

PROMOTION OF SAFETY CULTURE WITHIN SERBIAN REGULATORY FRAMEWORK

Marija Glogovac¹, Olja Čokorilo²

Abstract

The paper explains the concept of Safety Culture as the most important condition of successful functioning of an organization, since the Safety Management System cannot be effective without a positive Safety Culture. The five main components of Safety Culture are described: Reporting Culture, Just Culture, Flexible Culture, Learning Culture and Informed Culture. The emphasis is on the concept of Just Culture, because the information that are obtained by reporting occurrences and motivating employees to do so, are much more useful for safety improvement than punishment of employees, which leads to information concealment and hence to endangering the safety. Finally, the paper provides important issues of the promotion of safety culture within Serbian regulatory framework.

Keywords

Safety, Culture, Accident, Occurrences, Safety Management System

1 INTRODUCTION

Although the air traffic has become increasingly safer over the past twenty years, accidents still occur. Therefore, it is necessary to establish an adequate Safety Management System with the aim of continuous improvement of safety by identifying hazards, collecting and analysing data and continuously assessing safety risks. The most important precondition for a successful and effective Safety Management System (SMS) implementation is a positive Safety Culture [1].

Safety in aviation is a state in which the risk of endangering the lives and health of people and causing damage to property are reduced and maintained at an acceptable level through constant hazard identification and risk control. In order to understand the concept of safety it's necessary to consider three different periods of air traffic safety [2]:

- The technical era - from the early 1900s until the late 1960s. In that period, aviation could be described as an unreliable system, since aviation accidents were considerably more frequent than today. Safety deficiencies were related to technical factors and technological failures.
- The human factors era - from the early 1970s until the mid-1990s. Aviation became considerably safer in that period. The focus was on the influence of human factors on the frequency of the accidents. New technologies and regulations were applied.
- The organization era - from the mid-1990s to the present day. Aviation has become the safest transport mode. Organizational factors were considered as a combination of human and technical factors.

¹ Ing. Marija Glogovac, PhD Student, University of Belgrade, Faculty for Transport and Traffic Engineering, Vojvode Stepe 305, 11000 Belgrade, Serbia. Phone: +381 64 9464 772, E-mail: marija.glogovac@yahoo.com

² Ing. Olja Čokorilo, PhD, Associate Professor, University of Belgrade, Faculty for Transport and Traffic Engineering, Vojvode Stepe 305, 11000 Belgrade, Serbia. E-mail: o.cokorilo@sf.bg.ac.rs

According to the ICAO Standards and Recommended Practices (SARPs) that are defined in Annex 19 [1], Member States have an obligation to establish a State Safety Programme (SSP) with the aim to achieve an Acceptable Level of Safety Performance in civil aviation. SSP is an integrated set of regulations and activities aimed at improving safety. The implementation of SSP must be commensurate with the size and complexity of the State's aviation system and may require coordination among multiples authorities responsible for individual element functions in the State.

As a part of their State Safety Programme, States shall require that service providers implement a Safety Management System (SMS) acceptable to the State. SMS should as minimum include:

- a process for identification actual and potential hazards and risk assessment,
- a process for development and implementation actions that are necessary for maintaining an acceptable level of safety,
- a provision for continuing monitoring and regular assessment of the safety performance.

The main components of SSP and SMS are shown in Table 1.

Tab. 1

SSP components	SMS components
• State safety police and objectives	• Safety police and objectives
• State safety risk management	• Safety risk management
• State safety assurance	• Safety assurance
• State safety promotion	• Safety promotion (Safety Culture)

2 SAFETY CULTURE

Some authors provided detailed research to assess employees' perceptions of safety management and safety culture in the aviation industry [3]. Others provide summarization of the numerous reports and studies that have been conducted to define the influence of safety culture on aviation safety and other complex industries [4].

Culture can be defined as a system of values, ways of behaviour and belief, which is characteristic of a certain social community, group or organization. The three most important cultural components are: organizational, professional and national cultures, as it is shown in Fig 1. These components have relevance to safety management initiatives, because they are determinants of organisational performance.

Organizational culture is an essential part of every organization. It can be defined as a system of values, beliefs, assumptions and norms of behaviour that are common for members of certain organization. Organizational culture affects the following:

- Interaction between the members of the organization,
- Interaction between industry and regulatory authority,
- The acceptance and utilization of a certain technologies,
- The degree of information sharing between employees,
- The creation of an environment in which personnel are efficient, competent, loyal to the organization and ready for teamwork.

The most effective way to promote safe operations in organization is to ensure that it is developed the way of thinking in which all staff feel responsible for their actions and consider the impact of safety on everything they do.

Professional culture defines the characteristics of a particular professional group. It is a product of education, training and work in a particular work environment. From a safety management perspective, professional culture affects the ability of a professional group to distinguish between safety performance issues and industrial issues.

National culture defines the characteristics of particular nation. People of different nationalities are different, so the teamwork in mix national cultures environment can lead to misunderstandings. For example, the concept of safety risk differs between different national cultures. When applying SSP managers should assess and consider the differences in the national cultures of personnel.



Fig. 1 Community Cultures

Safety Culture is a product of the combined effects of Organisational Culture, Professional Culture and National Culture. It can be positive, negative or neutral [5].

2.1 Pillars of Safety Culture

According to James Reason [6, 7] there are five main components of Safety Culture (Fig.2):

- Reporting Culture is a culture in which people are encouraged to report their errors and nermisses. Open reporting is very important to any SMS.
- Just Culture refers to the encouragement and motivation of employees to provide information that have or may have an impact on safety, without fear of being treated unfairly and/or that they will be subjected to restrictive measures, but with a clear distinction between acceptable and unacceptable behaviour. Only a small proportion of unsafe human acts are intentional (criminal activities, sabotage, reckless non-compliance, etc.)
- Flexible Culture refers to organization's preparedness for reconfiguration in the face of high tempo operations of certain kind of danger.
- Learning Culture means that the organization is ready and able to learn from mistakes and to implement major reforms.
- Informed Culture means that people in the organization have current knowledge of factors that affect the safety of the system as a whole.

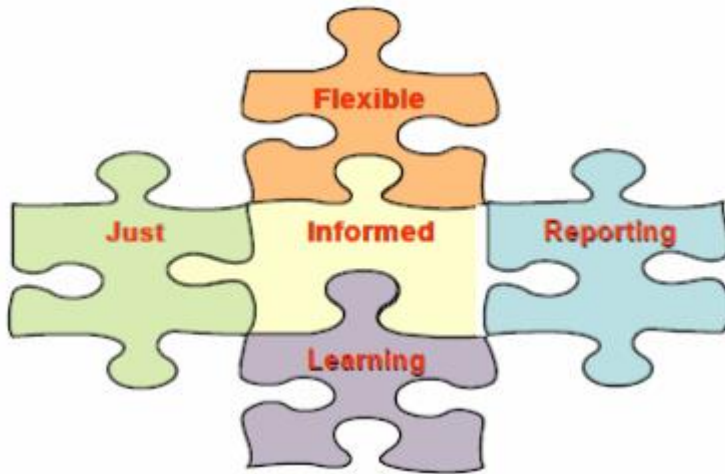


Fig. 2 Pillars of Safety Culture

2.2 Just Culture

According to Heinrich Pyramid [7], each accident is caused by a huge number of unreported occurrences. Based on Figure 3, for every 300 unreported occurrences one accident occurs. Minimising the number of unreported occurrences will lead to a reduction of number of incidents and major accidents. Therefore, it is necessary to motivate and encourage employees to report all occurrences, unsafe situation, omissions and deficiencies, without fear of being sanctioned, with the aim to improve safety through experience and lessons learnt, which means establishment of Just Culture.



Fig. 3 Heinrich Pyramid [7]

By monitoring the number of particular occurrences, which are important from the aspect of safety, it is possible to precisely determine the level of safety in certain segments of air traffic. These occurrences are: accidents, serious incidents and major incidents.

Figure 4 shows the number of ATM caused accidents, ATM caused serious incidents and ATM caused major incidents for FIR Belgrade for the period 2014-2016. It can be concluded that an increase of air traffic for three years is not significant (Figure 5). The number of accidents, serious incidents and major incidents is almost the same for considered years. There are no significant changes recorded.

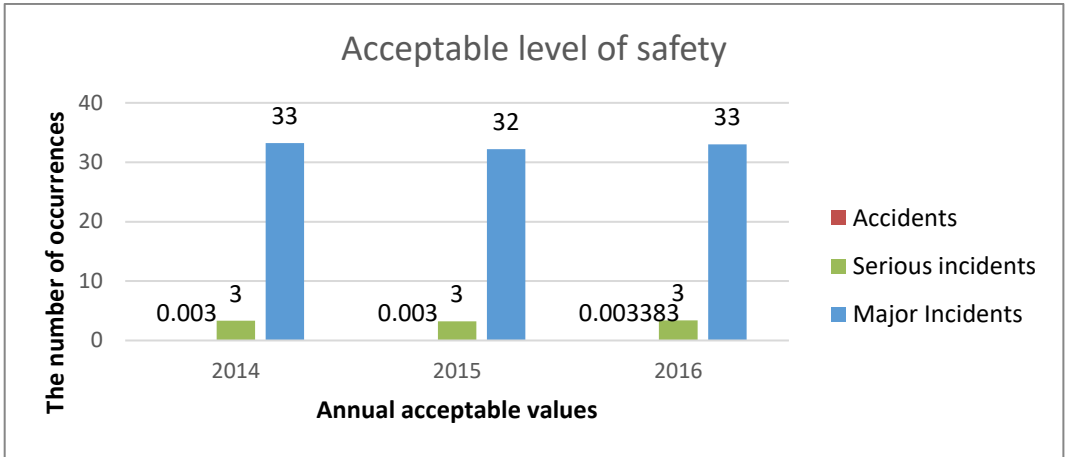


Fig. 4 Acceptable level of safety

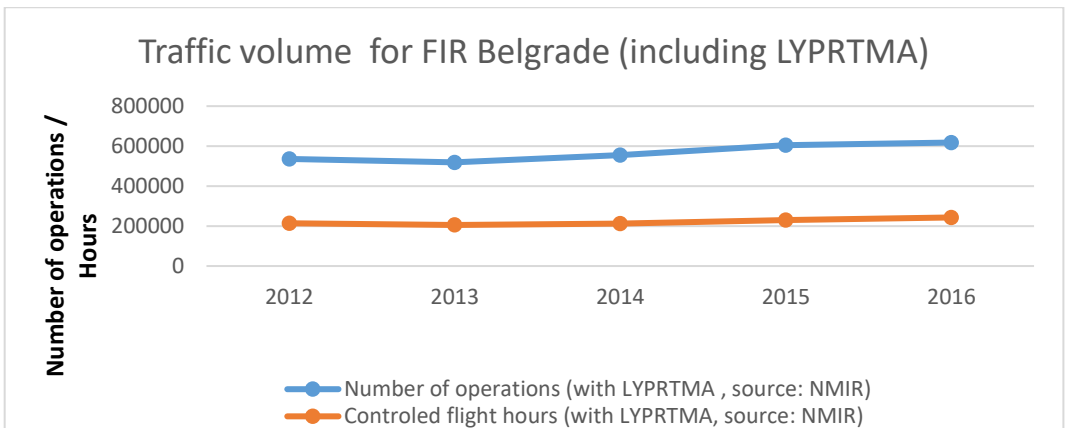


Fig. 5 Traffic volume for FIR Belgrade

2.3 Safety awareness within Civil Aviation Directorate of the Republic of Serbia

Management of CAD is a team of experienced professionals in aviation that are aware of their role in aviation and air traffic safety as NSA. In daily communication with staff management, they stipulate their safety awareness and actively promote Just Culture concept. There are six prerequisites for Just Culture [8, 9]:

- **Motivation and promotion** – Staff should be motivated to provide essential safety-related information.
- **Ease of reporting** – Reporting occurrences shall be made as easy as possible for staff.
- **Acknowledgement** – Reporters like to have information about their report, such as whether their report was received, what will happen to it, what to expect and when.
- **Independence** – A certain degree of independence must be assigned to managers of reporting system.
- **Feedback** – Feedback to reporters and other stakeholders is essential for functioning of the system.
- **Trust** – An atmosphere of trust should exist between reporters and managers of the reporting system.

All staff in ATM/CNS/PEL departments are persons of high degree of knowledge, skills, professional experience and personal and professional integrity. There is a procedure for continuous training of staff and annual plan of training, which assure a learning culture within departments. After completion of individual training, new knowledge is shared with other colleagues in formal manner, which is an environment of learning culture in CAD.

Regarding the informed culture, when is necessary, CAD is organizing meetings, workshop, presentations, for CAD staff, other NSA staff, ANSP staff and other representatives of industry.

With the aim of continuous assurance and improvement of safety culture within CAD, department (ATM/CNS/PEL) managers together with head of division and director of CAD are periodically performing review of:

- Audit activities,
- Inspections activities,
- Occurrence investigation and analysing activities,
- Training activities,
- Activities regarding participation in internal work groups and teams and international cooperation with other NSA and ANSP,
- Overall results of planned activities,
- Plans for following periods.

3 CONCLUSION

Air traffic is constantly increasing, and that also increases the number of potential hazards that can endanger its safety. In order to reduce safety risk in aviation or maintain it at an acceptable level, it is necessary to establish Safety Management System. Safety management is a constant process aimed at continuous detection of hazards and risk management. Perfect SMS does not exist, because it is impossible to foresee all possible interactions between people and technologies.

For successful work of one organization, it is necessary that there is an atmosphere of trust in which people are aware of the risk and hazards induced by their activities, and are encouraged to provide essential safety-related information, but still to understand where the line is drawn between acceptable and unacceptable behaviour. Any human or organizational errors must first be considered as an opportunity to improve operations through experience, feedback and lessons learnt.

This research has been supported by the ATM/ATCO/MET/AIS department of a Civil Aviation Directorate of the Republic of Serbia and the Ministry of education, science and technological development of the Republic of Serbia, project no. TR36027.



Bibliography

- [1] ICAO. *Annex 19 Safety Management*. 1st edition. Montreal, Canada: International Civil Aviation Organization, 2013.
- [2] ICAO. *Doc 9859 Safety Management Manual (SMM)*. 3rd edition. Montreal, Canada: International Civil Aviation Organization, 2013.
- [3] SKYBRARY, 2018. URL: <https://www.skybrary.aero/index.php/Organisational_Culture>.
- [4] GILL, G. K., SHERGILL, G. S. (2004). Perceptions of safety management and safety culture in the aviation industry in New Zealand. *Journal of Air Transport Management*, 2004. 10(4), s. 231-237.

- [5] WIEGMANN, D. A., ZHANG, H., VON THADEN, T. L., SHARMA, G., GIBBONS, A. M. Safety culture: An integrative review. *The International Journal of Aviation Psychology*, 2004. 14(2), s. 117-134.
- [6] ICAO. *Doc 9859 Safety Management Manual (SMM)*. 4th edition. Montreal, Canada: International Civil Aviation Organization, 2018.
- [7] ČOKORILO, O. *Aircraft Safety*. 1st edition. Belgrade: University of Belgrade, Faculty of Transport and Traffic Engineering, 2017. 158 p.
- [8] CAD. *State Safety Program of the Republic of Serbia*. Belgrade, Serbia: Civil Aviation Directorate of the Republic of Serbia, 2016.
- [9] CAD. *State Safety Plan of the Republic of Serbia for 2017-2018*. Belgrade, Serbia: Civil Aviation Directorate of the Republic of Serbia, 2016.