

Evaluation of Active Fire Protection Facilities at gas stations in Indragiri Hulu Regency

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Evaluation of Active Fire Protection Facilities at gas stations in Indragiri Hulu Regency

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Abstract

Fire is a threat to human safety, property and the environment. Fire incidents at gas stations often occur, at least from 2018-2020 there have been two fire cases in Indragiri Hulu Regency which resulted in physical and material losses. The fire occurred due to the unavailability and lack of monitoring of active fire protection facilities at gas stations. This type of research is a case study qualitative research which is determined by purposive sampling. The informants in this study consisted of 6 people, namely operators, field coordinators, technical staff, supervisors, leaders and directors of gas stations. The results obtained are that the gas station already has 2 fire detectors but does not meet the standard of SNI 03-3985-2000, Gas stations already have fire alarms but not yet installed in all buildings, gas stations already have 4 fire extinguishers and are not in accordance with Pertamina Regulation and PU Ministerial Regulation No. 26/PRT/M/2008, there is an absorbent in the form of sand with a blue tub and it is not in accordance with Pertamina standards, it already has a hydrant that meets the standard and already has hose reels. It is suggested to gas stations to increase the number of fire detectors, fire alarms, fire extinguishers, hydrants and absorbents in accordance with Pertamina standards.

Keywords

active protection; fire; gas station; Pertamina



I. Introduction

The environment has been extensively researched by the researcher in the areas of management accounting, behavior, and the strategy management. This variable adopts contingency theory. The research with contingency approaches especially the one that uses environmental uncertainty has been studied before, including Chong and Ming Chong (1997) found that environmental uncertainty has an effect on the design of management accounting and performance systems. (Astuty, W. and Pasaribu, F. 2021)

Fire is a threat to human safety, property and the environment. Most of the causes of fires originate from human negligence, but natural factors can also cause fires (Pertiwi, 2015). Fire events can cause fatalities and injuries, especially those caused by fire poisoning (Fire toxicity) because the majority of deaths and illnesses due to fires are closely related to the inhalation of smoke (effluent) from the fire (Nugraha & Ginanjar, 2018). One of the workplaces where fires often occur is the Public Fuel Filling Station (SPBU). From the analysis of the results of audits and investigations so far, various incidents at gas stations are caused by several factors such as human aspects (lack of skill, culture, competence), lack of engineering such as equipment design, installation, layout, piping and others. .

Referring to data from the National Fire Protection Association (NFPA) (2017), it was recorded that in the United States there were about 1,319,500 fire incidents which resulted in 3,400 deaths and 14,670 injuries, and this fire caused material losses of \$23,000.000.000 this is because the case of fires is still very high in the United States.

In Indonesia, the number of fire cases that occurred throughout 2020 reached 1,623 fires. This data was obtained from the National KPBD website, 656 cases of fire occurred in residential areas, 112 cases of public buildings, 298 cases of factories or industrial buildings, and 557 other cases (BNPB, 2021). Gas stations are places that have a high level of risk of fire (Major Hazard Accident), that is, if an accident occurs, it will cause enormous losses, both loss of human life and other material losses (Setyawan & Setyaningsih, 2013).

Public Refueling Stations (SPBU) are buildings where fuel sales for motor vehicles are managed by companies or individuals. Gas stations are one of the places or areas that have a high level of risk of fire (Major Hazard Accident) which is a large industrial accident with very detrimental consequences, both human life and other material losses (AKBAR, 2008). According to the Standard Operating Procedure (SOP) from PT. Pertamina has regulated that gas stations are required to provide fire protection facilities at gas stations. Completeness of active protection facilities at gas stations, among others, must have light fire extinguishers (APAR), fire alarms, fire detectors, absorbents in the form of sand, hydrants and hose reels. (PERTAMINA, 2016).

Of the several fire incidents that harm the gas station, it is caused by the lack of complete active fire protection facilities available at the gas station. Fires also cause fatalities, especially those caused by fire poisoning (Fire toxicity). Because the majority of cases of fatalities caused by fires are closely related to the inhalation of smoke from fires.

Based on a preliminary survey conducted, there were 2 cases of gas station fires in Indragiri Hulu Regency which were caused by the unavailability and lack of monitoring of active fire protection facilities. The importance of active protection facilities at gas stations which play an important role as fire detectors and carry out immediate extinguishing before officers and fire engines arrive at the location of the fire.

Based on the risk of fires occurring at gas stations, this research is needed to find out how to evaluate active fire protection facilities at gas stations No. 14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency in 2021.

II. Research Methods

This type of research is a case study qualitative research, data collection method by conducting in-depth interviews, observation and document review to obtain data on active fire protection facilities at gas stations No.14.293.641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency in 2021 according to actual conditions based on existing regulations to prevent fires from occurring.

In this study, the informants were determined by using a purposive sampling technique, which was selected with certain considerations and objectives, which really mastered an object that the researcher studied. The informants in this study consisted of the main informants and the supporting informants totaling 6 informants. The types of data used are primary and secondary data. By collecting data through interviews, participatory observation and document review. The data processing in this study was obtained from the results of interviews, checklist sheets, direct field observations, and document review, carried out by triangulation which is a data collection technique that combines various data collection techniques and existing data sources by testing the credibility of the data.

III. Result and Discussion

3.1. Fire detector

Gas Station No.14, 293,641 PT. Bharti Noorgraha Sejati already has two fire detectors, namely smoke detectors and heat detectors, but they do not meet SNI.03-3985-2000. As a reference, at least gas stations have no less than 5 fire detectors that are used to detect fires, including heat detectors, which are rise detectors. heat, *fix temperature*, smoke detectors, *flame detectors* (ultraviolet), and gas detectors. So as to minimize the effects of fire risk that may occur, considering that gas stations are a place that is prone to fire. This is in line with the results of research (Rizki, 2017) on Fire Detection Systems in Based Buildings *Programmable Logic Controller* (PLC). From the results of this study it can be concluded that the smoke sensor is able to detect smoke well in the event of a fire.

3.2. Fire alarm

Gas station No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency currently has a fire alarm, but it has not been installed in all rooms at the gas station, this does not meet SNI.03-3985-2000. Based on the results of research conducted by (Kowara, 2017) regarding Analysis of Fire Protection Systems as Fire Prevention and Control Efforts (Study at PT. PJB UP Brantas Malang). These results indicate that there is no fire alarm system in the PT. PJB UP Brantas. The unavailability of this fire alarm can harm the company in the long run because the way the alarm works is to automatically notify the danger situation previously detected by the fire detector.

3.3. APAR

SPBU No.14,293,641 PT. Bharti Noorgraha Sejati has 4 fire extinguishers consisting of 2 *dry chemical powder type cartridge* fire extinguishers 9 kg and 2 fire extinguishers with *dry chemical powder 70 kg wheels*. 26/PRT/M/2008 which states that gas stations are required to provide type APAR *dry chemical powder with a capacity of 9 kg* with at least one unit in every warehouse, office/kiosk and canopy pole and type fire *dry chemical powder extinguisher with 2 units a capacity of 70 kg* near the unloading site and stockpile tank. Based on the results of research conducted by (Suroto, 2011) regarding the Fire Extinguishing System (*Fire Protection*) at the Hotel Sahid Raya Yogyakarta which said that the purpose of providing APAR according to the Technical Requirements was to extinguish fires in the early stages of the building and the environment.

3.4. Absorbent

Gas Station No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency currently has an *absorbent* but it is not in accordance with Pertamina's standards. Sand at the gas station must always be available to cover fuel spill. Based on the results of research conducted by (Lestari, 2019) regarding the Description of Active Fire Protection Facilities and Consumer Compliance on Warning Signs and Signs at Gas Stations as a Fire Prevention Effort (Study on Bondowoso Regency Gas Stations) which states that Based on field observations it was found that Regency gas stations Bondowoso is also equipped with an *absorbent* in the form of sand.

3.5. Hydrant

Gas station No.14,293,641 PT. Bharti Noorgraha Sejati already has a hydrant and has carried out inspections, testing and maintenance in accordance with SNI 03-1745-2000 on procedures for planning, installing and testing for fire hazard prevention at gas stations.

²Based on the results of research conducted by Fadillah, 2018 regarding Planning Systems as *Fire Hydrant Fire* Emergency Measures in Buildings (Case Study of Jember University Campus Buildings) which said that the planning of fire hydrant systems in nine buildings at Jember University, the planning used was hydrants. pillar (yard hydrant).

3.6. Hose Reels

SPBU No.14,293,641 PT. Bharti Noorgraha Sejati already has *hose reels* as part of an active fire protection facility at gas stations. *Hose reels* or wind hose reels are part of active fire protection in the gas station area as well as through a routine maintenance process that is always carried out and supervised by the gas station supervisor. ¹Based on the results of research conducted by (Lestari, 2019) regarding the Description of Active Fire Protection Facilities and Consumer Compliance with Warning Signs and Signs at Gas Stations as a Fire Prevention Effort (Study on Bondowoso Regency Gas Stations) states that there are no available *hose reels* at gas stations.

IV. Conclusion

1. Fire detector

Gas station No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency has 2 fire detectors, namely heat detectors and smoke detectors, but they do not meet the standard of SNI 03-3985-2000. It is hoped that the leadership of SPBU No.14,293,641 PT. Bharti Noorgraha Sejati in order to be able to add 3 more fire detectors to be placed in rooms where there are no fire detectors available and carry out routine maintenance according to Pertamina standards.

2. Fire alarm

Gas station No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency has a fire alarm installed on the gas station dispenser but it does not meet the SNI standard 03-3985-2000. It is hoped that the leadership of SPBU No.14,293,641 PT. Bharti Noorgraha Sejati to be able to add 4 fire alarms because the fire alarm is only installed around the fuel dispenser. Fire alarms should be installed in all rooms in the gas station, which amount to 4 rooms.

3. APAR

SPBU No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency currently has 4 fire extinguishers consisting of 2 *dry chemical powder cartridge type 9 kg* and 2 *dry chemical powder fire extinguishers with a capacity of 70 kg* but not in accordance with Pertamina standards and Permen PU No. 26/PRT/M/2008. It is hoped that the leadership of SPBU No.14,293,641 PT. Bharti Noorgraha Sejati to be able to add 2 more fire extinguishers, namely fire extinguishers *dry chemical powder type cartridge with a capacity of 9 kg* to be placed on each pump / dispenser island and 1 CO₂ fire extinguisher with a capacity of 4.5 kg for the generator room.

4. Absorbent

Gas Station No. 14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency currently has an *absorbent* but it is not in accordance with Pertamina Standards. It is hoped that the leadership of SPBU No.14,293,641 PT. Bharti Noorgraha Sejati to be able to add 2 *absorbents* and place them on each pump island and it is better to change the blue sandbox to red and give it a lid so it doesn't look like a water tank.

5. Hydrant

Gas station No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency currently has a hydrant and has carried out inspections, testing, and maintenance in accordance with SNI 03-1745-2000.

6. Rose heels

SPBU No.14,293,641 PT. Bharti Noorgraha Sejati, Indragiri Hulu Regency already has *hose reels* as part of *active fire protection facilities at gas stations* that are *in accordance with* Pertamina standards.

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