ASSESSMENT OF SECURITY RISKS IN THE PROCESS OF STORAGE AND DISTRIBUTION OF AVIATION FUEL

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The article is to highlight the approach and methodology for processing the thesis on the assessment of security risks in the process of storage and distribution of aviation fuel. The greatest attention in terms of entering diploma thesis is focused on risk management in the handling of aviation fuel at airports. In the introduction, description of work is carried out national and European legislation on health and safety at work. The core of the DP analysis is the process of storage and distribution of aviation fuel and the process of assessing security risks in various operational processes. Design measures to reduce the risk of diploma thesis are defined so as to increase their adoption of the current state of protection of life and health in the described area.

K e y w o r d s: Aviation fuel, safety, risk, security policies, distribution, risk assessment

1 INTRODUCTION

The aim of my thesis is to highlight the methodology and process analytical assessments of security risks in the processes of storage and distribution of aviation fuel at airports, with possible proposals to improve overall security level in this area.

According to entering the diploma thesis issues were discussed in six chapters with subchapters.

The first chapter is devoted to the legal conditions of application of the principles of safety and health at work in accordance with national legislation and European Union legislation.

The second chapter is a description of the tasks of aviation fuel services, whose main task is to provide the required amount of fuel in a timely manner. Procedures carried out in the handling of aviation fuel, condition of fire safety and health at work, as well as other steps are part of the Rules of Operation Manual and airport aviation fuel at each airport.

Security risk assessment methodology is discussed in the third chapter of the thesis. There are several known methods applicable in the risk assessment process. However, most of the methods that are aimed at identifying risk, causes and effects that help us determine the relation between the events leading up to unintended consequences.

The fourth and fifth chapter is discussed the process of storage and distribution of aviation fuel at airports and main safety principles. For this purpose, the diploma thesis is used Ishikawa diagram, by which we can identify the cause of the dangerous phenomenon. Checklists in the fifth chapter, we wanted to determine the level of compliance with the career development of airports in Slovakia.

The last chapter made some suggestions and measures to eliminate the causes of risk, which will reduce the effects of the dangerous phenomena for the lowest possible limit.

2 OH & S LEGISLATION

Legislation on health and safety at work in the Slovak Republic is fully harmonized with EU legislation. The foundation was laid down the general principles of prevention and basic conditions for ensuring the required safety and health at work and requirements to eliminate risks that could give rise to accidents, occupational diseases and other harms and health risks.

The issue of health and safety is regulated in the Constitution. National legislation defines the basic workers' rights and obligations of employers for the purpose of adopting measures to ensure adequate security. The basic law in this area is the Law. 124/2006 Z. of. Safety and Health at Work, which defines the precautionary principle and defines the employer's obligation to provide its employees with all necessary information, education, and ensure the organization of work to

be found the required security. Legislation on health and safety at work is included in the Council Directives of the European Communities, discussing the measures to promote the improvement of safety and health of workers and their minimum requirements, including working conditions and labor protection equipment.

3 SERVICE OF AVIATION FUEL AT AIRPORTS

The main task of aviation fuel services at airports is a timely and continuous provision of air traffic control necessary quantity of aviation fuel and other fluids in the required quality. Service of aviation fuel is required on a regular basis as determined by the method treated and controlled. Aviation fuel duty service is also maintenance of all distribution systems and technical means to carry aircraft. Its responsibilities also include the area of training their staff services of aviation fuel.

The main roles of services include the operation of aviation fuel storage, treatment and dispensing fuel. This process is an important area of compliance with safety and health at work. Service aviation fuel at the airport is provided by section aviation fuel and conditions of reception, storage, dispensing and handling of regulated aviation fuel airport operating rules, which is designed for technical and operational period. For all employees covered under these sections of this order is binding.

The aviation fuel of service operating rules shall also include the area of fire safety, occupational health, safety standards, a description of the hazards of stored substances and field management of operational documentation.

4 EVALUATION SAFETY RISKS IN AVIATION FUEL HANDLING PROCESSES

The theoretical part of this thesis is contained in the third chapter. The environment of aviation fuel handling at airports is fraught with risks that you should be aware of. Risks should be taking appropriate preventive measures in the event of a dangerous situation, alleviate the consequences of the phenomenon. Overall, however, exclude the risk of life is impossible. To this end, various areas of society, attention is focused on the area of risk management. To minimize the risk to civilian airports is enough to know about possible threat, but it must be also analyzed and assessed from different perspectives, and assess the degree of threat to its range. The hazard analysis process is defined chain risk - risk - consequence - damage. The basic strategy of risk assessment in the diploma thesis procedure describes how to evaluate risks.

Assess risks in general in several respects. The airport safety risks in processes and services within the aviation fuel are most important for us to risk assessment in relation to health and safety at work. It is therefore necessary to examine and monitor risk factors.

It is necessary to review and take subsequent persistently preventive measures.

In practice, there are several security methods for risk assessment. These methods can be applied in some parts of the operating processes or in the process. In the diploma thesis we divided risk assessment methods for hazard identification methods, threats and estimate the consequences of which the best known of these is a method WHAT - IF?. Which uses checklists composed of different questions with a yes, no or I do not know. The work is also used Ishikawa diagram, which analyzes the causes and consequences of risk by fish bone diagram.

C / L	Insignificant	Serious	Very serious
Low	1	2	3
Central	2	4	6
High	3	6	9

Figure 1 Risk assessment

The risk assessment can also use the risk matrix, which is also considering safety parameters, such as damage, consequence and likelihood of risk (Fig. 2).

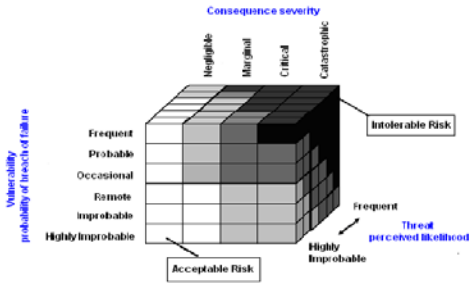

Figure 2 Three-dimensional matrix of risks

Using causal functions we can express the degree and level of risk.

5 RISKS IN THE PROCESS OF STORAGE OF AVIATION FUEL

The core of this thesis is to analyze the sequence of steps of risk assessment in the process of handling aviation fuel at airports.
From the very beginning of the handling of aviation fuel is needed to comply with many safety rules at work. These principles are to ensure the health, the environment, but also to determine the required fuel quality.

The process of storage of aviation fuel, the fuel begins to transport to the airport and then taking it to the store. LPH The carrier must meet a number of conditions set out the relevant legislation for transportation of hazardous liquids. The next step is filling the fuel tanks at the airports where in this process, there is a safety hazard.

The work is characterized by only a few selected hazards. In the safety analysis, we selected and characterized the risks assessed in terms of supply chain risk - risk - consequence - action. One of the assessed risk is the accumulation of vapours in the tanks, which is due to the fact that in the warehouse is located a large amount of fuel that is highly flammable and has the ability to catch fire at very low temperature. The greatest danger for the quality of fuel is to deteriorate water or solids. Another risk in the process of handling aviation fuel is a fire or explosion. This is due to the fact that aviation fuel has a flash point only 38 °C. Ecological environmental impact is considerable danger for the whole cycle of the environment. Properties of jet fuel and other operating fluids can cause serious harm to nature conservation. It is therefore important to prevent leakage of aviation fuel into the water and soil.

As a practical example of risk assessment of the causes of the DP, we chose the risk of fire, which was assessed using the Ishikawa fishbone diagram, where we defined primary, secondary and tertiary causes of the fire risk.

6 DISTRIBUTION AVIATION FUEL AND RISKS IN THE DISTRIBUTION PROCESS

Principles of safety in aviation fuel handling processes are described in chapter six. The most serious risk in the handling of aviation fuel is a fire. For this reason, the most important safety precautions is to prevent the formation of sparks. Observing the safety rules can eliminate the risk of sparks or electrostatic discharge during pumping aviation fuel from one tank to another, respectively from tanks to aircraft. The main conditions for these activities are ground tanks and aircraft.

In carrying aircraft LPH, arrival and location itself, filling a vehicle is necessary to comply with safety principles around performance of the aircraft. An important element in the course of an aircraft is not only a ground plane, to be carried out in order to create nearly zero voltage, and a link to the bottling plant to the ground, but it is important to pay attention to the safety circuit during the performance of the aircraft.

Some of the risks involved in storing and handling are similar, both rate and other risks or consequences. Tanker ship huge quantities of fuel to aircraft, and therefore they themselves are a potential source of danger. Danger arises when the tank moves on airfields speeding or not complied with safety circuit in the performance of the aircraft. Risks in the process of the aircraft are at every step in performance. There is a risk of inhalation, ingestion, or the risk of skin contact with fuel workers. It is important to follow prescribed work procedures and use protective equipment.

The contents of the sixth chapter in DP are also checklists of questions focusing on the area of compliance with the principles of health and safety

at the airport Sliač. Questions were formulated to field service vehicles, electrical equipment, fire safety, fire and human impact factor.

7 DESIGN OF MEASURES TO REDUCE THE RISK WHEN HANDLING AVIATION FUEL

The evaluation of security risks and discovering their causes, we can effectively eliminate the risks and factors which determine the occurrence of occupational accidents, damage to health workers, the environment and property.

Based on the risk assessment process in the handling of aviation fuel at the airport Sliač I proposed several new security measures:

• keep in regular intervals to carry out technical inspections of equipment and all parts of the filling tanks.

• use work tools and equipment only with the certificate and explosion proof. Follow the instruction manual from manufacturer's equipment.

• participate in regular training for bottlers of aircraft and persons involved in the whole process of the aircraft.

• the emphasis given to compliance with safety circuits in the performance of the aircraft and control entry of persons into the circuit.

• wear personal protective equipment like gloves, antistatic clothes and shoes to be always kept clean and without damage.

8 CONCLUSION

Security policy in the technical and technological processes requires careful attention in recent years. Less attention is devoted to risk management and prevention. This is what led us to pay more attention to this issue, in the processing of the thesis.

The main objective in terms of entering DP, which we established, should be for safety measures to prevent risks in the handling of aviation fuel.

In this thesis we analyze the extent required security risks in the process of storage and distribution of aviation fuel at airports. While writing my thesis, as an employee of OJSCI of Airport Sliač, I worked closely with fillers of aircrafts who have a lots of experience with this problematic.

When writing my thesis I used mainly materials from the Airport Sliač and very valuable advices from my colleagues from technical- the operating section. I also used information I gained during consultations with leader of this thesis.

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