SAFETY ON THE APRON

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Summary: The apron is one of the most sensitive places around the airport regarding security. At this relatively small area exists a constant danger, which can result in material damage or even health risk. Therefore it's important to be, in all circumstances, careful, professional, cautious, and always adhere to active regulations. Apron services require constant vigilance and unconditional adherence of security regulations.

Keywords: safety, apron, danger

1. INTRODUCTION

Airport is one of the most complex and busy environments. Even if the airplane is parked on the ground, several different activities are underway around or in close proximity simultaneously, such as: boarding, deplaning of passengers, loading and unloading of baggage and cargo, refueling of the airplane, maintenance and inspection. All these operations create an environment, which can be susceptible to incidents and accidents. Thus fairly high rate of personal care and appropriate procedures to ensure safe apron area is required. Airport safety is one of the most important basic tasks. It aims at development, implementation and improvement of strategies and processes to ensure that all of the aviation activities sustain the highest levels of operational security and fulfill the national and international standards. It´s important for the personnel to report every incident, to know all of the procedures of operational security, and to strive to improve overall security standard at the airport. All of the operational levels and every employee are responsible for providing the highest level of security operation, starting with CEO (Chief Executive Officer).

2. SAFETY POLICY

The safety policy should outline what kind of work is a certain employee doing and how does he do it. It should state the fact how does the airport deal with safety and health protection during work time. This policy should include measures which protect the employee, evaluate all of the health risks and safety, consult individual processes involving employees, provide enough equipment for maintenance, provide training and courses for workers and minimize accidents and incidents at the airport. At every civil airport, a security committee is established, which consist of organization agents responsible for fulfilling security measures. The chairman of the security committee is the airport director, deputy chairman is the local police department deputy.[1]

Every civil airport must create an airport safety program corresponding with the needs of the aviation operation. Airport safety program must be in line with demands of the national civil aviation safety program and with demands of its elaboration, which are determined by the aviation department. Airport safety program is approved by the aviation department. Airport operator is responsible for implementation of the safety measures at civil airport, who determines a person responsible for coordination of execution of the safety measures. The department organizes designs and establishes procedures which collectively ensure the standard level of flight service security at normal operational circumstances, which can be expanded to deal with the rise of the safety threat. Safety measures and procedures must be set so that, if possible, they would minimize delays or impact on the civil aviation operation.**Chyba! Nenašiel sa žiaden zdroj odkazov.**

First chapter is divided to:
- Personal security
- Non-civil airport area safety
- Safety management system

3. APRON HAZARDS

It´s possible to eliminate the risks for people at certain areas of the airport by adherence of certain rules of movement around the airport area to prevent person - vehicle contacts, by usage of loading bridges for passengers. Different solution might be assignment of roads such as traffic driveways or pathways at the airport area. It´s suitable to use appropriate illumination and clear traffic signs. Where segregation is not reasonably applicable, it is possible to use additional measures to restrict and minimize risk appearance. We may reorganize the arrangement of area in such way, that it would minimize the interaction between pedestrians, airplanes and vehicles or reduce the frequency of the risky operations.

3.1 Vehicles

If the airplane is maintained by more than one company, an effective cooperation of every party is important to prevent contacts of vehicles with other vehicles, equipment or aircrafts. It´s likely that a combination of measures, including people in vehicles and other risks, will be needed for risk control. Particular combination might vary the place, activities or time of the day. The effect of changes at the airport, such as temporary work, new building impact must be taken into account at the beginning. Therefore it´s important, that risks involving vehicles are evaluated as a part of the overall aviation and health security management.

3.2 Persons

Passengers can get to the airplane from the terminal via apron area. However, at the apron, passengers are exposed to risks such as vehicles moving around the apron. The risk of passenger injury rises, when they are not aware of the dangers around them. Furthermore, passengers can unintentionally or intentionally damage the airplane.
Passengers may cause by their recklessness:
1. collision with mobile mechanization instruments,
2. collision with rolling aircraft,
3. contact with exhaust gases of the aircraft,
4. sucking into the aircrafts suction system,
5. collision with aircraft propellers.

3.3 Aircrafts

Large, smaller propeller powered aircrafts and various types of helicopters are present at the airport. All of these flying machines requires different safety measures to ensure protection and safety of persons and equipment. Aircraft movement on the ground, by its own power, or pulled, creates a line of risks at the airport. Especially jet or propeller engines may cause fatal or serious injuries, vast damage of equipment or other aircrafts.

3.4 Drivers

Drivers, who enter the airside with a vehicle, must have a permission to operate a vehicle and to enter the airside. All of the information involving that permission are available at airport traffic regulations. Driving at the airside, in close proximity to the airplanes, is usually limited, and requires the knowledge of rules and norms. The objective of these guidelines is to minimize the risk of

accidents, personal injuries and airplane and equipment damage deriving from the vehicle usage at the airside.[2]

4. OPERATIONAL HAZARDS

To every work activity, we can assign a risk which might happen. We base the search for risks on employee experience, statistics data and results of work injuries and accidents investigation. In addition to above mentioned airplanes, vehicles and passengers, there are risks at the apron such as jet engines, machinery, insufficient illumination, flare or confusing lights and other potential risks such as:

• *airplane refueling*
Given that the handling of aircraft may happen at the same time as refueling, these operations must be coordinated to ensure safety and operation integrity. The location of every refueling cistern during refilling the fuel is very important and it is necessary to adhere to all of the safety regulations.

• *falling objects*
Some activities, for example catering, loading and baggage manipulation, cleaning activities, maintenance and repairs, require access to elevated parts of the aircraft. It is necessary not just to secure the platform from which a person may fall, but also it is important to establish such measures, which would prevent injury of personnel or their contact with a falling object.

• *noise*
Many sources of noise are present at the airport. During violation regarding noise reducing personal equipment, the excessive amounts of noise may cause temporary or terminal loss of hearing and so jeopardize the effectiveness of communication during securing of important tasks. Main sources of noise at the airport are jet engines and APU.

• *hazardous substances and hazardous goods (including radioactive)*
Airports should always judge the risks deriving from working with dangerous matter. This judgment should take into account risks created by using, manipulating or releasing of the substance.

• *adverse climatic conditions*
Except snow and ice, several climatic conditions may influence the safety of the aircraft at the apron, mainly strong wind and low visibility. Bad climate may cause accidents by flying objects and debris, and very strong wind may cause structural damage to the airplanes.

• *fire hazards*
Flammable substances can be used as a part of the aircraft repair process, as a cargo or appear as a consequence of a leak. The substance may be solid, liquid or gas. The formation of fire and explosions are the main risks connected to these substances. Such events may cause significant amount of damage to aircrafts or injure people. It´s important to assess the risks involving flammable matter manipulation, including its storage and transport. Jet fuel forms the largest amounts of flammable matter at the airport.

• *slips and trips*
Trips and slips make almost one fourth of the accidents at the airport. While some of these incidents are severe, many of them could be avoided by accepting simple measures. Injuries may be caused by many obstacles, slippery walkways, loose stairs, faulty wiring or insufficient ground maintenance. Slips can be caused by spilled water, hydraulic fluid, sudden change of ground elevation, inadequate abrasiveness of ground.[3][4]

5. RISK PREVENTION MEASURES

In this chapter are described the inspections, operational and technical measures aimed at preventing or decreasing the risks at the airports apron.

5.1 Operational measures

It´s important that all of the activities at the apron are in accordance with safety work procedures. Otherwise it may cause accidents or equipment damange.

Operational measures involve:

1. Personal Safety
Security management system helps us to prevent risks and dangers linked with all of the airports processes. It is a duty of every employee, working at civilian restricted areas of the airport, to be informed and understand the safety policy and procedures.

2. Personal protective equipment
Appropriate protective equipment must be worn at all times by workers who will work at the apron:
- hearing protection,
- protective clothing,
- shoes,
- protective gloves,
- helmet, hard-hat,
- protective glasses, sunglasses,
- flashlight, torch.[5]

3. Illumination
During night time and LVP, we must secure adequate level of illumination for pilots. It´s important to pay attention not to distract, confuse or blind the pilot or other personnel with excessive illumination, including ATC personnel. In similar manner, it´s important to provide sufficiently even distribution of illumination at all workplaces and avoid sudden brightness changes. Installation of   new lighting systems must always be approved by CAA. The lights must be regularly checked in case of damage or faulty setting of the lights.

4. Winter apron cleaning
When ice and snow is present at the airport, two main risks arise - reduction of surface friction and covering of the lights and signs. Every airport has plans to defreeze the runways, taxiways and aprons. It´s important to take into account the size of the airport, amount of snow in given time and availability of cleaning equipment, procedures and ice and snow removing mechanisms.

5.2 Technical measures

To avoid injuries of personnel and damaging of equipment or airplanes, people moving around propeller engine airplanes must always walk next to wings, even if it seems that engines are off, and never walk in line with propeller or jet fumes. Helicopter operation can be especially dangerous, since the rotor blades have enough force, even when engine runs in neutral, to cause serious or even fatal injuries.

This part is focused at:

a) electric current - A whole line of sources of electricity exist at the apron, including lights, stationary or mobile electrical ground units, power sources and other equipment or even the plane itself. Such resources should be isolated in such way, so that people would not have access to parts which are not secured, or if the power is not turned off. Electrical circuits should not be overloaded and must be used in appropriate environment.

b) work equipment - it includes every item on the apron, including vehicles, equipment such as airport loaders, loading bridges, ground power source and personal tools. Health risks or airplane security breach may occur when they are in motion.

c) overload - Mainly at smaller airports, measures must be adopted to reduce the load by reducing the amount of vehicles and equipment which are doubled. There is a possibility to reduce the overload by controlling the amount of operations of ground handling at the apron, but it´s necessary to know the regulations and directives which cover the terms for the ground handling, to prevent violation of these terms.

6. PREPARATION AND TRAINING OF EMPLOYEES

Work safety deals with various precautions in order to create a workplace free of incidents. It is a state of working conditions, which prevents adverse effects of dangerous factors on employee or other personnel. Safety is determined by stating and adhering of terms at the workplace, by appropriate work procedures and requirements for health and professional competence of employees.

6.1 Training categories

To achieve the maximum safety at the apron it's necessary to carry out:
a) training,
b) general training,
c) safety training,
d) recurrent training.

6.2 Safety management system

Safety at the apron means processing the operations, establishing the policy, stating the goals, observing the activity and oversighting the research.
This part provides safety management system which contains:
a) supporting and sustainment of safety discipline,
b) managing and monitoring of performance,
c) investigation of apron accidents and incidents,
d) regulations,
e) realization of corrective measures.

6.3 Risk management

Risk management is a tool for risk identification, for risk analysis, evaluation and subsequently its reduction. All four parts are described in my thesis in their respective subchapters.
Risk management presents a culture, processes and structures aimed at effective management of potential opportunities and possible unwanted consequences. It is an interactive process which consists of steps, which if retaining of planned succession, permit permanent raise of decision quality and thus improvement of results of realized processes.
  The result of securing requested or expected level of safety are procedures and methods of risk analysis and following assessment and evaluation of risks, of which results are used to regulate the risks by risk management. The realized risk analysis provide entry data for risk assessment and executing consecutive risk management activities, mainly deciding the acceptability of identified risks, evaluation and selection of possibilities of its reduction and backed decisions and measures to its reduction.[6]

7. CONCLUSION

The term safety in aviation is a state, in which the possibility of personnel injury or property damage is reduced or maintained at desired level by aprons dangers early identification process. While crash or incident elimination remains a fixed goal, it´s safe to say that aviation system cannot be risk-free. Human interaction and systems created by people are not 100% guarantee of safety. Dangers may be caused by many factors, such as equipment failure and operational errors. Safety violation may be a result of decisions made at the highest levels of the system. To secure such a large object as apron is very difficult. My asset in this thesis is in depicted measures and methods to reduce the degree of risks by using modern safety systems and technologies, which allow early intervention in an event of safety breach. Hidden risks exist which are present in the system before their consequences are shown. At first they may not seem harmful, until a safety violation appears. Therefore it´s important to

identify and reduce them. Risks at the apron may arise by equipment shortage, bad procedural design, accepting conflicting organizational goals, faulty organizational system or management decision.

7. LITERATURE LIST

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