

Implementation of Installation and Maintenance Portable Fire Extinguisher in Circuit Breaker Manufacture

Penerapan Pemasangan dan Pemeliharaan Alat Pemadam Api Ringan di Industri Saklar Elektrik

Herdy Perdana Wicaksono

PT Kamadjaja Logistik Surabaya

Jalan Krembangan Makam No.11, Krembangan Selatan., Kec. Krembangan
Surabaya, East Java 60175 Indonesia

ABSTRACT

Introduction: A portable fire extinguisher is one of the effective and active fire protection tool equipment used to extinguish fires at the beginning of a fire. The occurrence of a fire does not immediately become a big fire but it starts from a small fire. This small fire is perfectly extinguished by using a portable fire extinguisher. Installation and maintenance of a portable fire extinguisher is one of the systems for fire prevention. However, it is important to know that a good and effective implementation must be balanced with proper installation and maintenance in accordance with existing regulations so that later it can function properly. This study aims to evaluate the application of the installation and maintenance of portable fire extinguishers at PT Y Indonesia. **Methods:** This research used descriptive research method with cross sectional approach. The data were obtained by observation using observation sheets and measurements directly in the field using a meter. **Results:** PT Y Indonesia has a policy regarding the installation and maintenance of APAR but its application has not fully met the requirements except for the color, pressure and distance between APAR. **Conclusion:** The implementation of APAR installation at PT Y Indonesia has not been in accordance with the relevant regulations except for APAR color, and the distance between APAR and implementation of maintenance is only done once a month without conducting detailed inspection with a period of 6 months and 12 months.

Keywords: installation, maintenance, portable fire extinguisher

ABSTRAK

Pendahuluan: Alat pemadam api ringan merupakan salah satu alat proteksi kebakaran aktif yang efektif digunakan untuk memadamkan api pada awal terjadinya kebakaran. Kejadian kebakaran tidak langsung menjadi api yang besar tetapi perlu adanya penyalaan api yang masih kecil. Api yang kecil ini sangatlah tepat dipadamkan dengan menggunakan alat pemadam api ringan. Pemasangan dan pemeliharaan alat pemadam api ringan merupakan salah satu sistem untuk pencegahan kebakaran tetapi perlu di ketahui bahwa penerapan yang baik dan efektif harus di imbangi dengan adanya pemasangan dan pemeliharaan yang tepat juga sesuai dengan peraturan yang ada agar nantinya dapat difungsikan sebagaimana mestinya. Tujuan penelitian ini adalah untuk melakukan evaluasi penerapan pemasangan dan pemeliharaan alat pemadam api ringan di PT Y Indonesia. **Metode:** Penelitian ini menggunakan metode penelitian deskriptif dengan pendekatan cross sectional. Data yang diperoleh dengan cara observasi menggunakan lembar observasi dan pengukuran langsung di lapangan dengan menggunakan meteran. **Hasil:** PT Y Indonesia memiliki kebijakan mengenai pemasangan dan pemeliharaan APAR tetapi penerapannya belum sepenuhnya memenuhi syarat kecuali warna, tekanan dan jarak antar APAR. **Simpulan:** Penerapan pemasangan APAR di PT Y belum sesuai dengan peraturan yang terkait kecuali warna dan jarak antar apar serta penerapan pemeliharaan yang hanya dilakukan setiap bulan sekali tanpa melakukan pemeriksaan secara detail dengan jangka 6 bulan dan 12 bulan.

Kata kunci: alat pemadam api ringan, pemasangan, pemeliharaan

Author for Correspondence:

Herdy Perdana Wicaksono

Email : herdyperdana@gmail.com

Telephone: +6287857269547

INTRODUCTION

Indonesia is a country that has industries spread throughout Indonesia. The Industrial Sector is one of the biggest contributors to Indonesia's national economy, but in this industry it has potential hazard that can overcome losses for Indonesia. The industrial sector in the field of health and safety has two potential hazards, namely the potential health hazards and safety hazards. One of the biggest risks is safety hazards where one of them is a fire hazard.

Fire is a disaster or an accident that is most often faced and can be classified as a natural disaster or a disaster caused by human actions themselves. Fire can occur at anytime and anywhere, because there are many opportunities and risks that can trigger a fire (Tarwaka, 2012).

According to Ramli (2010) fire is an event that resource, personal, and available materials which cannot be control these events that can threaten life, physical resources, and the environment. Tarwaka (2012) stated that fire is a catastrophic event that is usually often categorized or classified either as natural disasters or artificial disasters caused by human actions and behavior.

Fire according to the National Fire Protection Association (2013) generally defined as an oxidation event that involves three elements that must exist, namely the fuel that is easily burning, oxygen that is in the air and energy sources or heat which results in causing property losses, injuries and even death.

According to Ramli (2010) fire is an event that can occur because of the three main factors which can be the element of ignition of the fire which consists of fuel, heat sources, and oxygen (O₂). Fuel is an element that is either solid liquid or gas that can burn and mix with oxygen. Heat that triggers a fire with enough energy can trigger a mixture of fuel and oxygen from the air. Oxygen contained in the air, without air or oxygen, the fire process cannot occur.

Many cases of fires occur, such as in 2017 there were 1.319.500 fires in America which caused many losses with less than 5,000 people died, 10.600 injuries and property losses of approximately 23 billion (Evarts, 2018)

According to the National Fire Protection Association's fire analysis and research, the incidence of fires also occurred as much as in the United States. In 2013 as many as 1,240,000 cases, in 2014 as many as 1,298,000 fires and suffered

losses from 2012 to 2014 reached to 32.6 billion dollars (Haynes, 2015).

Based on those fire cases, it can be concluded that an accident, fire, and blasting are not only causes material losses, but also causes injury, cessation of production processes, environmental and social problems and even death, to reduce the losses incurred, efforts must be made crime prevention and prevention. Prevention and mitigation of fires is an attempt to be aware of or be aware of the existence of factors that cause fires and take steps to prevent that possibility from becoming a reality (Tarwaka, 2012).

The first step in a fire prevention effort in a company is by providing a portable fire extinguisher installation which will then be abbreviated as APAR. APAR is an effective active fire protection tool to extinguish fires at the beginning of a fire. It is listed in Regulation Ministry of Labor and Transmigration Indonesia PER.04/MEN/1980.

Appropriate installation by APAR is in accordance to Regulation Ministry of Labor and Transmigration Indonesia PER.04/MEN/1980 subsection 4, it must install in a position that is easily seen, accessible and installed according to the susceptible fire hazard. The Incorrect installation can be fatal because it can cause the fire uncontrolled.

According to research from the National Association of Fire Equipment Distributors in the United States that a total of 5400 cases of fire can be overcome and extinguished by using APAR, while the rest are extinguished with automatic water spraying equipment or from firefighters with larger equipment. In the same survey it was also explained that more than 90% of fire cases could be overcome by using portable fire extinguishers before firefighters arrived.

According to the study conducted by Lestaluhu (2015) regarding to the installation and maintenance of APAR at PT ETA Indonesia, there were 36 APARs including 55% of the distance between the apparatus not yet suitable, 11.1% of the height of the APAR installation exceeding 120cm from the bottom of the floor, 8.33% there is a placement of APAR placement marks exceeding 125 cm from the bottom of the floor and 100% the size of the installation marks that are not in accordance to the Regulation of the Minister of Manpower and Transmigration PER.04/MEN/1980.

According to the results of a study conducted by Firdani, Ekawati and Kurniawan (2014) that the application of APAR installation in PT X Pekalongan

still exists that is not yet appropriate as there are 14 APARs which are placed in a hidden location and are difficult to reach, there are also portable fire extinguishers still placed on the floor.

According to the results of a study conducted by Kowara and Martiana (2017) on the analysis of fire protection systems as a fire prevention and prevention effort, there were only 23 portable fire extinguishers scattered in all areas of the work site and in accordance with the potential fire hazards but 72% the installation of APAR is not in accordance with Regulations of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980. This incompatibility can be found as a sign that the APAR installation is inappropriate; the APAR does not correspond to an altitude less than 120 cm when measured from the bottom of the floor.

Based on those description, it can be concluded that the proper installation of APAR is an obligation in preventing and controlling fires because if the installation of portable fire extinguisher is inappropriate and not in accordance with the relevant regulations, it can cause APAR to not function properly.

Based on the results of observations at PT Y Indonesia, the implementation of the installation of Portable fire extinguishers there has been carried out but the implementation is still incompatible with Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 including the absence of the installation of APAR laying triangle signs, there is an APAR installation with a height of more than 120 cm from the bottom of the floor, and there is an APAR which already contains corrosive, this can cause the presence of APAR to function optimally when needed.

Based on those problems, it is important to conduct research on the installation and maintenance of APAR at PT Y Indonesia. In General, this research was made to evaluate the application of the installation and maintenance of APAR at PT Y Indonesia in efforts to prevent and control fires. The Special Purpose of this Research is Studying the Policy on the Installation and Maintenance of APAR at PT Y Indonesia and identifying the application of APAR installation and maintenance at PT Y Indonesia.

METHODS

According to the methodology of this research, this is observational research. According to the place,

this research is a field research because the data collection was done in a company. According to its analysis, this research is a field research because the data collection was done in a company. According to its analysis this research used descriptive qualitative research. According to the research design, this research also used a cross sectional study, because the observations and measurements was carried out at a certain time. The object in this study was 23 APARS at PT Y Indonesia. The time of the study was carried out on April 25th 2016 to May 10th 2016. The variables of this study were policy, availability of portable fire extinguisher, portable fire extinguisher, and maintenance of portable fire extinguisher.

RESULTS

Policies for Installing Portable Fire Extinguishers

PT Y Indonesia has a policy regarding to the installation of portable fire extinguisher. APAR policy at PT Y Indonesia contains of the procedures for implementing the installation of Portable fire extinguishers which are guided by Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980. The policy also has been socialized by workers' superiors.

Installation of Portable fire extinguishers at PT Y Indonesia

A portable fire extinguisher or APAR is an active fire protection tool used to extinguish or control fires that are still small and often used in emergencies condition. Portable fire extinguishers are rarely designed for use in large fires such as fires that have reached the top of buildings or other hazardous condition.

A portable fire extinguisher is a fire extinguisher which shaped of a cylindrical press equipped with a hand grip, containing certain materials that can be dismantled or removed from its contents and replaced with new fillers used to extinguish fires.

Based on the results of the study, it was found that there was the availability of portable fire extinguishers in the implementation of fire prevention. All 100% portable fire extinguishers are available at the designated place. PT Y Indonesia is providing APAR at the workplace by marking inventory numbers; this was done to make it easier

to carried out the maintenance, inspection and recording. The inventory number is in the form of a label with numbers written on the APAR tube. This can be seen in the figure 1.

APAR Type

Based on observations at PT Y Indonesia, the APAR type applied to PT Y Indonesia uses 16 types of Dry Chemical Powder (DCP) and 7 types of carbon APAR CO₂. In addition, 23 APARs show that all APAR in Indonesian PT Y have red APAR

APAR Condition

Based on observations at PT Y Indonesia, the APAR conditions can determine whether the quality of APAR is good or not. Based on the researcher observation, there are 3 APARs installed in the office area and outside the office of PT Y Indonesia which are not good because there is a corrosive in the APAR tube. More detailed information can be seen in table 1

APAR Installation Height

Measuring the height of the APAR installation is done by measure from the floor where the APAR is attached to the top. More detailed information can be seen in table 2.

Table 1. Conditions of APAR which are not good at PT Y Indonesia in 2016

Inventory Numbers	Types	Capacity
APAR/2	DCP	3 kg
APAR/7	CO ₂	3 kg
APAR/13	DCP	6 kg

Table 2. Height of 120 cm APAR at PT Y Indonesia in 2016

APAR Installation Height	Amount of APAR
Proper (120 cm)	19 pieces
Improper (>120 cm)	4 pieces

Table 3. The Height of the APAR Marking in PT Y Indonesia in 2016

Height Marking APAR	Amount of APAR
Proper (125 cm)	10 Pieces
Improper (>125 cm)	13 Pieces

Based on table 2, the height of APAR installed in PT Y Indonesia were only 4 pieces which exceeds 120cm and the rest 19 pieces are in accordance to the Regulation of the Minister of Manpower and Transmigration PER.04/MEN/1980 About the Terms of Installation and Maintenance of Portable Fire Extinguishers.

APAR Marking

Marking used to find out where the APAR is installed, this marking also install precisely where the APAR is placed. Examples of APAR marking images at PT Y Indonesia as figure 2.

Based on Figure 2, the marking of APAR does not use an equilateral triangle-shaped mark with a red base, 35cm side size, height of portable fire extinguisher 3cm red and arrow height 7.5cm white. According to Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 the mark of all APAR Y Sidoarjo facilities is not appropriate.

Height Giving on APAR Sign

The height rate of APAR marking according to Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 is 125 cm from the bottom of the floor. Based on the results of observations obtained, there were 10 APAR which height was more than 125cm from the bottom of the floor. More detailed information can be seen in table 3.

Distance between APAR

The distance between APAR at PT Y Indonesia ranges from 15 meters-22 meters. According to the



Figure 1. The Used of Numbering at PT Y Indonesia in 2016



Figure 2. Application of APAR Marking at PT Y Indonesia in 2016

HSE staff's information, the APAR placement was determined by HSE itself. According to this, it is in accordance to the guidelines of the Regulation of the Minister of Manpower and Transmigration PER.04/MEN-/1980 article 2 on fifth subsections, that the placement of the APAR may not exceed 15 meters unless specified by the Occupational Health and Safety expert it self.

APAR Maintenance

Based on the data obtained, PT Y Indonesia has implemented APAR maintenance activities which carried out once in month or 12 times in 1 year. The inspection is only done visually and there is no detail inspection within 6 months or 1 year. APAR inspection is carried out routinely by HSE assisted by 2 officers from the department facility. Inspection is usually carried out at the beginning of the month to ensure that the APAR installed in a ready to use condition, in the right place, and to detect any physical damage to the portable fire extinguisher.

There are several points of 1-month term inspection which are as follows APAR is in a predetermined location, the location of the APAR is not blocked and the position of the nozzle is not squeezed or blocked, size is enough pressure, there is no sign of physical damage to the APAR tube, make sure there are tags to record each inspection result, the instructions for using APAR are available and clearly understood, APAR is still within the specified validity period and APAR Dry Chemical Powder makes sure that the contained materials do not clot by flipping and shaking the APAR tube.

After conducting an inspection on the APAR, the officer fills out the checklist form and reports the results of the examination to the HSE staff and then

there will be followed up according to the findings. APAR replenishment is submitted to the department facility section to be subsequently given to third parties in collaboration with PT Y Indonesia to carry out APAR filling.

DISCUSSION

APAR Installation and Maintenance Policy

Fires can occur at any time, there are things that need to be considered so that the portable fire extinguisher is always in a good condition and ready to use, namely procedures for installing and maintaining portable fire extinguisher.

PT Y Indonesia has a policy on installing and maintaining APAR. The policy is in the form of an SOP or standard operational procedure regarding the installation and maintenance of APAR so that later the implementation in this application can be directed.

Installation and maintenance of APAR at PT Y Indonesia is the responsibility of HSE and is assisted by the department of the facility. Installation and maintenance of APAR at PT Y Indonesia is guided by the regulations of the Minister of Manpower and Transmigration PER.04/MEN/1980 but the implementation of the procurement and maintenance of the fire has not been fully implemented.

According to Ramli (2013) states that policy is a form of commitment that can make principles to influence by acting in a planned and consistent manner in achieving certain goals.

PT Y Indonesia does have a policy of installing and maintaining APAR, but in its field practice, it is still not in line with the implementation that has been done, so that the implementation of the APAR installation is still incompatible with existing policies.

This can occur because there is no full awareness or support from the management so that errors in the installation and maintenance of APAR can occur.

This is in accordance with the opinion explained by Suyono and Nawawinetu (2013) that commitments manifested in the form of written, clear, easy to understand and have been implemented or known to all workers but commitments are not only in the form of written policies, need full support and real actions from the management or leadership in proving that the company is truly committed to

work compliance at work such as the installation and maintenance of APAR in preventing fires.

This is also supported by the opinion of Mufida and Martiana (2019) saying that the policy has a relationship in the issue of occupational safety and health in the company. Concern from the management of fire emergency response systems such as the installation and maintenance of APAR is limited to the establishment of guidelines that are prepared and determined by the company but are not supported by commitment.

The policy related to fire prevention, which is one of which is the installation and maintenance of APAR, is an input in an emergency management that is prepared and determined as a company commitment. Fire control and prevention is a process in emergency response management, one of which is the installation and maintenance of fire extinguishers which can later produce zero accidents and safety conditions (Mufida and Martiana, 2019)

APAR Installation

Types of APAR

Installation of APAR types must be in according to the fire class. Because in extinguishing the fire, it will not be effective in extinguishing the fire if it does not followed the fire classification. Based on this, the APAR classification is a very important thing to learn and understand. APAR is always equipped with a label that contains information about the class and the ability of fire extinguishers to extinguish fires. According to regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 in subsection 2 says that the classification of fires is divided into 4 groups, namely Class A; is useful for extinguishing fires that come from solid non-metal materials, Class B to extinguish fires originating from fires caused by liquid and combustible gases . Class C is useful for extinguishing fires caused by electrical installations and the last is Class D is a fire caused by metal fuel. This is supported by the statement cited by Ramli (2010) that the purpose of classifying fire classes based on burning materials is to facilitate business in handling and suppressing fires appropriately and effectively.

Based on observations in the PT Y Indonesia office, there is a collection of bookshelves containing of documents with paper materials and there are many tables, chairs and computers so that in the

event of a fire classified into class A fires (solid materials except metal) and class c (voltage electrical installations), therefore the installation of the fire extinguisher type DCP is already suitable to use in the office area. However, the area which affected by Dry Chemical Powder is very difficult to clean especially the chemical; the DCP powder that is exposed to heat will become sticky like glue. Therefore, the installation of APAR type DCP is not suitable and the right type of APAR is pasca halon.

According to Tarwaka (2012) which stated that the pasca halon is clean and does not damage the surrounding equipment and machinery when APAR is used, it also leaves no residue and it is non-conductive. Pasca halon is an improved APAR of halon, because the halon is now not allowed to be used.

According to Hambyah (2016) which stated that the use of halon can damage the ozone layer because it is caused by the chemical gas fire extinguisher from halon and when exposed to fire it can cause poisons called bromofsgene which is dangerous if inhaled by humans. Based on this, the use of halon gas is now banned.

APARs carbon dioxide is very suitable to extinguish class C fires, namely fires caused by electronic and electrical equipment. Based on this, it can be explained that this can occur because the gas produced from APAR type CO2 does not damage electronic equipment.

Based on this explanation, it can be concluded that the installation of APAR based on its type in PT Y Indonesia is in accordance with the Minister of Manpower and Transmigration. PER.04/MEN/ 1980. concerning the requirements for Installation and Maintenance of APAR article 4 paragraph 4, namely installation and placement of APAR according to type and fire classification

APAR Physical Conditions

Based on the results obtained, APAR at PT Y Indonesia can still be found in a rusty physical condition. APAR physical condition greatly determines the success in fire prevention efforts, physical conditions of fire extinguisher must not be rusty or corrosive. According to NFPA 10 which stated that if there is an APAR which is found in a rusty state or has expired, it is prohibited to use it because APAR which is found to be expired and rusty can be detrimental to the user because the APAR must have performed improperly as it should.

According to Wahyudi (2005) which stated that if there is a rusty APAR it will potentially result in holes in the APAR so that it can cause pressure loss on APAR and APAR cannot be used properly.

Based on this case, it can be concluded that the application of fire extinguisher installation based on physical conditions at PT Y Indonesia is not in accordance to Regulation of the Minister of Manpower and Transmigration Indonesia PER.04 / MEN/1980

APAR Height Installation

Based on the results of the study, there is a mismatch such as the installation of APAR height that exceeds 120 cm from the bottom of the floor surface. APAR installation is very important, because the fire extinguisher must be easily accessible and easily stabilized during a fire. Fire extinguishers should not be installed too high or exceed the height of human body, because APAR will be difficult to take and it will slowing down the extinguishing efforts and the fire can be increasingly enlarged and uncontrolled so that it can cause damage to injury.

Based on this explanation, it can be concluded that the application of APAR Installation Height in PT Y Indonesia is not in accordance to regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 namely the installation must be placed with a maximum distance of 120 cm from the ground floor.

This is supported by a study conducted by Hambyah (2016) that the correct installation of APAR must be placed at a maximum height of 1.2 meters from the bottom of the floor. This is done because it is feared that if there is an APAR the installation is too high it will be difficult to reach when an emergency occurs and this can result in a fire suppression process being delayed.

Size Marking of APAR

Based on the results of the research, all APAR markings that have been applied at PT Y Indonesia use a rectangular shape. This is not according to the Minister of Manpower and Transmigration PER.04/MEN/1980 which requires that the APAR marking should be in the form of an equilateral triangle with a red base color, 35 cm side size, letter "3 cm Fire Extinguisher red and 7.5 cm arrow height white

His is supported by research conducted by Lestaluhu (2015) that APAR marking must be in accordance with applicable regulations, namely

the equilateral triangle with red base color, 35 cm side size, letter "3 cm Fire Extinguisher red and 7.5 cm arrow height white. This was done because psychologically will attract attention during a fire and make it easier for APAR users to get APAR even in a panic situation.

Height of APAR Sign Installation

Based on the results of the study, the installation of high APAR marking at PT Y Indonesia is inappropriate because there are several markings of APAR which are over 125cm high from the bottom of the floor.

Based on this case, this is not according to Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980, namely the height marking of APAR installation is 125cm from the bottom of the floor, just above one or a group of light fire extinguishers concerned.

His is supported by research conducted by Lestaluhu (2015) that APAR marking must be in accordance with applicable regulations namely the height marking of APAR installation is 125cm from the bottom of the floor. This is done so that the emergency compilation can be seen by the eyes and to be easier to find

Distance between each APAR

Based on the results of the study, the distance between the installations of fire extinguisher with one another in PT Y Indonesia ranged from 16 meters to 22 meters. This installation distance was done because of recommendations from the OSH Expert itself. This is already followed Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980, namely the placement of APAR with one and another is not exceeding 15 meters unless specified by the occupational Health and Safety Expert itself.

Concerning that if an emergency occurs and APAR laying is in accordance with what has been determined, the apparatus will be easily accessible without not requiring a long time in the APAR retrieval process, in addition the Occupational Health and Safety team determines the APAR placement at a particular work location due to the location it has high fire risk.

APAR Maintenance

APAR facilities that are in optimal, good and quality conditions greatly support the success of fire

prevention efforts while still young, so that APAR can function properly, it is necessary to carry out routine checks and maintenance.

Routine checks that have been carried out by PT Y Indonesia are carried out every 1 month and do not carry out in-depth inspections such as inspections of 6 months and 12 months in one year.

Based on the results, the maintenance of APAR in PT Y Indonesia is not in accordance to Regulation of the Minister of Manpower and Transmigration Indonesia PER.04/MEN/1980 article 11 first subsections which states that APAR must be examined twice in depth in 1 year, namely a 6-month and 12 month.

Based on this, it can be concluded that the APAR which is not carried out in-depth examinations such as the 6 and 12-month term checks is feared that the APAR is not in good condition because if it is used in an emergency or fire condition and no detailed inspection is carried out the APAR cannot extinguish the Fire because in the APAR there is a fire extinguisher that can extinguish the Fire and if the material is expired it can interfere in the process of suppression and can cause the fire to grow bigger.

This was supported by Mufida and Martiana (2019) which said that the fire extinguisher examination needs to be carried out within a period of 6 months and the multiplication is intended to know the condition of the fire extinguisher that is good and ready to use so that an emergency such as an APAR fire can be used in a blackout.

According Firdani, Ekawati and Kurniawan (2014) said that fire extinguishers must be routinely examined or maintained and minimal checks at least done once a month but it would also be good to do an in-depth examination, which is a period of 6 months and 12 months, if APAR maintenance is not routinely carried out when it is worried when an emergency or fire occurs, the APAR is not ready to be used so it cannot be used to extinguish the fire. In addition, what needs to be considered in carrying out maintenance is that the officer conducting maintenance must record the APAR inspection using a check list and documented it through a routine and written checklist. This is done in order to make it easier to conduct future checks and evaluation of APAR whether it is still in optimal condition and ready to use or not ready to use.

Based on this, PT Y Indonesia has been carrying out records in maintenance and has conducted periodic inspections for 1 month but has not

conducted in-depth examinations with the 6 and 12 months period.

CONCLUSION

Based on the research that has been done, it can be concluded that the installation and maintenance of APAR at PT Y Indonesia is as follows PT Y Indonesia has a policy related to the installation and maintenance of fire extinguishers adopted by the Indonesian Minister of Manpower and Transmigration Indonesia PER.04/MEN/ 1980 but in the application of APAR installation and maintenance in PT Y Indonesia has not been in accordance with the relevant regulations such as type, physical condition, size of marking installation, and high marking installation from the floor floor, besides in terms of maintenance only conducting visual inspection conducted within 1 month.

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