron cleanliness and report any issues. However, violations related to apron cleanliness by these parties are common. This indicates that AMC has not fully ensured that operating personnel maintain apron cleanliness, which is inconsistent with the SOPs applicable at Hang Nadim Batam International Airport.

Standard Operating Procedures (SOPs) are established to ensure that personnel carry out their duties according to the stipulated guidelines. However, these duties and responsibilities have not been fully applied in practice. Therefore, there is a need to enhance AMC duties and responsibilities to achieve optimal service delivery.

Based on the explanation above, the researcher intends to address the topic in this Final Project with the title "Optimization of Apron Movement Control (AMC) Services at the Apron of Hang Nadim International Airport, Batam." The research questions to be addressed in this study include two main points: first, how is the current operational service on the apron of Hang Nadim International Airport, Batam; and second, what efforts can be made by AMC personnel to overcome the challenges in providing operational services on the apron.

2. METHOD

2.1 Research Design

A research design can be defined as a set of procedures and methods used to analyze and collect data to determine the variables that are the subject of the study. It can also be understood as a strategy employed by the researcher to systematically connect each element of the research in such a way that the analysis and determination of the research subject become more effective and efficient. This research aims to understand how Apron Movement Control (AMC) personnel coordinate with stakeholders regarding services at the apron of Hang Nadim International Airport, Batam.

Therefore, this study employs a qualitative descriptive research method, with data collection techniques including observation, literature review, interviews, and documentation. The research design can also be seen as a structured work plan concerning the relationships between variables comprehensively so that the research results can provide answers to the research questions (Umar, 2007).

2.2 Subject and Object of Research

According to Sekaran and Bougie (2017), a subject is one of the components or members of a sample. Muhammad Idrus (2009) defines research subjects as individuals, objects, or organisms that serve as sources of information needed by a researcher to gather data for the study. The research subjects are the parties that provide information or data for the research. In this study, the subjects are two Team Leaders of AMC and one Airside and Cargo Operations Manager at Hang Nadim Batam International Airport.

Sugiyono (2014) defines the research object as the characteristics of people, objects, or activities within a certain type determined by the researcher, with the aim of studying them to draw conclusions. In this study, the research object is the apron area of Hang Nadim Batam International Airport.

2.3 Data Collection Techniques and Research Instruments

According to Sugiyono, data collection techniques are considered the most strategic step in research because the primary objective of any research is to obtain data (Sugiyono, 2013). The methods of data collection employed in this study were carefully selected to facilitate the gathering of information regarding the optimization of Apron Movement Control (AMC) services at Hang Nadim International Airport, Batam. The study utilized several methods, each aimed at providing comprehensive and reliable data for analysis.

Observation, as defined by Sutrisno Hadi, is a complex process that involves various biological and psychological processes, particularly those related to observation and memory (Sutrisno Hadi, 2013). The primary goal of observation in this context is to produce detailed descriptions as part of qualitative research, which can then be used to generate and test theories and hypotheses. The observations conducted in this study involved direct, on-site observation at the locations relevant to the research focus, specifically the apron area

of Hang Nadim International Airport, Batam. These observations were carried out during the On The Job Training (OJT) period from December 2023 to February 2024. The focus was on observing how AMC personnel manage and control apron operations, with the aim of identifying areas where services can be optimized. The research instrument for this observation consisted of an observation guideline that detailed specific variables, dimensions, and indicators to be monitored, ensuring that the data collected was systematic and relevant to the study's objectives.

Interviews were another critical method of data collection used in this research. According to Esterberg, an interview is a meeting between two people where information and ideas are exchanged through a question-and-answer format, allowing for the construction of meaning on a specific topic (Esterberg, 2013). Interviews are particularly useful for obtaining in-depth insights from key informants, in this case, the personnel involved in AMC operations. The study involved intensive interviews with AMC personnel to gather detailed information about their duties, the services they provide, the challenges they face, and the strategies they employ to overcome these challenges. The interviews were structured around a set of guidelines that ensured all relevant aspects were covered. These guidelines included questions about the specific duties of AMC personnel, the extent to which these duties align with existing regulations, the challenges encountered during apron operations, and the efforts made to address these challenges. The aim was to gain a comprehensive understanding of AMC operations and to identify areas where improvements could be made.

Documentation served as a supplementary method of data collection, providing additional context and supporting information for the research. Documentation involves the collection of data in the form of books, archives, documents, written records, numbers, and images, including reports and statements that are relevant to the research topic (Sugiyono, 2013). In this study, documentation was used to gather background information and historical data about Hang Nadim International Airport, particularly concerning apron operations and the performance of AMC personnel. This method allowed the researcher to collect data from existing documents, which were then analyzed to provide a comprehensive overview of the airport's operational procedures and the challenges faced in optimizing AMC services. The documentation process included reviewing official records, operational reports, and other relevant documents that provided insights into the current state of apron management and the effectiveness of AMC services. This information was crucial for understanding the broader context of the research and for corroborating the data collected through observation and interviews.

2.4 Data Analysis Techniques

The writing method for this final project is descriptive qualitative. According to Sugiyono, qualitative research methods are used to study natural conditions of objects, where the researcher acts as the key instrument, data collection techniques are done through triangulation (combination), data analysis is inductive, and qualitative research results emphasize meaning rather than generalization (Sugiyono, 2018). This qualitative

research method is used for projects with natural objects, where the researcher is the key instrument. Qualitative research will produce descriptive data in the form of verbal messages from the sources observed by the researcher. After obtaining data related to the research, the next step is to analyze the data obtained from the sources. Based on the research results, the researcher uses descriptive analysis or qualitative research to address the problem.

The data collection technique involves interviews, and the data obtained will be combined with literature studies based on existing regulations. The stages of data analysis techniques according to Miles, Huberman, and Saldana (2014) used in qualitative analysis are:

1. Data Collection

Data collection refers to the researcher's efforts to gather initial data, starting with raw and detailed data. The appropriate approach involves identifying patterns, which allows the researcher to review and analyze the original data in new ways, potentially answering deeper questions than those initially posed.

2. Data Reduction

Data reduction is an initial step in data analysis in this research. The purpose of data reduction is to simplify the data collected for easier understanding. Data collected from the field through observations and interviews are reduced by summarizing, selecting key and important aspects, classifying according to the research focus, and organizing data effectively to ensure the final conclusions are accurate. In this study, the aspects reduced include observations and interviews concerning the AMC personnel's operational duties in monitoring GSE vehicles and service tasks at Hang Nadim Batam International Airport.

3. Data Presentation

In data presentation, the writer presents data clearly and concisely to facilitate understanding of the research issues, both as a whole and in parts. According to Nasution (2003), data that is dense and reports that are lengthy are difficult to understand. Therefore, to visualize specific aspects of the research, various matrices, brief descriptions, networks, charts, and graphs should be created. Meanwhile, Miles and Huberman (Sugiyono, 2007) state that "The most frequent form of display data for qualitative research data has been narrative text," indicating that narrative text is commonly used to present data in qualitative research.

In this study, the data presentation process involves the writer providing a general overview of the research results, starting from the research location at Hang Nadim Batam International Airport, the issues observed on-site, and the data collected at the research location.

4. Drawing Conclusions

Drawing conclusions and verification is the final and crucial part of the data analysis technique in qualitative research, as outlined by the interactive model of Miles and Huberman (Bungin, 2003). From the data collection process, the writer records all phenomena related to AMC personnel's performance in monitoring and service tasks at Hang Nadim Batam International Airport. The writer seeks explanations for various phenomena and examines cause-and-effect relationships

related to the research problems. The conclusions are drawn from preliminary data, which are still provisional. These conclusions are refined into accurate and credible final conclusions as the data collection process uncovers strong, valid, and consistent evidence supporting the initial data.

The conclusions are then verified throughout the research period. Verification involves reviewing the data collection notes, consulting with experts (advisors), developing intersubjective agreement, and comparing with other related findings.

Therefore, data reduction, data presentation, and drawing conclusions are integral parts of qualitative research data analysis, as stated by Miles and Huberman. According to Spradley (Sugiyono, 2007), "analysis of any kind involves a way of thinking. It refers to systematic examination of something to determine its parts, the relation among parts, and the relationship to the whole. Analysis is search for patterns." Analysis in any type of research involves systematic examination to determine parts, relationships among parts, and their relationship to the whole.

Consequently, data analysis in this research is a process of systematically organizing and interpreting data obtained from observations, interviews, and documentation to make conclusions that are comprehensible to both the researcher and others.

2.5 Validity Testing of Data

Qualitative research emphasizes data validity, which is tested through three steps: validity, reliability, and objectivity. According to Sugiyono (2014, p. 363), validity is the degree of accuracy between the data observed in the research object and the data reported by the researcher. Therefore, valid data is data that does not differ between what the researcher reports and what actually occurs in the research object.

Data validity refers to the degree of trustworthiness or correctness of research results. According to Lincoln and Guba (1985) as cited in Wijaya (2018), in qualitative research, validity is complex and dynamic, meaning it is not consistent and repetitive as it was initially. Data validity can be achieved through data collection processes using data triangulation techniques. According to Sugiyono (2015, p. 83), data triangulation is a data collection technique that combines various data and existing sources. Wijaya (2018, pp. 120-121) describes data triangulation as a technique for verifying data from various sources using different methods and at different times. There are three types of triangulation: source triangulation, technique triangulation, and time triangulation.

a. Source Triangulation

Source triangulation tests the credibility of data by checking data obtained from various sources. For example, interview results with informants FS should be consistent with results from informants SP, AZ, and AM.

b. Technique Triangulation

Technique triangulation tests data credibility by verifying data obtained from the same source using different techniques. For instance, data obtained from observations at Hang Nadim Batam International Airport should match the results from interviews with informants

FS, SP, AZ, and AM, as well as with documented evidence.

c. Time Triangulation

Time can affect data credibility. Data obtained through interviews in the morning, when the informant is still fresh, is generally more valid. Therefore, testing data credibility should involve checks using observations, interviews, and documentation at different times or under different conditions to ensure data credibility. Interviews conducted with informant SP on February 5 and 6, 2024, at different times and settings, should yield consistent results.

2.6 Research Location and Time

This Final Project research was conducted at Hang Nadim International Airport in Batam, specifically in the apron area. The location was chosen because the researcher was participating in a three-month On The Job Training (OJT) program at Hang Nadim International Airport, providing a practical opportunity to observe and analyze the operations in this area.

The research was conducted from December 11, 2023, to February 28, 2024, coinciding with the duration of the On The Job Training (OJT). The schedule for research activities was planned to align with this period, allowing the researcher to gather data and conduct observations effectively throughout the training program.

3. RESULT AND DISCUSSION

AMC Operational Services on the Apron

AMC operational services on the apron are a form of aviation operational service directly related to aircraft activities while on the apron. The following are the results of interviews conducted with FS, who serves as the Acting Manager of Airside and Cargo, regarding the question, "What are the forms of AMC operational services?" FS responded:

"AMC operational services include aviation operational services such as aircraft parking plotting, apron cleanliness, garbarata (aviobridge) services, and follow-me car services. Aircraft parking plotting is conducted to determine the parking stand position for incoming aircraft. Regarding airside cleanliness, AMC personnel are responsible for maintaining the condition of the airside, especially the apron area, in a clean state. Garbarata services involve AMC personnel as garbarata operators, handling the docking and undocking processes of the garbarata with the aircraft. Follow-me car services are provided when assistance is needed related to directions on the airside area." (See Appendix B-1)

This information was also confirmed by SP, the Team Leader of Apron Movement Control, who, in response to the same question, stated:

"AMC operational services include determining aircraft parking. Each aircraft is assigned a parking stand location according to the conditions on the apron. In garbarata services, AMC personnel also handle the docking and undocking processes of the garbarata with the aircraft. For apron cleanliness, AMC personnel must ensure the apron remains free from hazards and FOD (Foreign

Object Debris). In follow-me car services, AMC personnel provide escort services for vehicles with special duties on the airside, such as escorting VVIP and Hajj passenger buses." (See Appendix B-6)

Several forms of AMC operational services on the apron were identified as the duties and responsibilities of AMC. From the explanations provided by FS and SP, four main services were highlighted: aircraft parking plotting, airside cleanliness, garbarata services, and follow-me car services. AMC is responsible for determining the parking stand location for aircraft arriving on the apron. Regarding apron cleanliness, AMC personnel are required to maintain the apron in a clean state, free from hazards and FOD. Additionally, AMC personnel serve as garbarata operators, handling the docking and undocking processes, and provide follow-me car services to escort special vehicles operating on the airside.

These observations align with the researcher's findings during the On The Job Training (OJT) period at Hang Nadim International Airport, Batam. While conducting the OJT, the researcher observed all forms of aviation operational services that fall under the duties and responsibilities of AMC personnel. These services include aircraft parking plotting. When an aircraft lands, it enters the apron to carry out passenger, cargo, and baggage loading and unloading activities. Given the numerous parking stands on the apron, AMC personnel determine the parking location for each arriving aircraft to prevent collisions or accidents on the apron.

The apron is where aircraft conduct passenger and cargo loading and unloading, which is why maintaining cleanliness is essential. Ensuring the apron is clean is a key operational service provided by AMC, which is among their primary duties and responsibilities. AMC personnel are required to keep the apron clean at all times. Additionally, AMC serves as the operator of the garbarata. AMC personnel handle the docking process for aircraft that have just block-on and the undocking process for aircraft that are block-off. Garbarata services are an integral part of AMC's aviation operational services.

AMC personnel are equipped with follow-me cars, which are used for operational activities on the airside. Follow-me car services are provided by AMC personnel during special activities on the apron, such as escorting buses carrying VVIP or Hajj passengers and providing guidance to aircraft that require directions on the airside.

The researcher reviewed several documents related to AMC operational services on the apron. Figure 4.1 illustrates the aircraft parking plotting process, one of the operational services provided by AMC on the apron.

FLIGHT	ORG	SCH	EST	ACT	BLK	BAY	BELT	STAT	REG
PALE	KNO	15:14:00	15:14:00	15:14:00	AE6	2	LAN	PKLJZ	OD-357
PRIDE	DTB	15:14:15	15:14:15	15:14:15	AE2	2	LAN	PKSAF	OD-357
PRIDE	CGK	15:14:30	15:14:30	15:14:30	AE3	2	LAN	PKSGE	OD-357
PRIDE	SRG	15:14:45	15:14:45	15:14:45	AE4	1	LAN	PKSAO	OD-357
PRIDE	LMU	14:45:15	14:45:15	14:45:15	AD7	2	ETA	PKWHI	OD-357
PRIDE	PNK	15:30:00	15:30:00	15:30:00	AE1	2	ETA	PKCRH	OD-357
PRIDE	CGK	14:45:15	14:45:15	14:45:15	AE2	4	SCH	ZZZZZ	OD-357
PRIDE	TKG	16:30:00	16:30:00	16:30:00	AE5	2	SCH	ZZZZZ	OD-357
PRIDE	SUB	16:30:00	16:30:00	16:30:00	AE2	2	SCH	PKGQM	OD-357
PRIDE	PGK	16:35:00	16:35:00	16:35:00	1	SCH	ZZZZZ	SI-1883	OD-357
PRIDE	PDG	17:20:00	17:20:00	17:20:00	1	SCH	ZZZZZ	SI-1883	OD-357
PRIDE	CGK	17:40:00	17:40:00	17:40:00	2	SCH	ZZZZZ	SI-1883	OD-357
PRIDE	PNK	18:10:00	18:10:00	18:10:00	2	SCH	ZZZZZ	SI-1883	OD-357
PRIDE	CGK	18:15:00	18:15:00	18:15:00	3	SCH	ZZZZZ	SI-1883	OD-357

Figure 1. Web ATV Aircraft Parking Plotting

The above photo shows the web-based ATV system used by AMC as a medium for plotting aircraft parking locations. Once the parking stand location is entered into the web, it appears on the ramp display. This information is used by all parties to view the parking location of incoming aircraft.

Arrival										Departure									
FLIGHT	ORG	SCH	EST	ACT	BLK	BAY	BELT	STAT	REG	FLIGHT	DEST	SCH	EST	ACT	BLK	BAY	GATE	STAT	REG
JI-972	KNO	13:20	14:40	14:35	14:39	AE6	2	LAN	PKLJZ	OD-357	KUL	12:15	13:45	14:30	14:19	AE1	1	DEP	PKMLC
IU-854	CGK	14:10	14:42	14:45	14:47	AE3	4	LAN	PKSAF	OD-357	SUB	14:00	15:10		AE6	7	ODD	PKLJZ	
QG-931	DTB	14:15	14:15	14:22	14:24	AE2	3	LAN	PKSGE	OD-357	KNO	14:10	14:28	14:17	AE6	8	DEP	PKLHS	
IU-955	SRG	14:30	14:30	14:26	14:29	AE4	1	LAN	PKSAO	OD-357	PDG	14:20	14:37	14:22	AE5	9	DEP	PKLHV	
IW-1229	LMU	14:45	14:45			AD7	2	ETA	PKWHI	OD-357	KNO	14:45			AE2	3	NBD	PKSGE	
SI-1882	PNK	15:30	15:30			AE1	2	ETA	PKCRH	OD-357	PGK	14:50	15:30		AE3	6	ODD	PKSAF	
QG-948	CGK	15:45	15:45			AE2	4	SCH	ZZZZZ	OD-357	IU-950	YIA	15:10		AE4	6	CKC	PKSAO	
IU-978	TKG	16:30	16:30			AE5	2	SCH	ZZZZZ	OD-357	SUB	16:15			AE2	4	CKO	ZZZZZ	
QG-948	SUB	16:30	16:30			3	SCH	PKGQM	OD-357	SI-1883	PNK	16:30			AE1	CKO	ZZZZZ		
IU-972	PGK	16:35	16:35			1	SCH	ZZZZZ	OD-357	IU-859	CGK	17:10			AE5	7	SCH	ZZZZZ	
JI-228	PDG	17:20	17:20			1	SCH	ZZZZZ	OD-357	QG-949	CGK	17:30			AE3	3	SCH	ZZZZZ	
IU-852	CGK	17:40	17:40			2	SCH	ZZZZZ	OD-357	PLM	18:00			8	SCH	ZZZZZ			
JI-989	PNK	18:10	18:10			2	SCH	ZZZZZ	OD-357	IU-855	CGK	18:15			6	SCH	ZZZZZ		
GA-156	CGK	18:15	18:15			3	SCH	ZZZZZ	OD-357	QG-945	CGK	18:45			4	SCH	ZZZZZ		

Figure 2. Ramp Display

The ramp display is shown to all stakeholder units that require information about aircraft parking locations. Regarding apron cleanliness, AMC personnel are responsible for ensuring the apron remains clean at all times.



Figure 3. Apron

The above image depicts the apron area, which must be kept clean at all times. Several stakeholders operate in the apron area in relation to aviation operations. Due to the high volume of operational activities on the apron and the location where aircraft

conduct passenger, cargo, and baggage loading and unloading, the apron must always be kept clean.

Regarding garbarata services, AMC personnel also serve as garbarata operators.



Figure 4. Garbarata Service

The above image shows AMC personnel operating the garbarata. This process is carried out when the aircraft has just block-on and when the aircraft is about to block-off.

Regarding follow-me car services, AMC personnel provide follow-me car services to vehicles with special duties on the airside.



Figure 5. Follow me car service

The above image shows the follow-me car service provided by AMC personnel to escort special vehicles transporting VVIP passengers.

Based on data from interviews, observations, and documentation, it can be concluded that AMC operational services on the apron consist of aircraft parking plotting, airside (apron) cleanliness, garbarata services, and follow-me car services.

Efforts Made by AMC to Address Existing Challenges

The efforts made by AMC are in response to various challenges encountered in operational services on the apron. The following are the results of an interview

with FS, Acting Manager of Airside and Cargo, in response to the question, "Are there any challenges encountered in providing services on the apron? If so, what are the challenges faced by AMC personnel?":

"The challenge is maintaining airside cleanliness, especially in the apron area, where AMC personnel often find fuel/oil spills from aircraft or Ground Support Equipment (GSE) vehicles operating in the apron area. These fuel/oil spills occur frequently, resulting in a dirty apron area. When such spills occur, we request the responsible party to clean them up themselves. However, these incidents continue to happen, leading to a lack of cleanliness on the apron." (See Appendix B-2)

This sentiment was echoed by SP, the Team Leader of Apron Movement Control, who, when asked the same question, stated:

"The challenge lies in ensuring the cleanliness of the apron. During apron patrols, AMC personnel often find fuel/oil spills from GSE vehicles engaged in operational activities on the apron. These spills make the apron dirty, and the responsible parties are held accountable for cleaning up the spills." (See Appendix B-6)

The challenges identified in AMC's operational services, as explained by FS and SP, primarily involve fuel/oil spills caused by parked aircraft and GSE vehicles operating in the apron area. These spills result in a dirty apron, impacting AMC's operational services related to airside cleanliness. When fuel/oil spills are detected on the apron, AMC personnel hold the responsible parties accountable for cleaning up the spills. It is mandatory that all spills be cleaned to ensure the apron remains in a clean state.

These observations align with the researcher's findings during the On The Job Training (OJT) period at Hang Nadim International Airport, Batam. The researcher observed that during apron operations, fuel/oil spills from GSE vehicles handling parked aircraft were common. In some cases, even the parked aircraft itself would leak fuel/oil from its engines. These recurring incidents raise concerns about potential accidents or incidents.

AMC personnel have so far responded by reprimanding and requesting the responsible parties to clean up the fuel/oil spills. Typically, the spills are cleaned only after AMC personnel issue warnings and request the responsible parties to take action. According to the regulations outlined in the Director General of Civil Aviation's Decree No. PR 21 of 2023, which covers the Manual of Standards CASR part 139 Volume I Aerodrome, Chapter 9, point 9.8.3 on airside vehicle supervision, all vehicles and ground equipment operating in the airside area must be maintained in good working condition to prevent issues such as fuel, oil, and hydraulic fluid leaks. The regulation clearly states that vehicles and equipment operating in the apron area must be in a serviceable condition to prevent fuel/oil spills.

The researcher also reviewed documentation related to fuel/oil spills on the apron:



Figure 6. fuel/oil spill from an aircraft engine

The above photo shows a fuel/oil spill from an aircraft engine while parked on the apron. The responsible party is asked to clean up the spill themselves. Such incidents lead to a dirty apron.



Figure 7. residual fuel/oil spills from a GSE

The image above shows residual fuel/oil spills from a GSE vehicle operating on the apron. This vehicle belongs to the ground handling company operating in the apron area. The spill causes the apron to become dirty, affecting the cleanliness that is part of AMC's operational services.

Based on data from interviews, observations, and documentation, it can be concluded that due to the challenges posed by fuel/oil spills from aircraft and GSE vehicles in the apron area, AMC's operational services have not yet been fully optimized. Therefore, efforts are needed to prevent these incidents from recurring. These efforts should aim to address the challenges that have persisted. According to an interview with FS, Acting Manager of Airside and Cargo, in response to the question, "What efforts are AMC taking to prevent this from happening again?" FS stated:

"So far, the efforts we've made are based on existing regulations. To prevent this from happening again, it might be impossible to eliminate it entirely, but we can minimize the violations. We are working on establishing

a Service Level Agreement (SLA), also known as a Service Level Agreement between AMC and the ground handling company, which would stipulate penalties or fines in the event of fuel/oil spills on the apron. Imposing strict penalties on violators is an effective way to reduce the occurrence of these incidents." (See Appendix B-3)

This was also confirmed by SP, the Team Leader of Apron Movement Control, in response to the same question:

"We always refer back to the existing regulations. By implementing a Service Level Agreement that addresses the handling of fuel/oil spills on the apron, we ensure compliance. Since we work within the aviation industry, everything we do is governed by regulations." (See Appendix B-7)

Similarly, AM, an officer at Apron Movement Control, also emphasized the importance of establishing a Service Level Agreement:

"Creating a Service Level Agreement (SLA) between AMC and ground handling, which outlines the consequences for violations of airside cleanliness, is a more effective approach. This way, AMC has a solid foundation for taking action." (See Appendix B-13)

Based on interviews with the various informants mentioned above, it can be concluded that AMC's efforts to address existing challenges involve establishing a new regulation in the form of a Service Level Agreement (SLA), which clearly defines the handling of operational activities on the apron. Once the SLA is in place, the parties responsible for causing issues that impact AMC's services can be held accountable and subject to strict penalties. This approach is expected to effectively address the challenges faced in AMC's operational services.

Discussion of Research Results

This research has presented data on AMC's operational services on the apron and the efforts made by AMC to address challenges in providing operational services at Hang Nadim International Airport, Batam. The researcher first discusses the operational services provided by AMC on the apron. These services are part of AMC's duties and responsibilities as airside supervisors. The operational services provided by AMC on the apron include aircraft parking plotting, airside cleanliness, garbarata (aviobridge) services, and follow-me car services.

Aircraft parking plotting is conducted by AMC as part of aviation operational services. The apron is a specific area on the aerodrome intended for aircraft to load and unload passengers, mail, or cargo, refuel, park, or undergo maintenance (Aswanti, 2019). The apron is a parking area for aircraft, consisting of several parking stands. AMC determines the parking location for each aircraft entering the apron to carry out the loading and unloading of passengers and cargo. Regarding airside cleanliness, AMC personnel, as airside supervisors, are responsible for ensuring that the apron is always kept clean (Bima, 2022). Due to the numerous operational activities on the apron, it is essential to maintain the apron

in a clean condition. Regarding garbarata services, AMC personnel also serve as garbarata operators. AMC personnel handle the docking process for aircraft that have just block-on and the undocking process for aircraft that are about to block-off. Additionally, in the case of follow-me car services, if there are special activities on the apron, AMC provides escort services using follow-me cars. This is consistent with the findings of Yoga (2019), who stated that AMC personnel, as airside supervisors, have duties and responsibilities that include overseeing traffic regulations on the apron, managing aircraft parking, maintaining airside cleanliness, and ensuring the safety of personnel, vehicles, and aircraft on the apron.

Next, the researcher discusses the efforts made by AMC to address challenges in providing operational services on the apron. One of the challenges faced by AMC in their operational services on the apron relates to maintaining apron cleanliness. These challenges include fuel/oil spills caused by aircraft or GSE vehicles operated by ground handling personnel. These spills result in a dirty apron, and AMC's services related to apron cleanliness become suboptimal. Therefore, with these challenges, optimization efforts are needed to ensure that AMC's services on the apron become optimal. The efforts that AMC has taken so far include reprimanding and requesting the responsible parties to clean up the spills. However, this approach has not been effective, as similar incidents, such as fuel/oil spills on the apron, continue to occur. In the short term, AMC personnel can take various measures, such as enhancing supervision functions on the apron to create a more conducive apron environment. Additionally, improving coordination with ground handling personnel can make them more aware of the importance of apron cleanliness. A long-term solution to prevent the recurrence of these incidents is to establish a Service Level Agreement (SLA), which outlines fines or penalties for violators. This approach is a long-term solution because it requires a relatively long time to be discussed and reviewed for all relevant aspects. With the implementation of a new SLA, it is hoped that challenges such as fuel/oil spills and other issues on the apron can be effectively addressed.

4. CONCLUSION

After conducting research related to the above title and issues, which have been elaborated in the previous chapters, the following conclusions can be drawn. First, the operational services provided by AMC on the apron of Hang Nadim International Airport, Batam, include aircraft parking plotting, apron cleanliness maintenance, garbarata (aviobridge) operations, and follow-me car services. However, these services have encountered challenges, particularly related to fuel/oil spills caused by aircraft or Ground Support Equipment (GSE) operated by ground handling personnel in the apron area. These spills have resulted in a less-than-optimal level of cleanliness on the apron, impacting AMC's ability to maintain a clean and safe environment.

Second, to address these challenges, AMC has undertaken the initiative to develop a Service Level Agreement (SLA). The SLA will outline the necessary actions and strict measures to be taken when fuel/oil spills occur on the apron, ensuring that the responsible parties are held accountable for maintaining the cleanliness and safety of the area. The establishment of such an agreement aims to mitigate the recurring issue of spills and enhance the overall operational effectiveness of AMC services on the apron.

Based on the discussion and conclusions outlined above regarding the operational services provided by AMC on the apron of Hang Nadim International Airport, Batam, and the efforts made by AMC personnel to address the challenges faced, several recommendations can be made.

First, it is essential to further enhance the role and responsibilities of AMC as airside supervisors, in accordance with the Director General of Civil Aviation's Decree No. PR 21 of 2023, which pertains to the Manual of Standards CASR part 139 Volume I Aerodrome, Chapter 9, point 9.5.6, on the duties of airside movement personnel. By adhering to these guidelines, the safety of aviation operations can be more effectively achieved.

Second, it is crucial to continuously improve all forms of aviation operational services in line with AMC's Standard Operating Procedures (SOPs) and Quality Procedure No. PM/BTH-AOM/AO-02 on Apron Operations Management. This will help ensure that the services provided by AMC are optimal and meet the highest standards of operational efficiency.

Third, it is recommended to regularly evaluate all challenges related to aviation operations on the apron by referring back to the Director General of Civil Aviation's Decree No. PR 21 of 2023, specifically Chapter 9, point 9.8, on airside vehicle supervision. This evaluation process will help identify and address any existing issues, ensuring that they are effectively managed and mitigated.

Fourth, improving coordination with all stakeholders operating in the apron area is essential. This should be done in accordance with the Letter of Operational Coordination Agreement (LOCA) No. LOCA/DO.001/XII/2022/BIB. Strengthening this coordination will ensure that all parties involved in apron operations are aligned and working together to maintain a safe and efficient operational environment.

Finally, it is recommended to establish a Service Level Agreement (SLA) that specifically addresses the handling of fuel/oil spills on the apron. This should be aligned with the guidelines set out in the Director General of Civil Aviation's Decree No. PR 21 of 2023, particularly Chapter 9, point 9.8.3, on airside vehicle supervision. The SLA should ensure that all vehicles and equipment operating on the apron are maintained in good working condition, thereby preventing spills and maintaining optimal cleanliness on the apron. By implementing these recommendations, AMC can enhance its operational effectiveness and ensure a safer,

cleaner, and more efficient apron environment at Hang Nadim International Airport, Batam.

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