

## **Analysis of the Role of the Airport Rescue and Fire Fighting Unit (ARFF) for Airside Safety at Adi Soemarmo Solo Airport**

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### **Abstract**

A role is something that emphasizes the duties and obligations of a person and as a process of achievement, it means that someone has carried out a role. The role of the ARFF Unit is important in monitoring security and safety on the air side and overseeing the movement of aircraft, vehicles, passengers and goods in the airside area as well as handling or monitoring runways or runways. The ARFF unit at Adi Soemarmo Solo Airport needs a limited number of personnel, because the unit lacks finances due to the Covid-19 period and officials who have aged or retired. The purpose of this research study was to determine the Role Analysis of the Airport Rescue And Fire Fighting Unit (ARFF) for Airside safety and the Readiness of the ARFF Unit when dealing with accidents and incidents at Adi Soemarmo Solo Airport. Research using qualitative research methods, namely data using primary and secondary data. Primary data were obtained from interviews, observations and field documentation regarding airside safety at airports. Secondary Data is data obtained from photographs, documents and others in the company unit. The results of the research, from the main and principal roles or tasks that have become the obligations of the ARFF Unit must be demanded according to the Stipulation Letter in the KP regulations. Number 14 of 2015 regarding Facilities, Human Resources and Standard Operating Procedures. The role of the Airport Rescue And Fire Fighting Unit (ARFF) at Adi Soemarmo Airport is now not in accordance with the rules with the reality on the ground, so there is a difference from according to the applicable provisions and in the field what occurs is not following according to procedures, especially at Adi Soemarmo Solo Airport. If the financial condition has improved one day it will make it easier for the tasks and obligations to fulfill them and overcome if there are accidents and incidents regarding airside safety at Adi Soemarmo Solo Airport.

**Keywords:** Role, Safety, ARFF Unit



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### **INTRODUCTION**

Air transportation modes are now serving increasing passengers due to the advancement of international trade and activities, hence the emergence of increased activity at terminals or aircraft movements as well as on the air side. So that currently aviation in Indonesia is experiencing rapid development. The airport is an access to air travel in the supporting factors of air transportation. This is not only seen from the smoothness that is provided and every airport throughout Indonesia provides services with fast and responsive safety and security. In accordance with applicable regulations at airports regarding the importance of security in order to create safety on flights with elements of facilitators or regulators, infrastructure providers and operators.

The researcher this time had the opportunity to research at Adi Soemarmo Solo Airport which is located in Boyolali Regency, Central Java Province. The previous name of the airport was the Panasan Air Base (Lanud) because it was located in the Panasan area. The International Air Transport Association's (IATA) code is "SOC" and the International Civil Aviation Organization's (ICAO) code is "WAHQ". This airport is a place for planes and

helicopters to get off and on and operates inter-island as the main access for transporting passengers and cargo. According to Government Regulation PP. number 3 (2001), aviation security and safety is a situation with the aim of creating flights that are carried out safely and safely in accordance with Standard Operating Procedures (SOP). According to KP. number 14 (2015) requires facilities, human resources and SOPs for aviation safety and security that must exist, namely the role of the Airport Rescue And Fire Fighting (ARFF) unit. So that the Airport Rescue And Fire Fighting (ARFF) unit in the airport area plays an important role.

The role of the ARFF Unit is important as security and safety oversight on the air side by supervising the movement of aircraft, vehicles, passengers and goods on the air side and handling or monitoring runways or runways, even the security of areas on the air side or apron based on Standard Operating Procedure (SOP). As meant by the Airport Rescue And Fire Fighting Unit (ARFF) are airport personnel who have certificates and ratings to carry out and carry out work plan tasks as the person in charge of activities such as equipment checking, supervision, aircraft movements, vehicle traffic and accident prevention in the area. air side. The movements carried out by the unit are located in the vicinity of the airport area, one of which is the end of the runway or runway and other places in the area of aircraft movement or the air side.

By knowing the emergence of a plane crash at the airport, the Aviation Accident Assistance and Fire Fighting Unit (PKP-PK) or Airport Rescue And Fire Fighting (ARFF) immediately directed the operating vehicle to the scene of the incident. The Airport Rescue And Fire Fighting Unit (ARFF) plays an important role if an incident occurs or an airplane accident occurs within the airport, so that the unit has special obligations in carrying out its duties. Then it can create flight comfort and security, so that safety in flight is a top priority. Accidents on aircraft can be caused by several factors, including weather factors, human error factors, both the aircraft itself and the airport facilities not functioning properly. ARFF unit operations are almost non-existent due to the increasing level of aviation security in the world, especially in Indonesia. But for the Airport Rescue And Fire Fighting Unit (ARFF) at Adi Soemarmo Solo Airport, the required number of personnel is still lacking. Because at that time the unit lacked finances due to the Covid-19 period and officials who had aged or retired. So to make up for the shortfall, the shift time is carried out under Operation Control (BKO), which is called an additional guard shift, but it is only done when the category is under eight. If it is categorized as eight when there are major activities such as the departure or arrival of the pilgrimage, then there will be a lack of personnel.

This study aims to re-ensure the duties and obligations of the ARFF Unit which should have complied with the applicable standard operating procedures by assessing or re-evaluating the personnel, equipment and vehicles of the Airport Rescue And Fire Fighting (ARFF) for Airside safety whether they comply with national regulations and valid international. The results of this research are expected to be a solution for the Airport Rescue And Fire Fighting (ARFF) unit at Adi Soemarmo Solo Airport to create policies that are more effective and efficient in maintaining order and smooth flight operations. So the importance of the role of the Airport Rescue And Fire Fighting Unit (ARFF) for safety when supervising and handling aircraft accident and fire rescue quickly, responsively.

The research objectives of the report above are as follows: To determine the analysis of the role of the Airport Rescue And Fire Fighting Unit (ARFF) for airside safety at Adi Soemarmo Airport, Solo. To determine the readiness of the Airport Rescue And Fire Fighting Unit (ARFF) when facing accidents or Accidents and Incidents at Adi Soemarmo Solo Airport.

## Relevant Research

**Table 1. Relevant Research**

No	Name	Title	Year	Research Result
1	M. Amirullah	Implementation of PKP-PK Unit Performance on Occupational Safety and Health at Sultan Hasanuddin Makassar International Airport	2020	The results of the study stated that Fire Aviation Accident Assistance (PKP-PK) is a part of the emergency management unit at the airport which has the main task of saving lives and property in the event of an aircraft accident.
2	Nurul Qamil	Analysis of Access Road Development as an Effort to Improve Aviation Accident and Fire Fighting Unit (PKP-PK) Facilities at Nusawiru Airport	2021	Explaining that the condition of the access road at the PKP-PK Unit at Nusawiru Pangandaran Airport has not fulfilled the conditions stated in the KP. 14 of 2015, even though a better access road has been built, the Nusawiru Pangandaran Airport access road only connects the fire station with the taxiway and does not directly connect the fire station to the runway.
3	Alvian Ardiansyah	Analysis of PKP-PK Vehicle Maintenance at Adi Soemarmo Solo Airport	2021	The result is that in maintaining personnel in a work system using shifts, for facilities there are daily, weekly, monthly, quarterly, semester, annual and annual routine activities and in efforts both in terms of performance and the process of maintaining facilities, especially vehicles and supporting equipment, are in accordance with SOP ( Standard Operating Procedure).
4	K.Sevi Nur Safitri	Feasibility Analysis of Aviation Accident Assistance Unit and Fire Fighting Unit (PKP-PK) Facilities at Dewandaru Karimunjawa Airport	2022	The results explain that the PKP-PK unit facilities have been declared feasible because they meet the standards for the category of main facilities or tools in providing aviation accident assistance and fire fighting, PKP-PK operational equipment and supporting materials at Dewandaru airport.
5	Kania Chaerunnisa	Identification of Hazards and Occupational Health and Safety Risks Airport Rescue & Fire Fighting Sultan Hasanuddin Airport, Makassar	2022	The result is that the highest level of risk is dominated by moderate risk with mechanical hazard potential. In terms of safety, the Airport Rescue And Fire Fighting Unit, especially the personnel, are not fully aware of and comply with existing work instructions.

Source: Researcher (2020, 2021, 2022) STTKD Library

As for the various research differences in the table above, with this research the differences lie in time, place, and object. Airport Rescue And Fire Fighting (ARFF) is tasked with supervising the vicinity of the ARFF Unit or Apron, so the level is high to protect and maximize time or On Time, and the equipment and vehicles used must be maintained.

## RESEARCH METHODS

### Research Design

This researcher conducted research using qualitative research methods that are descriptive in nature and use more analysis. Descriptive qualitative research is research that uses a case study method or approach. (Sugiyono, 2017) Based on this, there are four

keywords that need attention, namely the scientific method, data, purpose and usability. Because researchers choose to use qualitative research methods to determine how to find, collect, process and analyze the research data.

### **Place and Time of Research**

In this study, it was only conducted in buildings or fire stations and the Airside Unit Airport Rescue And Fire Fighting (ARFF) at Adi Soemarmo Airport, Solo.

### **Research Subject**

The research subject is someone who provides information on the situation and conditions at the research site. To determine this informant using a purposive sampling technique, namely the technique of taking data sources by determining the sample under consideration, (Sugiyono, 2010). The subject of this research is all the Airport Rescue And Fire Fighting (ARFF) Units that carry out activities at Adi Soemarmo Solo Airport. According to Sugiyono (2018) research subjects in qualitative research are referred to as informants, namely a person or individual who provides information about the data that the researcher wants related to the research being carried out.

### **Object of Research**

The object of research according to the Big Indonesian Dictionary (KBBI) is a thing, case, or person who is the subject of the informant to the source or research target. According to Sugiyono (2017) the object of research is an attribute or value characteristic of people, objects or activities that have certain variations. The object of this research is part of the Airport Rescue And Fire Fighting Unit (ARFF) building located at Adi Soemarmo Solo Airport.

### **Data Collection Technique**

The data collection method used in this research is as follows:

1. Interview. According to Yusuf (2014), an interview is an event or process interaction between the interviewer and the source of information or the person being interviewed through direct communication or asking directly about an object under study. The researcher conducted semi-structured interviews with related parties, namely Airport Rescue And Fire Fighting (ARFF) personnel, both the operators and supervisors, in order to find problems more openly so that the informants could give their opinions and ideas. From the basic considerations of choosing semi-structured interviews because the implementation is freer than structured interviews, the researchers and informants are more intimate, making it easier for researchers to collect data. (Sugiyono, 2017)
2. Observation. According to Sugiyono (2018), observation is a data collection technique that has specific characteristics when compared to other techniques. In the observation section, this time the researcher made direct observations of Airport Rescue and Fire Fighting (ARFF) activities which were carried out while on the field of Personal Protection Equipment (PPE). As for the ARFF Unit, researchers observed equipment, vehicles, and personnel. In the morning the personnel checks the vehicle with a checklist table, as well as filling water every day for the main vehicle, checking (APAR) Light Fire Extinguishers once every 1 month and testing the quality of foam once every 6 months. In this case it makes the results with a real framework from the subject of the research object. So it makes it easier for researchers to retrieve the results of information data.

3. Documentation. According to Sugiyono (2018), documentation is a way to obtain data and information in the form of books, archives, documents, written numbers and pictures in the form of reports and information to support research. Documentation carried out to obtain secondary data which will be used as a theoretical basis in analyzing problems and can complement research. So the data is a complement to the use of observation and interview methods so that they are more trusted or have high credibility if they are supported by photographs or written works related to the maintenance activities of the ARFF Unit vehicle facilities at Adi Soemarmo Solo Airport.

### **Research Instruments**

According to Sugiyono (2018), a research instrument is a tool used to measure natural and social phenomena that are observed or researched. This study uses 2 types of data, namely primary data and secondary data. Primary data were obtained from interviews, observations, and field documentation regarding airside safety at airports. Secondary data is data obtained from photographs, documents, and others in the company unit.

### **RESEARCH RESULTS AND DISCUSSION**

The Airport Rescue And Fire Fighting Unit (ARFF) is a unit that saves human life and property or goods during an emergency at the airport and its surroundings, so that if there is no unit at the airport it will be difficult to operate. One of them is the factor of security and safety in an effort to increase air transportation users must comply with the mandatory provisions that are owned by each airport with the condition that it is in the form of a certificate or rating. Obtaining this certificate requires mastery of the field and the ARFF Unit must have facilities, Human Resources (HR) and Standard Operating Procedures (SOP) according to its category.

In carrying out the activities of the unit, as part of their role, following the job description or duties and authority to carry out the obligations of these personnel who hold their respective expertise so that when handling accidents and even incidents it becomes efficient and effective with the provisions that have been in effect. Then the implementation of the unit is based on a decree that has been determined from the Decree of the Director General of Civil Aviation KP. Number 14 (2015) Concerning Technical Standards and Operations of Civil Aviation Safety Regulations Part 139 (Manual of Standard CASR Part 139) Volume IV Airport Rescue And Fire Fighting (ARFF) Services. Research entitled Analysis of the Role of the Airport Rescue And Fire Fighting Unit (ARFF) on Airside Safety at Adi Soemarmo Solo Airport which was conducted from 1 August to 30 September 2022. The results of this research and discussion were obtained from interviews, observations and documentation will be presented in In this chapter, further analysis and discussion of qualitative descriptive methods will be carried out, as follows:

### **The Role of the Airport Rescue And Fire Fighting Unit (ARFF) for Airside Safety at Adi Soermamo Solo Airport**

The importance of requiring a role for the ARFF Unit at airports, especially at Adi Soemarmo Solo Airport, is a unit that must be available. If an emergency occurs in an accident or incident at the airport and its surroundings, there will be movement of personnel and facilities provided based on their duties and authorities with the provisions of national regulations based on categories. This will support the safety of passengers and facilities so that airport and airline companies can achieve this well.



Safety, especially for passengers, is very important. The task of personnel is to help when handling quickly, even responsiveness, which can be seen from the timeliness or response time which should not be more than 3 minutes. with these requirements fulfilling the response time until the ARFF Unit vehicle is ready to emit a foam extinguishing agent of at least 50% of the average emission according to the airport category for ARFF.

As for maintaining vehicles and equipment which is also a factor for safety, it will become more stable as well as Human Resources (HR), some of which meet the provisions of Standard Operating Procedures (SOP) or by category. The term for this category is a determination from the airport or according to the Stipulation Letter for the ARFF Unit, which consists of 10 categories with the length and width and weight of the aircraft or if there are major events such as the arrival and departure of the hajj. Based on the results of this study, it is related to the ability of the ARFF Unit which shows its role in Airside safety for passengers and goods or property, the rest of this will be explained below:

#### 1. Main Duties of the ARFF Unit.

In accordance with national regulations KP. Number 14 (2015) The ARFF Unit with its main task is to help or save people and goods or property on airplanes when incidents and accidents occur at airports. The regulations formed thus are the responsibility of the ARFF Unit, with the procedures included in Law (UU) Number 1 of 2009, Ministry of Transportation (KP), Directors Main Director, Ministerial Regulations (PM) and Work Instructions (IKA) , it performs expertise in its duties. This procedure aims to ensure that relief and suppression operations can be handled as soon as possible so that the number of victims and losses can be minimized. In addition, the ARFF Unit also as executor of duties and obligations is tasked with carrying out prevention, control, fire suppression, protection for humans and goods that are in dangerous and threatening conditions, this will be explained below, as follows:

##### a. ARFF Prevention Unit.

In the actions of ARFF personnel when preventing an emergency or from the side of accidents and incidents on airside safety, they will carry out activities such as checking birdstrikes, vehicle facilities and flame trap equipment as well as Light Fire Extinguishers (APAR) and carrying out services or supervision of activities prevention of fire hazard when starting the engine (engine start) according to the request of the Air Transport Business Entity. Checking birdstrike at the airside or what can be said is that there is a wild bird or animal in terms of driving it away so that it is not around the airside, then the ARFF Supervisor Unit while in the watchroom is informed from the Tower about the presence of wild birds and animals on the airside. Then ordered the ARFF Officer Unit on duty by turning on the siren to carry out the expulsion using a command or command vehicle, so that the aircraft landing and taking off remained safe.

As for the personnel's duties to fill and even empty fuel, before filling up the unit will evaluate procedures, supervise and inspect periodically in the process of fueling and defueling. The ARFF unit refuels vehicles that are in a special refueling warehouse that is put into a tank using a utility car, so that the vehicle is ready to operate. If a fuel spill occurs, the Air Transport Business Entity must immediately clean it up and report it to the ARFF Unit based on procedures. Procedures that prevent the occurrence of spills or spills of fuel or lubricants in the movement area, it is necessary to pay attention to the following matters:



- 1) Equipment that can cause spills or sources of fuel or BP spills, hereinafter referred to as "Ramp Equipment", is prohibited from being placed in the Movement Area when it is not used to serve aircraft.
- 2) When the Ramp equipment is not in operation and is parked in its place, it is necessary to check periodically for the possibility of leakage of the equipment by looking at the surface of the parking area under the equipment.
- 3) If during the inspection of the Ramp equipment it is proven that there is a leak, then the operator of the equipment must immediately call to repair the equipment and or accommodate leaks of fuel or BP

**b. ARFF Unit Control.**

Control is a process that has been planned to achieve the objectives of the ARFF Unit, such as monitoring operation activities and the strategic location of the location of the fire building or fire station so that targets from the distance of incidents and accidents can be timely or response time in the airside area of the runway. Furthermore, each fire station is equipped with operational vehicle facilities and even supporting equipment and personnel to ensure implementation and immediate action in an emergency, there is a warehouse facility area where water and foam supplies are replaced and replenished for ARFF vehicles, fuel warehouses and reserves of fire extinguishing equipment and materials. Minimum reserve of equipment to support the operation of the ARFF Unit in control with the amount that must be available at the fire station.

Meanwhile, if there is a lack of standards in the unit, then it must be corrected, for example, personnel who are less competent or responsive need education, training, with competency exams every year. once set according to KP. Number 002 (2012). The fire station section must be equipped with a watch room to function as a visual monitoring of aircraft movements without obstruction. This watch room is equipped with, among other things: communication equipment, alarm system, monitoring aids (voice and/or visual), voice recording equipment system (voice), radio base station, crash bell, and telephone. Fire station construction personnel must meet the requirements and technical standards and operational needs implemented by the Directorate General. The fire station building provides, among other things: water tanks, mock-ups, smoke houses and pillar hydrants.

**c. ARFF Unit Fire Suppression**

ARFF personnel when carrying out blackout operations in an airside area or airport building must follow the provisions of Standard Operating Procedures (SOP) such as the equipment provided must be all ready. In accordance with the procedures, the unit checks all facilities in carrying out if there is an emergency to handle accidents and fire fighting in accordance with the Work Instructions (IKA), including: reporting incidents to the Airport Operation Center Head (AOCH), Manager in charge of the ARFF function and ARFF Officer . The ARFF officer will immediately go to the location, the ARFF Unit will coordinate with the tower, then report to the ARFF Supervisor Unit the results of the rescue and suppression operations, the ARFF Unit Supervisor will report the results of the rescue and suppression operations to the Manager in charge of the Unit's function, the Manager in charge of the ARFF function instruct the ARFF Supervisor to make an incident report, then the ARFF Supervisor Unit instructs the ARFF Officer to



make an incident report and the ARFF officer makes an incident report and submits it to the ARFF Supervisor.

When carrying out extinguishing the fire, the procedures include checking for potential fire hazards during every morning service, informing the ARFF Supervisor Unit from the ARFF Watch Room Unit officers, the ARFF Supervisor will make the decision to lead and order the supporting ARFF Officer to move towards the location. . In the ARFF organization when carrying out fire relief when it fails to make it unsuitable, it has the next plan, namely the contingency plan. The contingency plan is an action by the ARFF Unit that has been prepared, to address the possibility of disruption or failure at the airport, so that it follows the procedures.

#### d. ARFF Unit Shield

In this case protection means a lot to passengers or property as well as ARFF Unit personnel. Occupational safety protection, especially for passengers, is by using medical equipment or light fire extinguishers or the main weapon from the vehicle. The ARFF unit that supports safety provides protective clothing and respiratory equipment.

The protective clothing and breathing apparatus are useful for saving a person or property from a fire. All of these protective clothing are maintained until they are checked and placed in a place that can be easily taken by ARFF Unit personnel, so the personnel using these protective clothing are divided into several parts, namely: helmets, windshield protectors, heat-resistant protective clothing in the form of jackets and pants, masks , boots and gloves. Heat resistant clothing to approach the fire area and has general technical requirements, as follows: Resistant to flames, Resistant to heat radiation  $3 \text{ W/cm}^2$  for 2 minutes, Resistant to heat radiation  $8 \text{ W/cm}^2$  for 1 minute, Impact resistant, waterproof, non-conducting, heat-resistant, resistant to radiant heat, weather-resistant and impermeable to water, easy to use quickly, easy to clean without compromising durability.

## 2. Main Duties of the ARFF Unit.

### a. Operational (administration, preparedness, rescue, prevention and suppression).

Operational is the implementation of activities and tasks by carrying out the daily work that has been determined so that because they have to always ensure that vehicles and equipment are always ready to operate if an event occurs according to the requirements and has the following duties and responsibilities:

- 1) Carry out a recapitulation of financial administration when spending every day or yearly to purchase the use of stock materials or equipment reserves, vehicles and fire extinguishers as well as managing leave, salaries and results of activity reports in the office space carried out by the ARFF Unit.
- 2) Carry out specified daily work tasks by having multi-purpose equipment and vehicles to support the operation of the ARFF Unit with a basic certificate.
- 3) Check and maintain all Light Fire Equipment (APAR) equipment or support and support or operating equipment used in the team, equipment that is treated with rejuvenation so as to prevent it from quickly becoming a factor of age and always ready so that it can function optimally.
- 4) Checking and maintaining maintenance of the main operational and supporting vehicles which are checked when the vehicle is turned off and started every morning and evening so as to ensure that ARFF personnel are able to operate vehicles for





emergency response including flight accident assistance and fire fighting so that supporters are ready to operate in PT. Angkasa Pura I Adi Soemarmo Solo International Airport and rejuvenating vehicles so as to prevent them from quickly becoming a factor of aging. As for the appropriate license and rating in using the vehicle.

- 5) Report damages and deficiencies to superiors and carry out corrective maintenance.
- 6) Maintain discipline and foster cooperation among team members in carrying out their maintenance duties.
- 7) Carry out other tasks assigned by the direct supervisor or Supervisor, such as;
- 8) Operation of the watchroom according to the procedure, as follows:
  - a) SOC. Airport Rescue, Fire Fighting and Security Manager (OR) instructs the ARFF Supervisor to place watchroom personnel in accordance with their License and Rating.
  - b) ARFF Supervisor instructs ARFF Officer to operate watchroom equipment in accordance with the license and rating held.
  - c) ARFF Officer carries out watchroom operations according to instructions from the ARFF Supervisor by visually monitoring aircraft movements.
  - d) ARFF Officer records operational activities into the watchroom Log Book.
  - e) ARFF Training & Standard Supervisor makes a recapitulation of daily watchroom activities to make monthly reports, and submit them to SOC. Airport Operation and Safety Senior Manager (AO).
- 9) Carry out Birdstrike handling to ensure flight safety so that it is free from the threat of disturbance by birds and wild animals in the airside area that operate command car vehicles by sounding sirens and expelling them.

#### b. Training

PT training is an effort to maintain, maintain and improve the basic competence of personnel in order to achieve optimal results in carrying out their duties when providing assistance in every aviation accident and fighting fires in a competent manner. The competence of the ARFF Unit at Adi Soemarmo Solo Airport, namely theoretical, physical and practical knowledge which is at least a basic rating so that in an emergency situation it will have the body's resilience so that the ability of personnel in their fields is more masterful and more capable. Personnel who are less competent or responsive will need to refresh the course, such as education, training, then equipment as it is old because it may be old so it needs vehicle and procedure rejuvenation, so with suitability there are 3 things that must be in the unit, namely personnel, equipment and procedures, with these three mutually supporting human resources or qualified personnel who have licenses and supporting equipment according to the categories and Standard Operating Procedures (SOP). The license has basic, junior, senior, advance and salvage according to KP regulations. Number 002 (2012) personnel license module.

All ARFF personnel are required to receive training to carry out their duties and responsibilities effectively, then are required to take part in live fire drills using a type of aircraft to train fires but the unit did not do so until mid-pandemic last year. One of the training programs is training in human performance including team coordination (Human Factors).

- c. Maintenance. Maintenance is maintaining the stable condition of equipment and vehicles as well as the resilience of maintenance personnel, such as personnel checking

equipment and vehicles every day. When checking equipment which is carried out every morning after heating the vehicle and at night. In terms of personnel resilience, maintenance is carried out with physical training and dry training, this dry training is intended for units that carry out practice based on material once a week.

### 3. Additional Tasks of the ARFF Unit

With duties outside of special service calls including passenger service when experiencing health problems and so on. For example, a sick passenger who asked for coordination asked to be taken to the nearest hospital. After that, the ARFF Unit also handled building fires which made it the job of an ARFF Unit with airport facilities so not to leave the area around the airport when you go out you have to ask for permission, so as to minimize the event of a building fire. The ARFF Unit provides education to all officers on how to put out fires using a Light Fire Extinguisher (APAR) or traditionally such as sand and cloth. Because the tools in the building will cause fires such as electronics make it easier for fires to occur. The ARFF Unit is also willing to provide supplies for On Job Training (OJT). And prevent the spread of viruses and infectious diseases at airports.

### **Readiness of the Airport Rescue And Fire Fighting Unit (ARFF) when dealing with accidents and incidents at Adi Soemarmo Solo Airport**

In the readiness of the ARFF Unit at Adi Soemarmo Solo Airport when facing accidents and incidents, there is an emergency alert level, namely aircraft accidents, at the airport and around it, a full emergency. , namely where the aircraft is indicated to be experiencing a serious disturbance which causes an accident and alerts the local area

(stand by), in which an aircraft approaching an airport experiences interference but does not cause serious difficulties in landing. For example, such as due to bad weather or special things that require alertness. Furthermore, when an accident or incident occurs at Adi Soemarmo Solo Airport, they will receive information from the watch room to go to the crash site or the farthest place on the runway.

The first step taken when in the field is to be prepared to direct members to prepare equipment facilities or use Personal Protective Equipment (PPE) clothes and vehicles to go to the accident or incident location. The second step when handling it should not be more than 3 minutes ARFF Unit vehicles or called response time because saving the human condition should not be more than 3 minutes not up to 2 minutes with optimum visibility and a minimum foam extinguishing agent emission of 50% of the average and according to the KP regulations. Number 14 of 2015 is to carry out daily activities for the readiness of the unit, whatever is needed, such as facilities, human resources, and SOP or IKA (Work Instructions) as follows:

#### 1. ARFF Unit Facilities.

The ARFF unit has vehicle facilities as well as equipment and supporting materials that are useful when operating to make it more optimal. As the duties and responsibilities of personnel every day to carry out maintenance or maintenance of vehicles by washing or cleaning vehicles based on their schedule in the morning as well as checking or operating to ensure the readiness of equipment and vehicle facilities in a safe condition and ready to use when operating in support of emergency response in Adi Soemarmo Solo Airport. If there is a damaged vehicle with mild, moderate and severe damage, namely light damage that must be handled in 8 hours, medium damaged vehicles around 12 hours and severe damage done 3x24 hours in accordance with Ministerial Regulations (PM) and Work



Instructions (IKA). The ARFF unit reacts quickly, so the term if the vehicle is damaged is not allowed to operate. Because it has a standard size category for handling aircraft landing in that unit depending on what type of landing aircraft, as usual, the Boeing 737-900ER aircraft required category requires 7 and the total water requirement is 12,100 liters. If you need only 1 vehicle, 11,500 liters is enough.

For vehicles that experience problems due to the age factor, they must be rejuvenated, which are not so severe, such as wind and punctured tires, they are renewed every 2 years. But in the pre-pandemic period, the vehicle was heated for 1 day 2 times and now it's only 1 time so the effect is that the vehicle often breaks down, it's hard to start on so it affects the battery. This vehicle facility consists of the main vehicle as well as supply (additional reserves). Supporting Vehicles are non-main vehicles consisting of ambulances, command, multi-purpose (utility) and water tenders with classifications in their respective categories. So the provisions for the classification of the number of types of vehicles at each airport are different, which are determined, among others:

- a. Command car must be available for ARFF.
- b. Oshkosh F1 2021 type I Striker 6 categories and above, holds a water capacity of 12,500 liters and 1,750 liters of Foam, 6 categories and above.
- c. Oshkosh F2 of 2012 type I which holds a water capacity of 11,600 liters and 1,500 liters of foam, 6 categories and above.
- d. Rosenbauer F3 1993 type II which holds 9,000 liters of water, and 1,200 liters of foam, 6 categories and above.
- e. Nurse tender with a capacity of 4000 liters of water for ARFF category 6 and above.
- f. Ambulance, as an ARFF unit in categories 8-10 as many as three units, categories 6-7 as many as two units, categories 1-5 as many as one unit.
- g. Utility car as a multipurpose function in category 8 and above ARFF units.
- h. Mobile Command Post for ARFF 7 units and above.

## 2. Human Resources (HR) ARFF Unit

Specifically for the ARFF Unit it is important as a major component in safety, in the ARFF Unit a personnel whose main task is to handle flight accident rescue and fire fighting of human lives and goods. Based on the number of personnel needed, the category must be according to the KP regulations. Number 14 of 2015, especially at the Adi Soemarmo Solo airport, the ARFF Unit for parties to recruit personnel is the cause of financial shortages during the Covid-19 period and officials who have aged or retired. By looking at the expertise of personnel based on a license or certificate.

ARFF Unit Licenses include basic, junior, senior, advance and salvage according to KP regulations. Number 002 (2012). Specifically the certificates for the ARFF Unit at Adi Soemarmo Solo Airport, namely basic, junior, senior and Salvage. The ARFF Unit license or certificate will be refreshed every year if the power or skill level decreases. First the unit conducts a physical test, then a comprehensive written competency test, so that it will be retrained. Every year there will also be a recap of whether there has been an increase or not so that it becomes a correction, need refreshing courses or learning, while work improvements are called personnel evaluations which are carried out every 6 months to find out these personnel with their conditions, for example their physical, theoretical and practical knowledge. In addition, ARFF Unit personnel serve as a maintenance person with a record of having a license to carry out maintenance on operational equipment or vehicles as well as physical resistance. Carrying out daily physical activities to train endurance, this is what makes the role of HR with Standard Operating Procedures (SOP) applicable.

### 3. ARFF Unit Standard Operating Procedures (SOP)

This SOP is regulated in the Ministerial Regulation (PM) entitled Airport Operation, Services and Security Department No.PM/SOC-AO/OR-01 concerning equipment operation, No.PM/SOC-AO/OR-03 concerning ARFF personnel training and Instructions Work (IKA) No.IK SOC-AO/OR-17-01 Concerning Response Time Testing. ARFF units that carry out operations, training and maintenance of equipment or vehicles must comply with their requirements, so as to avoid human error. With the applicable SOP, maintenance operations (maintenance) in the ARFF Unit facility must be carried out by personnel who already have competency certificates in accordance with the provisions of the vehicle category. From the Standard Operating Procedures, each airport and its categories are different. Then the conformity of the procedure from a license or certificate to the main and supporting vehicles has their respective fields when driving.

Parameters that must be tested by personnel when carrying out maintenance are the average and beam range, acceleration, response time, maximum speed, and braking distance. The response of the ARFF Unit which is the level of service is the response time in dealing with accidents, especially at Adi Soemarmo Solo Airport, within 2 minutes it cannot be more than 3 minutes when it reaches the response time, with a perimeter with a distance of 5 miles away in good road conditions, the optimum weather according to KP. Number 14 (2015) concerning Technical Standards and Operations of Civil Aviation Safety Regulations Part 139 (Manual of Standard CASR Part 139) Volume IV. As for the procedure for training ARFF personnel, to ensure the readiness of ARFF personnel in maintaining and improving the competence of personnel to use work facilities and be fit in carrying out ARFF operational duties at Adi Soemarmo Solo International Airport.

Training is a planned, scheduled, patterned, methodical, regular training process from easy to difficult, from simple to more complex, which is done repeatedly, over time the amount of training load increases. Exercise in the unit is carried out routinely to increase physical endurance more accurately and not excessively which causes excessive fatigue, the main goal is to increase functional potential and develop biomotor abilities to the highest degree. In the exercise there are divided into 3 parts, namely, physical exercise, dry exercise and wet exercise. At the time of the Covid-19 pandemic, in practice sports were only carried out occasionally depending on the commander and not routinely every day.

Foam quality tests are carried out twice a year to check the condition of the foam used is feasible, judging from the normal pH of 7-8 according to SOP. (SOP) Standard Operating Procedures for each operation have different handling procedures, such as Training (Training) is one way to develop one's abilities with training when using vehicle facilities or equipment according to their respective fields. Then operational are personnel who carry out administration, preparedness, rescue, prevention and extinguishing as well as facilities used such as main vehicles and others by heating the engine, checking, and washing so that these conditions are good when operating.

### Discussion

Based on the results of research on observations and interviews conducted with ARFF Unit personnel by the author at Adi Soemarmo Solo Airport from 1 August to 30 September 2022. In accordance with the main and principal roles or tasks it is the obligation of the ARFF Unit which is demanded to comply with the Decree on CP regulations. Number 14 of 2015 there are Facilities, Human Resources (HR) and Standard Operating Procedures (SOP). So these units have differences from according to applicable regulations and the reality that has occurred in the field so that there are some who do not follow according to procedures, such



as training for physical endurance which is routinely now reduced, furthermore live fire drills training using this type of aircraft but did not participate due to the Covid period -19 in its financial condition, waiting for the government's budget to become unbalanced to cover the shortfall, as well as during the previous Covid-19 ARFF Unit, namely having complete personnel and during the Covid-19 season the number of personnel was reduced. This is the role of the ARFF Unit at Adi Soemarmo Solo Airport which greatly affects the safety of fire rescue, especially in the airside section.

## **CONCLUSION**

Based on the results of the discussion in the previous chapter, the researcher can draw conclusions: In dealing with safety at the airside of Adi Soemarmo Airport, Solo, the role of the ARFF Unit is not good enough, because the ARFF unit personnel do not comply with applicable regulations or according to regulations which will be hampered, so that there are some circumstances or factors. What makes these factors include the lack of routine physical endurance training depending on the commander, live fire drills training using this type of aircraft and the lack of personnel or Human Resources (HR). This was due to the Covid-19 period which made financial conditions deteriorate quickly to carry out activities as the role of the ARFF unit. With the problem of reducing costs caused by covering the needs of the unit, ARFF units with these limitations will affect their role when dealing with unstable accidents. If the financial condition improves in the future, it will facilitate the tasks and obligations to fulfill in dealing with accidents and incidents regarding airside safety at Adi Soemarmo Solo Airport.

The efforts of the Airport Rescue And Fire Fighting Unit (ARFF) personnel in preparing for an accident or incident to airside safety are quite good, as the readiness of the unit at Adi Soemarmo Solo Airport is very important because this unit plays a direct role in the field in an effort to improve safety. and aviation security. The thing that is being tried to make it even better is to always be routine with terms of readiness in activities and personnel conditions according to the rules so that vehicle facilities and equipment, as well as personnel are always on standby and ready in an emergency.

Based on the research that has been done, the following suggestions can be given by the author: For airports, the research that has been carried out at the Airport Rescue And Fire Fighting Unit (ARFF) at Adi Soemarmo Solo Airport, is expected to better prepare everything according to the applicable rules based on KP. Number 14 (2015), Ministerial Regulations (PM) and Work Instructions (IKA) are not available, such as for daily activities, personnel training and Human Resources (HR). So that in the future it is hoped that the Angkasa Pura I SOC company will complement these deficiencies by recruiting ARFF Unit personnel who do not fulfill them and when the pandemic conditions are over they must comply with normal activities by routinely following according to procedures so that the role of this unit can be carried out properly. For STTKD Institutions, Become a reference source material and develop indicators for cadets at STTKD so that research is better now. It is also known that the unit will carry out recruitment with expert and competent Human Resources (HR), it is hoped that the STTKD institution will provide good teachings to Cadets related to improving flight safety.

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