**ANALYSIS OF THE APPLICATION OF PASSIVE PROTECTION AND FIRE MANAGEMENT SYSTEMS IN THE FACULTY OF ECONOMICS AND BUSINESS BUILDING**

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**ABSTRACT**

Background: The Faculty of Economics and Business Building UPN Veteran Jakarta has two different buildings, the Muh. Husni Thamrin and the Soepomo Building. The purpose of this study was to analyze the appropriateness of the application of passive protection, life-saving, organizing, and fire prevention systems at the Faculty of Economics and Business Building, UPN Veteran Jakarta with the applicable regulatory standards. Methods: This study uses qualitative research and descriptive research design with direct observation and interview methods. The results of this study were compared in accordance with Peraturan Daerah Provinsi DKI Jakarta Nomor 8 Tahun 2008, Peraturan Menteri Pekerjaan Umum Nomor 20/PRT/M/2009, Peraturan Menteri Pekerjaan Umum Nomor 26/PRT/M/2008, NFPA 101 and NFPA 220 as a comparison. Result: The results of this study found that the organization in FEB was not up to standard due to the absence of an emergency response team and the absence of a fire protection organization. Conclusion: The conclusion of this research about organizing at FEB UPN Veteran Jakarta is not in accordance with the standards. FEB needs to create an emergency response team and fire protection organization.

***Keywords:*** *Fire, Passive Fire Protection System, Fire Fighting*

1. **INTRODUCTION**

Fires are currently still one of the events that occur in buildings, with the most frequent cause of fires being electrical short circuit. Fires in buildings can result in material loss and non-material loss [1], So it is mandatory to have a passive protection system that can reduce the occurrence of fires in buildings. Passive protection systems are fire safety strategies built into building structures to protect human life and limit the impact of damage to buildings and their contents [2].

According to the International Association of Fire and Rescue Services [3], in 2015 there were 31 countries that reported fires and there were 1 billion total affected populations with 18,400 deaths resulting from these fires. Then in 2016 there were 39 countries that reported fires and there were 1.1 billion total populations affected by this, with 18,000 deaths resulting from these fires.

Furthermore, in 2017 there were 34 countries that reported fires and there were 1.1 billion total populations affected by this, with 16,900 deaths resulting from these fires. According to the Indonesian

Disaster Information Data [4], from 2017 to 2020 there were 521 fire incidents including residential fires in Indonesia. The fire incident killed 4 people, 371 people were injured and 591 people were suffering and were displaced. In 2017 to 2020 there were 4,948 causes of fires such as stoves, electric short circuits, cigarette butts, and others as well as unknown triggers [5].

In the last 3 years there have been several cases of fire in the campus building. In 2017, a fire occurred at IPB (Institut Pertanian Bogor) which was caused by an electrical short circuit, in the fire there were no fatalities but burned 2 rooms in the IPB Faculty of Agricultural Technology Building, and caused losses of up to 2 billion [6], In 2019, there was a fire in the IISIP Building (Institut Ilmu Sosial dan Ilmu Politik), the cause of the fire was not yet known, in the fire there were no fatalities but burned the IISIP campus canteen, and caused losses of up to 220 million [7]. In 2020, a fire occurred at UNDIKSHA caused by an electrical short circuit, in the fire in the fire there were no casualties and caused no loss because the fire could be extinguished quickly [8].

UPN Veteran Jakarta is one of the state universities located in South Jakarta, which has various multi-storey buildings with different functions such as buildings used as learning places, laboratories, computer rooms, student activities, canteens, and so on. The difference in the function of the building can distinguish the consequences that will be caused by a fire. The Faculty of Economics and Business Building is one of the multi-storey buildings at UPN Veteran Jakarta. In this building, there are potential hazards that can trigger a fire, such as books in the library, lecturer archives, and electrical panels. Fires in the building can be prevented by a passive protection system where the main purpose of a passive protection system is to prevent fires in the building. So it is important for researchers to carry out research "Analysis Of The Application Of Passive Protection And Fire Management Systems In The Faculty Of Economics And Business Building UPN Veteran Jakarta Year 2020".

There were 692 cases of fires in the DKI Jakarta area in 2018 and caused a loss of 180 billion with the highest cause of fire was an electrical short circuit. Fires always occur every year, fires can occur anywhere including in campus buildings and the factor that causes fires that often occurs is electrical short circuit. The purpose of this research is to analyze the suitability of the application of passive protection systems and fire control in the FEB UPN Veteran Jakarta building with the regulatory standards that the researchers put in the scope of the research.

The research was conducted to determine the passive protection system and fire prevention in the UPN Veteran Jakarta FEB Building. Researchers took data in the FEB UPN Veteran Jakarta Building, because researchers saw a potential risk of danger that could cause a fire, such as the construction being carried out on the ground floor of the FEB Building. This research is useful for identifying and reducing the impact of fire. The research will be carried out in February to May 2020.

This study used a descriptive study design with a qualitative approach. Collecting data in this study using primary data and using secondary data. Primary data is based on observations and interviews with building managers and other related parties, while secondary data is in the form of documents owned by the agency regarding standards and regulations in accordance with fire. The data obtained is then compared with applicable standards or regulations, such as PerDa DKI Jakarta Nomor 8 Tahun 2008, PerMen PU Nomor 20/PRT/M/2009, PerMen PU Nomor 26/PRT/M/2008, KepMenNeg PU Nomor 10/KPTS/2000, SNI 03-1736-2000, SNI 03-1746-2000, SNI 03-6571-2001, SNI 03-6574-2001, NFPA 101 and NFPA 220 as a comparison. Furthermore, the non-conformity of the protection system will be given recommendations.

1. **METHODS**

The research used is qualitative research with descriptive study design with observation methods and interviews with building managers and related parties. The research was conducted at Muh. Husni Thamrin and at the Soepomo Building. The research was conducted from February to May 2020. The informants in this study were 3 people. Data collection techniques in this study used data triangulation, source triangulation, and method triangulation. Data processing techniques in this study require direct observation because it compares the data obtained with applicable standards and regulations. The data analysis technique used in this study was a checklist with 2 categories, namely appropriate and unsuitable and the final result in the form of a percent. How to analyze a checklist with an average calculation that is given a minimum score of 0% and a maximum score of 100%, for category 1 (Not Appropriate) given a score (0% - <50%) and category 2 (Suitable) given a score (≥50% - 100%).

Formula:

$$Average Score= \frac{(Result Score)}{(Question Score)}×100\%$$

1. **RESULT**

Based on the results of direct observations that have been made, it shows that the UPN Veteran Jakarta Faculty of Economics and Business Building has a passive protection system score, a life-saving facility score, an organizing score, and a fire suppression score which can be seen in Table 1, Table 2, Table 3 and Table 4.

The following is a table of score scores at the UPN Veteran Jakarta Faculty of Economics and Business Building:

**Table 1** Score Value of the Passive Protection System

|  |  |  |
| --- | --- | --- |
| **No** | **Passive Protection System** | **Score Value** |
| **1** | Building Materials (fire resistance test) | 3% |
| **2** | Building construction | 3% |
| **3** | compartmentization | 0% |
| **4** | Protection On Openings | 0% |
| Average | 75% |

From the results of the score of the passive protection system, the Faculty of Economics and Business Building, UPN Veteran Jakarta, got an average result of 75%. Based on PerDa DKI Jakarta No. 8 tahun 2008, NFPA 220 and NFPA 101 passive protection systems in accordance with the standard.

**Table 2** Score Value of Life Saving Facilities

|  |  |  |
| --- | --- | --- |
| **No** | **Life Saving Means** | **Score Value** |
| **1** | Means of Exit | 8% |
| **2** | Emergency Lighting | 0% |
| **3** | Exit Directions | 6% |
| **4** | Emergency Communication | 1% |
| **5** | Meeting Place | 3% |
| **6** | Emergency door | 0% |
| **7** | Emergency Stairs | 1% |
| Average | 50% |

From the results of the scores for the life-saving facilities of the Faculty of Economics and Business Building, UPN Veteran Jakarta, the average result is 50%. Based on PerMen PU Nomor 26/PRT/M/2008 and NFPA 101, life-saving facilities are in accordance with standards.

**Table 3** Value of Organizing Score

|  |  |  |
| --- | --- | --- |
| **No** | **Organizing** | **Score Value** |
| **1** | Emergency Response Procedure | 0% |
| **2** | Fire Protection Organization | 0% |
| **3** | Human Resources | 1% |
| **4** | Fire Education and Training | 3% |
| Average | 13% |

From the results of the organizing score of the Faculty of Economics and Business Building, UPN Veteran Jakarta got an average result of 13%. Based on PerMen PU Nomor 20/PRT/M/2009 the organization is not in accordance with standards.

**Table 4** Score of Fire Management

|  |  |  |
| --- | --- | --- |
| **No** | **Fire Management** | **Score Value** |
| **1** | Fire Management | 2% |
| Average | 100% |

From the results of the fire control scores for the Faculty of Economics and Business Building, UPN Veteran Jakarta, the average result is 100%. Based on Perda DKI Nomor 8 Tahun 2008 fire control is in accordance with standards.

1. **DISCUSSIONS**

**Passive Protection System**

Based on direct observations, the passive protection system for the Faculty of Economics and Business Building at UPN Veteran Jakarta has an average value of 75%. The result of the passive protection system is in accordance with the reference standard because of the 8 requirements there are 6 requirements that meet the standard. This value is obtained from reviewing actual conditions by comparing reference standards such as [9], [10] and [11] so that they can be categorized according to standards (≥50- 100%).

**Life Saving Means**

Based on the results of direct observations and interviews with informants, the lifesaving facility for the Faculty of Economics and Business Building at UPN Veteran Jakarta has an average value of 50%. The results of the life-saving facilities are in accordance with the reference standard because of the 38 requirements, 19 have met the standard. This value is obtained from the results of interviews and reviewing actual conditions by comparing reference standards such as [12] and [11] so that they can be categorized according to standards (≥50-100%).

**Organizing**

Based on the results of direct observations and interviews with informants, the organization of the Faculty of Economics and Business Building at UPN Veteran Jakarta has an average value of 13%. The results of the organization were not in accordance with the reference standard because of the 29 requirements only 4 met the standards. This value is obtained from the results of interviews and reviewing actual conditions by comparing the reference standards, namely [13] so that it can be categorized as not according to standards (0- <50%).

**Fire Management**

Based on the results of direct observations, the fire prevention building at the Faculty of Economics and Business UPN Veteran Jakarta has an average value of 100%. The results of fire prevention are in accordance with the reference standard because of the 2 requirements as many as 2 requirements that meet the standard. This value is obtained from reviewing actual conditions by comparing reference standards such as [9] so that they can be categorized according to standards (≥50-100%).

1. **CONCLUSION**

The UPN Veteran Jakarta Faculty of Economics and Business Building does not have an emergency response team, does not have a fire protection organization, does not have human resources in fire management and there is no awareness to participate in fire education and training because when the fire education and training was held, not all employees participate in these activities. The passive protection system and life-saving facilities in the FEB UPN Veteran Jakarta Building can be seen from the results of the passive protection system score table results and the life-saving facilities score table results and the respective scores are 75% and 50% with the level of conformity according to the standard. Fire prevention in the FEB UPN Veteran Jakarta Building can be seen from the results of the table of fire management scores and a score of 100% is obtained with the level of conformity according to the standard.

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**REFERENCES**

[1] Kelvin, Pram Eliyah Yuliana, dan S. R. Pemetaan Lokasi Kebakaran Berdasarkan Prinsip Segitiga Api Pada Industri Textile. Seminar Nasional Inovasi dalam Desain dan Teknologi. 5, 36–43 (2015).

[2] ASFP. What is Passive Fire Protection, The Association for Specialist Fire Protection. (2019).

[3] Brushlinsky, N. World Fire Statistics. Center Of Fire Statistics, Rusia, Germany, USA. (2019).

[4] DIBI. Kebakaran. Data Informasi Bencana Indonesia. (2020).

[5] Dinas Penanggulangan Kebakaran Dan Penyelamatan Provinsi DKI Jakarta 2020. Statistik Kebakaran Berdasarkan Penyebab. 2020. (2020).

[6] Bempah, R. T. Kampus IPB Kebakaran. Kerugian Ditaksir Rp 2 Miliar. (2017).

[7] Anugrahadi, A. Kebakaran Padam. Kantin di Kampus IISIP Ludes Dilalap Api. (2019).

[8] Bali Post. Kebakaran di Kampus Undiksha. 3 Unit Damkar Dikerahkan. (2020).

[9] Peraturan Daerah Provinsi DKI Jakarta 2008. Perda DKI Jakarta Nomor 8 tahun 2008 tentang Pencegahan dan Penanggulangan Bahaya Kebakaran. Pemerintah DKI Jakarta.1–39 (2008).

[10] National Fire Protection Association. NFPA 220 Standard on Types of Building Construction. National Fire Protection Association. 1, 1, 7–8 (2012).

[11] National Fire Protection Association. NFPA 101 Life Safety Code. (2015).

[12] PerMen PU No.26 2008. PERMEN PU No.26/PRT/M/2008 Tentang Persyaratan teknis sistem proteksi kebakaran pada bangunan gedung dan lingkungan. PERMEN PU No.26/PRT/M/2008. 5 (2008).

[13] PerMen PU No.20 2009. Peraturan Menteri Pekerjaan Umum No: 20/PRT/M/2009 Tentang Pedoman Teknis Manajemen Proteksi Kebakaran Di Perkotaan. PerMen PU No 20/PRT/M/2009. 2, 5, 255 (2009).