

“Friction Surfaces” of Airport Emergency Plan

Jakub Kraus, Vladimír Plos, Peter Vittek

Abstract—This article focuses on the issue of airport emergency plans, which are documents describing reactions to events with impact on aviation safety or aviation security. The article specifically focuses on the use and creation of emergency plans, where could be found a number of disagreements between different stakeholders, for which the airport emergency plan applies. Those are the friction surfaces of interfaces, which is necessary to identify and ensure them smooth process to avoid dangerous situations or delay.

Keywords—Airport emergency plan, aviation safety, aviation security, comprehensive management system, friction surfaces of airport emergency plan, interfaces of processes.

I. INTRODUCTION

AVIATION safety and aviation security are the properties of air transport, which needs to be continuously monitored, evaluated and mainly increased their level. Solutions to increase the aviation safety has recently become a primary focus of all supervising bodies and international organizations and now is here an attempt to implement better and smarter systems for aviation safety assessment.

With aviation safety and security deals the second chapter of this article, where is indicated the development of modern trends, but also shown needed emphasis on the basic building block of safety - a reactive approach.

Aerodrome emergency planning is a simple element of aviation involving all stakeholders operating in the aviation. To airport emergency planning is devoted the third chapter. Specifically, we mention the issue of legislation, where are large number of requirements and some regulations having conflicting demands. This could be found especially when comparing the requirements for a security program [5], [10], national laws [2], [4], [9] and European regulations Part-ADR [1]. This issue is very broad and, as mentioned above, it affects every stakeholder in aviation. In this article, we focus only on airport operators.

The airport operator view about the airport emergency plan is contained in the second part of chapter three. There is mentioned the relationship of airport emergency plan to other required documentation for airport operator and the procedures for creating an emergency plan, which are common practice at small and medium-sized airports. The chapter also mentions the issue of identification of risks for

J. Kraus is with the Department of Air Transport, Czech Technical University, Faculty of Transportation Sciences, Prague, 12803 Czech Republic (phone: +420-728334098; e-mail: kraus@fd.cvut.cz).

V. Plos is with the Department of Air Transport, Czech Technical University, Faculty of Transportation Sciences, Prague, 12803 Czech Republic (phone: +420-721583384; e-mail: xplos@fd.cvut.cz).

P. Vittek is with the Department of Air Transport, Czech Technical University, Faculty of Transportation Sciences, Prague, 12803 Czech Republic (phone: +420-608122617; e-mail: vittek@fd.cvut.cz).

which the plan should be created.

The fourth section then summarizes all “friction surfaces” mentioned in previous chapters and adds other important things, which are necessary take into account when dealing airport emergency plans. Consequently, it also describes how to solve these issues. The result should be drawn up emergency plan that is ready to use and will not hinder the smooth response to an extraordinary event at the airport.

II. AVIATION SAFETY AND SECURITY

Aviation safety and aviation security are two separate areas of aviation, which can stay alone, but they can be also interconnected. The reason is a completely different focus - to increase operational safety and increase the security. However, integration is based on legislation where both these areas are included in the airport emergency plan and also that when dealing with the event with impact on safety there is needed to ensure the security in the area and vice versa (when dealing with security events it is necessary to ensure safety there also).

Approach to increasing the level of aviation safety and security is also similar, though it differs in starting year of expert interest in these areas of aviation. Approach can be divided into three directions: reactive, predictive and proactive (Fig. 1) [8].

A reactive approach to safety or security is the most basic one and can be considered as the least efficient. Reactive approach depends on the fact the corrective measures are started after unwanted event occurs. In practice, therefore, no steps is taken to increase the level of safety until there is an incident / accident and corrective measures are taken only on the basis of information gathered from the event.

Predictive approach is a higher level of ensuring the system against the occurrence of unwanted events. Predictive approach, as its name suggests, means predicting the potential presence of a hazardous event.

The latest and most effective way to access safety is a proactive approach based not only on the prediction, but also on active searching for possible sources of danger and taking effective corrective measures that will lead to the elimination of the phenomenon. This approach is most effective, but it also brings with it the highest costs for proper functioning. These costs, however, are positively reflected in avoiding undesirable situations, which economic impact could have far greater consequences.

For proper functioning of aviation safety and security as a whole, it is necessary to consider the usage of all three approaches. Each approach has its irreplaceable contribution to safety and security and cannot be replaced by other one.

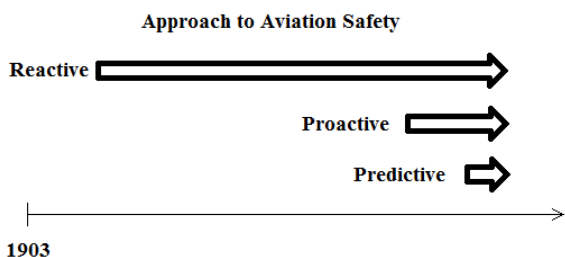


Fig. 1 Approach to Aviation Safety (s: authors)

Given the emphasis on aviation safety in recent years and expanding methods of evaluation and improvement of safety, there are noticeable deviations from the use of reactive approach. However, the reactive approach is the foundation upon which are constructed the remaining two approaches. The reactive approach is also the main one for reaction to realization of emergency and non-standard events at airports, thus airport emergency planning.

III. AIRPORT EMERGENCY PLANNING

Emergency planning is generally an attempt to avoid the consequences of an event that has ever occurred, or there is a possibility that it will someday. For airports, which would not be bound by the legislation, it would mean that they evaluate what events are happening at the airport, what events are happening at other airports, and also identifies what could happen. All these inputs will be then summarized and evaluated. For this it could be used the traditional method of risk matrix, or any other. Thereafter, for several important events will be developed an emergency plan, because airport operator himself will know that he needs the emergency plan [7].

The situation is now different - legislation exists.

A. Typical National Situation - Model from the Czech Republic

European regulatory integration of the European Union and EASA's for aviation has resulted in a new uniform regulations for the entire European aviation. However, on the time of arrival of the new regulations dealing with specific areas, national legislation and regulations still apply and for some time overlap. This is the case of airport emergency planning, where the Czech Republic have four national regulations, which are supplemented by European regulation. The situation is complicated due to differences in aviation safety and aviation security, which have different base rules but are also simultaneously in one document - airport emergency plan.

For the Czech Republic it is the decree no. 108/1997 Coll., decree no. 410/2006 Coll., National Security program, aviation regulation L14 (Czech version of ICAO Annex 14) and European regulations Part-ADR [1]. These documents can build a framework for which events should be created emergency plan, but already this is the first obstacle when the emergency plan cannot cover all the events recommended by this legislation as some of them overlap and differs.

The list of events then should probably be like this:

- Aircraft accident on the aerodrome

- Aircraft accident off the aerodrome
- Malfunction of aircraft in flight (Full emergency or local standby)
- Structural fires
- Intervention on hazardous substances (environmental disaster)
- Bomb threat (aircraft)
- Bomb threat (structure)
- Sabotage
- Penetration into aerodrome perimeter
- Unlawful seizure of aircraft
- Abandoned baggage
- Highly contagious disease on board the aircraft
- Active shooter - AMOK
- Incident on the aerodrome (collapse of structures, vehicle/aircraft collisions...)

B. Approach of Large and Small/Medium-Sized Airports to Airport Emergency Planning

An example mentioned above is a typical situation in which are airports across Europe. But there can be seen the difference in approach for the different-sized airports. Large airports that have millions of passengers a year have also made very good emergency plans, which contain all the necessary information to ensure the functionality.

Small and medium-sized airports, however, are in a different situation. The emergency plan is there often only as a necessity given by legislation. To these airports should be given any help. Unfortunately, regulations give clear and mandatory structure of emergency plan, which also ensures that to airport emergency plan preparation may not be allocated a sufficient amount of resources (time, finances). This in turn creates a barrier in its applicability, as each airport should have a specific emergency plan - "tailor-made", because every airport is different.

The approach to airport emergency plan is also affected by its relationship to other required documentation of airport operator; the relationship to the security program of the airport operator and the safety management manual. Each of these documents affects respectively should affects the content and scope of the airport emergency plan. The security program is the highest airport document, which specifies security protection against unlawful acts. One part also includes emergency plans for security related events specified in national security program. Safety management manual should on the other hand, be aimed at reducing the number of realizations of events with impact on safety. Reducing the number of realizations of these events would then have an effect on the list of events for which is defined plan in the airport emergency plan [3], [6].

Such an approach is very unique and the section about safety management manual is impossible to apply because of the legislation. Therefore, it is necessary to ensure the proper technique for creating airport emergency plan in spite of these obstacles, to create an environment and process (Fig. 2), which can eliminate "friction surfaces" described in the next chapter.

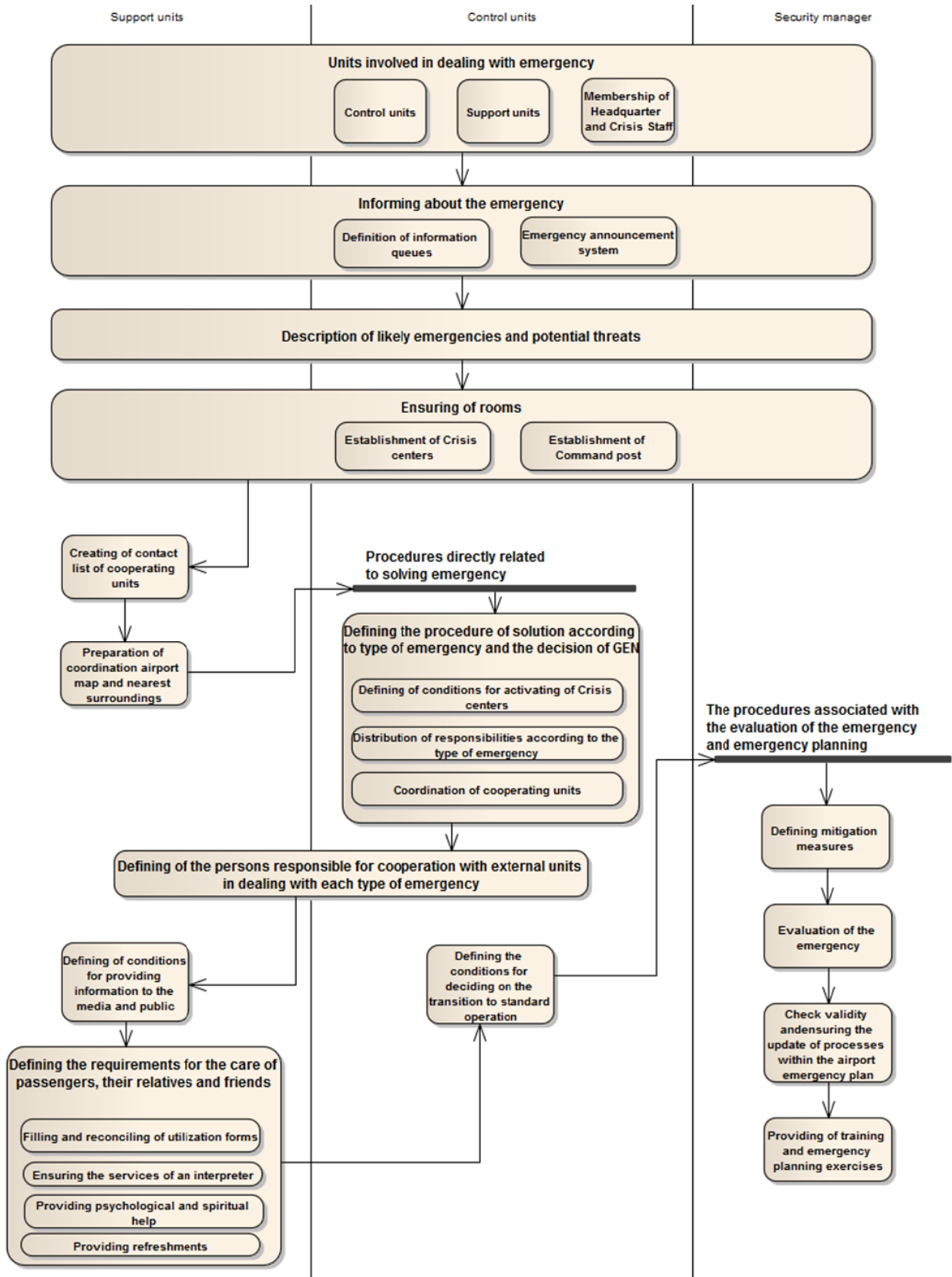


Fig. 2 Model of Airport Emergency Plan

IV. "FRICTION SURFACES" OF AIRPORT EMERGENCY PLANS

This chapter describes the "friction surfaces", which have been identified above, or are clearly identifiable in the creation and use of airport emergency plans.

A. Legislation and Regulations

As already mentioned, for the creation of airport emergency plans, there is a large amount of legislation, which in most cases affects different parts of the airport emergency plan. Unfortunately, some partially overlap, causing inconsistencies in requirements.

In this area, it is necessary to raising awareness for airport operators, which will specify the binding rules and the recommended ones. Legislative issues of airport emergency plans have, however, apart from ignorance other impacts related to the selection of events for description in airport emergency plan.

B. Identification of Events for Airport Emergency Plan

Identification of events for Airport emergency plan, i.e. those that will be detailed for each individual intervention unit is a necessary preparatory step to the development of the airport emergency plan. Currently, however, bypassed, because identification would cost some resources, finance and time, which an airport operator does not have. Therefore operators resort to develop plans defined in airport emergency planning legislation, even if they are meaningless to the airport.

This is a real challenge, because providing airport emergency plan as required to the each specific airport is a complex task. A potential solution would be the regulation update specifying that it is necessary before the creation of airport emergency plan (or when keeping it updated) to periodically carry out risk analysis of airport from which it would be possible to identify the events for emergency plans.

C. Inputs from Airport Operator Personnel

With the mentioned identification of risks and events for emergency plan and resources needed for the creation of emergency plan relates one another problem. It is a limited group of employees of the operator, who can comment the creation of airport emergency plan. Here it is just and only about organizational constraint of airport operator, which usually defines a person or small group who are responsible for the creation of the plan and nobody else has a chance to comment it. This applies both to persons skilled in the issue, and also for those unfamiliar with it. Since ignorance (no constrains from knowledge) can be beneficial. Greater knowledge makes people pessimistic. When you don't know enough to know that you don't know enough, there is no knowledge holding you back. You are not tied with knowledge, that something could be impossible. You can achieve things that people with more knowledge cannot.

Use as input information from a wide range of people is therefore a suitable solution to this obstacle.

D. Coordination with Non-Airport Units

If it will be resolved creation of airport emergency plan

from airport operator point of view referred to in Section C., the next "friction surface" to be resolved is communication with non-airport response units for which airport emergency plans also specifies tasks. This coordination, exactly bad coordination is the biggest threat to any emergency response, as uncoordinated intervention may prove to be worse than the lack of response units. However, this unnecessarily prolongs the period of intervention, thereby increasing loss of life and property.

Emergency plan coordination with non-airport units should therefore be mandatory and the knowledge and approval of airport emergency plan should be officially confirmed by these non-airport units.

E. Linking to Other Documents

In the case of removal, respectively solving all four above challenges there is only one left; airport emergency plan integration into airport operational documentation. This is partially already happening now but only in a way given (again) by legislation –airport emergency plan is one attachment of the airport operation manual.

There needs to be addressed links to the safety management manual and possibly even business contingency plan. The primary objective should thus be an awareness of dependability of these documents for airport executives and then linking together processes that describe each of these documents to eliminate "friction surfaces".

V. CONCLUSION

The improving aviation safety and increasing traffic generates ever-tightening requirements to ensure / secure any events related with it. Mentioned problematic of airport emergency plans "friction surfaces" are currently in this area the most important obstacle to be addressed.

Removal of described five stages would lead to better preparation for emergencies and also assist in the creation of process view on airport management. Basic reactive approach of airport emergency plans, could contribute to increased safety not only in reaction but also in the use of predictive and subsequently proactive evaluation of processes for the entire airport, respectively entire aviation.

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