International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:9, No:12, 2015

# Usage of Military Continuity Management System for Supporting of Emergency Management

R. Hajkova, J. Palecek, H. Malachova, A. Oulehlova

***Abstract*****—**Ensuring of continuity of business is basic strategy of every company. Continuity of organization activities includes comprehensive procedures that help in solving unexpected situations of natural and anthropogenic character (for example flood, blaze, economic situations). Planning of continuity operations is a process that helps identify critical processes and implement plans for the security and recovery of key processes. The aim of this article is to demonstrate application of system approach to managing business continuity called business continuity management systems in military issues. This article describes the life cycle of business continuity management which is based on the established cycle PDCA (Plan-Do-Check-Act). After this is carried out by activities which are making by University of Defence during activation of forces and means of the integrated rescue system in case of emergencies - accidents at a nuclear power plant in Czech Republic. Activities of various stages of deployment earmarked forces and resources are managed and evaluated by using MCMS application (Military Continuity Management System).

***Keywords*****—**Business continuity management system, emergency management, military, nuclear safety.

## I. Introduction

IMPLEMENTATION managing of business continuity management support to ensure the functioning of the national security system in the case of crisis situations and preparing for them. Due to frequent occurrence of incidents is beginning applications of business continuity plans or parts thereof not only in manufacturing organizations but also at public authorities, including department of defence. As a part of the Army of the Czech Republic University of Defence deploys detached forces and means in terms of integrated rescue system in accordance with the Act No 239/2000 Coll. [1], in the case of accidents at nuclear power plants in the Czech Republic.

## II. Current Situation Analysis

Business continuity management (BCM) is the process that allows to effectively overcoming the disruption of business interruption while the organization should be prepared for an emergency such as for example crash so that its impact was minimized and recovery as soon as possible. In 2006 was in UK by the British Standards Institute (BSI) in cooperation with the Business Continuity Institute (BCI) issued Standard BS 25999 with the main goal to establish a uniform standard of right procedure and satisfy at the same time customers', governments, regulators of government, clients and other stakeholders needs. Under the name of BS 25999 meaning a pair of standards that provides recommendations and requirements in the field of business continuity management. The first part of standard BS 25999-1:2006 "Code of practice for business continuity management" sets the basic principles and provides recommendations for implementing BCM in the organization [2]. In 2007 was published second part of this new standard called BS 25999-2:2007 "Specification for business continuity management" which provides requirements for certification BCMS [2].

Business Continuity management system (BCMS) is defined by British standard 25999-2 [3]. BCMS is an integral part of a generic management system, introducing, implementing, managing, monitoring, assessing, customizing, and improving the management of continuity in an organization [4].

BCM can be understood as strategic and tactical competence of the organization to respond to the incidents and disruption of its activities and the pursuit activities at a predetermined acceptable level.

Each organization has implemented BCMS however questions can also be asked what was in the implementation taken into account. Defining actions in organization should be based on standard ČSN ISO 22301 Societal Security - Business continuity management systems — Guidance - requirements that prescribes what should organizations within BCMS includes [5].

System approach to business continuity management (Business Continuity Management System, BCMS) is based on the PDCA cycle (Plan-Do-Check-Act). For planning, implementing and improving the effectiveness of the business continuity management is used to known access with other modern management systems, which are eg. QMS, EMS, OHSAS, consisting in the implementation of the Integrated Management System [5], [6]. Organizations having implemented business continuity and disaster recovery plans, are more resilient than other ones [7].

For the proper functioning of entire system is important effective support from the management. The entire process must be implemented throughout the organization and must be an integral part if operations and production processes. It must also be promoted throughout the organization, including their

R. Hajkova and J. Palecek are students in Master degree program at the Department of Emergency Management, University of Defence, 65, Kounicova Street, 662 10 Brno, Czech Republic (e-mail: radmila.hajkova@unob.cz , jiri.palecek@unob.cz).

H. Malachova is with the Department of Emergency Management, University of Defence, 65, Kounicova Street, 662 10 Brno, Czech Republic (Phone: 004209733431; e-mail: hana.malachova@unob.cz).

A. Oulehlova is with the Department of Emergency Management, University of Defence, 65, Kounicova Street, 662 10 Brno, Czech Republic (Phone: 004209733155; e-mail: alena.oulehlova@unob.cz).

sub-contractors and other stakeholders. BCM can be implemented in all organizations regardless of size or scope of business. The basis of the BCM lifecycle is managed of program BCM which is taken as a continuous process [8], shown in Fig. 1.


Fig. 1 The Business Continuity Management Lifecycle [8]

## III. Used Methodology

Business continuity management includes these steps:

- Understanding the organisation;
- Determining of BCM strategy;
- Developing and implementing BCM;
- Exercising, maintaining, and reviewing BCM [8], [9].

### *A. Understanding the Organization*

Business continuity management in organization is issue whose solution requires a comprehensive approach to understanding the organization's activities. During this phase is important to define key processes in the organization and resources involved in their implementation. Part of this step is to impact analysis.

### *B. Determining BCM Strategy*

Business continuity strategy of organization is defined on the basis of continuity management. In this phase are solved procedures for the selection of an appropriate strategy to reduce losses in the event of a crisis. It must be set out concrete steps for managing crisis situations. All procedures

All procedures are based on material and personal resources in organization and the ability of maintaining continuous operation in the event of an emergency or disaster so as not to compromise to jeopardize functioning of company as well and provision of services in case of restricted conditions.

### *C. Developing and Implementing BCM Response*

One of the main outputs of business continuity management is Business Continuity Plan. It provides a comprehensive overview of the steps and procedures that must be implemented for achievement of continuity of all operations. This planning is covers all identified threats that could disrupt operations. The part of the plan is detailed instruction to restoration during in the shortest possible time.

### *D. Exercising, Maintaining and Reviewing*

In the process of business continuity management are very important tests that are realized at many levels from control of contacts to move the training (or part of the) organization to another place. Practice tests helps to determine whether strategies and BCP plans are actual and reflect real needs of the organization. Regular testing increases ability of employers to respond flexibly to unexpected situation. Testing helps to optimize the resources for the restoration of processes [10].

## IV. Application of Business Continuity Management in the Military Area

Army of the Czech Republic is in accordance with the Act of Integrated rescue system [1] among other components that provides planned assistance upon request. Forces and means can be used to strengthen the basic components of the Integrated Rescue System during liquidation of consequences of natural and anthropogenic disasters, where situation cannot be solved by basic components (Fire department of Czech Republic, Police department of Czech Republic and Emergency medical Services).

University of Defense as a government department is participated to activation and deployment of forces and means within the Integrated Rescue System in Czech Republic in the case of accidents and crashes at nuclear power plants in accordance with the government regulation [11] and the directive if Chief of General staff of Army of Czech republic [12]. Deployment of forces and means is required from the regional headquarters of Police department through integrated operations Centre Police of Czech republic.

The activities at University of Defense are regulated by the rector-commander regulation. It is started by system of takeover regulation or requirement to deploy forces and means of informing the principal officers and chief operating officer. Description of the individual steps of BCM is listed below.

### *A. Understanding the Organization*

University of Defense is deployed in the case of event of a radiation accident called as incident in the second degree at one of the nuclear plants in Czech republic, at Dukovany nuclear power plant or a at Temelín nuclear power plant.

When such an event occurs or may occur inadmissible serious release of radioactive substances into the environment, which require urgent actions to protect the population and the environment. At this event they are activated only affecting people of the licensee and intervening persons according to the external emergency plan, respectively county emergency plan, as in the case of emergencies incidents in the second degree but they are also involved other relevant public authorities. For this purpose, University of Defense prepared a plan for the deployment of officers within integrated rescue systems during accidents at nuclear power plant. Application of BCM is to prevent to prepare on necessary steps to deal with

accidents and apply processes for its solving. University of Defense has in the cases of incidents in the third degree prepared processes to ensure a response to the resulting crisis. This includes steps and procedures for business continuity management.

*B. Determining of BCM strategy*

In the first phase is necessary to make strategy for response to incidents in organization. University of Defense must implemented procedures to managing with emergencies incident in the third degree to be able to maintain control under this situation and possibly deliver the required levels of activation of business continuity plans. Timeline for response (Fig. 2) describes the sequential activation of the plan to cope with emergencies and the continuity plan. When determining strategies are set up is very important to consider how they will be involved in key resources, for example people, equipment and material. Especial emphasis is placed on communication with our own staff.

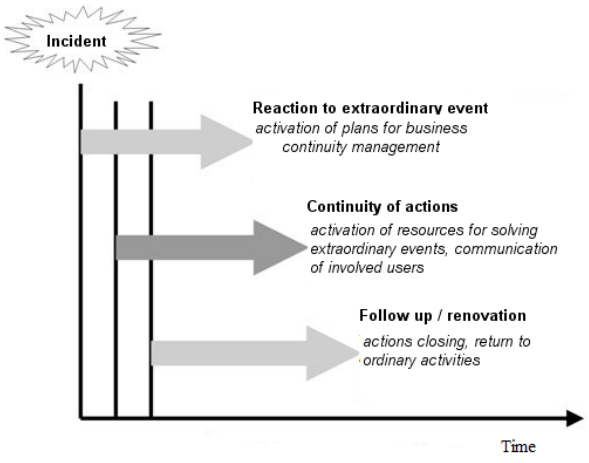


Fig. 2 Timeline emergency response

*C. Developing and Implementing BCM*

During the next phase is necessary to determine how the operation will be activated University of Defence within the target recovery time (RTO) and must be redefined the resources for this purpose. Sub-continuity plans identify activities and resources necessary for manage emergencies without problems. Each plan specifies the conditions for its activation and identify persons responsible for achieve every part of plan. The activities of University of Defense begin by system of requirement to deploy forces and means through supervisory University of Defense which informs the main functionaries, especially the Rector-commander and Chief Operation Centre. Supervisory of University of Defense after receipt of requirements drawn up an initial report on the occurrence of an event that contains information regarding the time of formation emergency and its nature, extent, location, number of forces and means and expected activities.

Following plan is open for all persons which are employed which are required to proceed according to him. Every plan includes at least the following information which are described in more detail below [9]:

1) Purpose and scope
2) Roles and responsibilities
3) The conditions and procedures for activating the plan
4) Locations
5) Overview of tasks and activities - what should be done, when, where and in what order
6) Important contact information
7) Other necessary data and information

Continuity plans must provide answers to basic questions: What should be done? When? Where are the resources situated? Who is involved? How should achieve business continuity management? Answers to these questions are part of a prepared plan for the deployment of members from University of Defense within Integrated Rescue System in the case of emergency or crash on a nuclear power plant.

In plan was specified how the University of Defense proceed and managing the disaster and how is achieve business continuity in a predefined time sessions. The plan must be short, simple, and easy to ensure for his achievement without problems. The actual plan consists of these sub-activities [9]:

A. Purpose and Scope: In plane is defined purpose and scope with regard to the organization. University of Defence in this regard has a clear mission. In the first phase must be activated necessary powers and resources of the University of Defense which consists of students and school Battalion steady state and move to a predetermined income places territorial Police departments. In the next stage these forces and means of addressing the needs of work and refinement Regional Police headquarters. University of defense earmarks for the tasks of law enforcement officials Police 454 soldiers in active service for the Dukovany nuclear power plant and 172 soldiers for a Temelín nuclear power plant. The basic task is to accomplish tasks riot police related to the regulation of movement of persons, security of public order and safety of emergency at a nuclear power plant.
B. Roles and Responsibility: The plan identifies the roles and responsibilities of employees who are involved in the plan. They are identified as team leaders (Chief of Operations center). The members of the team are, also, identified and convened in the case of activation of plans. Plan set up their competences and persons, which must be informed about the plan step by step.
C. Activation Plan: Plan includes circumstances in which it is to be activated and also information, who can order the activation of the plan. From the plan it is evident that activation of the plan in the case of taking reports occurrence if an emergency about incident in third degree on one of the nuclear power plant in Czech republic. Activation of the Plan in the form of occupation forces and means at the workplace, especially chief of operating center, performs supervisory Defense University. After the arrival of the chief of the operations center all activity is controlled in accordance with his instructions.
D. Locations: Plan contains detailed information about

locations of deployment forces and means, including placing maps. In case of emergency at the nuclear power plant Dukovany are soldiers earmarked for Territorial Police departments Třebíč, Znojmo and Brno - country. In case of that there is emergency at a nuclear power plant Temelín are the place of deployment České Budějovice and Tábor.

E. Contact Information: The plan contains contact information for the persons and internal employees and external contacts to organizations and companies that participate in the implementation of the board at the site of deployment. This is for example local authorities, Police of Czech republic, supplier services. Separately from plans are contacts about other contracts and persons which cooperative in case of emergency, for example contracts concluded in order to provide members of rescue team necessary food and drink at the site of deployment.

F. Completion of Emergency: Rescue teams are withdrawn from the place of deployment. In this context, there is a cessation of activities and subsequent processing of the message to end the deployment of troops and then the processing of the final report which includes a quantification of the total costs of deployment. These messages are sent to Permanent Joint Operations center of Ministry of Defense.

The main benefit plans for business continuity management is the fact that at the time of activation plans are all responsible personnel trained in the procedure for dealing with emergencies [8]. Specific approach with contacts, the process of involvement of individual human and material resources is at the moment very required. All soldiers, who perform tasks Police are armed with weapons and complete functional and personal protective equipment. Members of the University of Defense, who are called to perform tasks Police have in performing the tasks of police powers and duties of police officers are on duty subordinate members of Police.

### *D. Exercising, Maintaining, and Reviewing BCM*

Processed plans must be testing and validating their integrity, realism, and functionality. In testing, can be detected shortcomings in resources of timing. Testing is also used for detect discontinuities and omissions in the plans before they are used in the event of an accident. Testing and rehease plans also serve to train personnel who are assigned roles continuity plans. Testing and revision of plans should take place at regular intervals according to the schedule approved by management of University of Defense. University od Defense tested plans prepared during exercise called Zone 2013 when the exercise was organized at the nuclear power plant Dukovany. The aim of the exercise was to review crisis preparedness of central state authorities, local government offices and Integral rescue system in dealing with emergencies arising in connection with simulated radiation accident at the nuclear power plant. In 2015 was realized an exercise called Zone 2015 but during this exercise University of Defense didn't participate. For the resort of defense was involved in exercise members of the air transportation and mobile monitoring teams conducted monitoring the radiation situation and trained the accident at the nuclear power plant Temelín [13]. Testing must be practical and economical designed to build confidence in the developed plans. Testing plans must be managed on the basis of appropriate scenarios. During each test must be recorded in detail, all the activities and results of the tests should be reviewed. For this purpose, it tested applications for modeling and simulation support management processes at alerting to the department. This application is called Military Continuity Management System (MCMS).

## IV. Exercising, Maintaining and Reviewing Military Continuity Management System

MCMS application provides users surroundings that are unified for creating business continuity plans and allows for the participation of a wide team of processors and managers, for defining clear roles and responsibilities. Outputs impact analysis on the processes in business called business Impact Analysis (BIA), are easily interpreted systematization of causes. Causes representing the identified threats, for which plans are created. In the case of plans to deploy members of the University of Defense within the integrated rescue system in case of a crash on a nuclear power plant is the cause of this incident. The causes are linked measures that define professional and managerial requirements of a minimum range of activities filled the implementation of plans. In the case of plans for nuclear power plants are measures meant activities that are carried out by members of the University of Defense in different times, e.g. activities carried out by the chief of the operation center at the initial briefing. This work is organized by member of fight dispensaries weapons and ammunition such carry of weapons, their transport or work making by chemist specialist who verifies the chemical and radiological situation on routes to destinations. Life and health of deployed soldiers must be in safe. Fig. 3 depicts the selected measures.

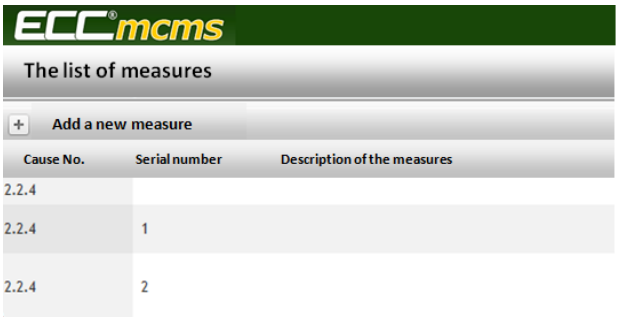


Fig. 3 Measures carried chemist specialist in the MCMS system

By finding out the causes and the measures, it is possible to view documents, methodology, normative acts and links to subjects critical organizational structure and other information.

MCMS application provides all the processors plan for a selected cause automatic editing, the default form of the plan, including any attached information. Copies action arises

sequence of actions to be undertaken in implementing the plan.

In the process improvement, plan processor edits specific information, e.g. for defining individual activities actors and their roles, locations, tasks, resources, etc. Most of the linked information is available from the dials. Dials are processed to cause crisis situations, site material and technical support, activated services, shortcuts, document templates, as demonstrated by Fig. 4.

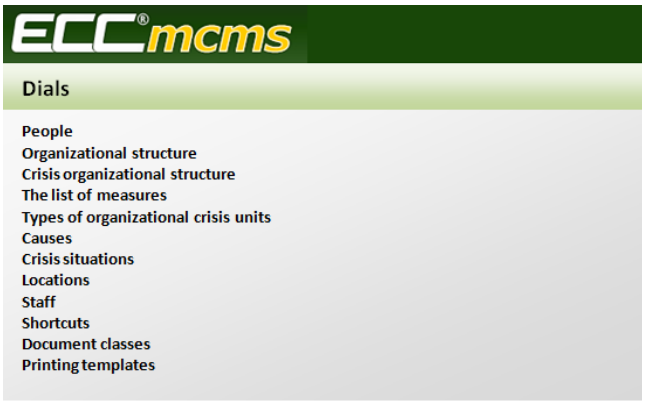


Fig. 4 Available dials as a source of information for the management of causes incident

Plans can be interlink with each other and completing of action plan may be conditional on implementation of another plan. MSMC application allows activate events, execution plans and track your progress. Active event defines plans for all processors developed for the sake of their own activation. The system generates a runtime copy of the activated plan which can be modified and supplemented unplanned activities and information. All these changes are available through the application and provide a picture of the situation and its evolution. The original plan is not changed. It is also possible activation events and implementing plans in test mode for the purpose of the exercise. In the course of the plans, it is possible to change the status of the individual planned activities, tasks to perform communication, display, modify, and supplement linked documents and other information. To monitor and document the time course of implementing the plan are editable entry time of commencement and completion operations. All user actions are recorded in the system. It is supported by the survey throughout the even [14].

MCMS application can be linked to external data systems so that information changes automatically reflected into the previously elaborated plan. It is all about personal systems - weave into secure data in the current crisis organizational structure. This application allows you to view the site address in a public map portal or GIS client. Entities or organizational units have in the application interface made available to its communications contacts. Application provides comprehensive working with documents, including versioning, attachments, and the possibility of returning to their historical versions. The system provides management functionality used abbreviations and their interpretation in selected interfaces. In the inner liner is made possible through a communication system notification.

The application builder provides the following advantages by eliminating unsystematic approach to BCM, lack of time for the introduction of BCM, finding organizational, technical and qualification barriers, identify the workload of key personnel, finding imperfections process maps and analyzes, unification of approaches among actors [14].

## V. Architecture

MCMS is an intranet client-server application. Server is optimized to run on Microsoft Windows Server 2008 and uses the Microsoft.NET Framework v. 4, the database server Microsoft SQL Server 2008 and Microsoft IIS 7 with SSL support. The client part is available at the intranet from a standard web browser. Scheme and links between entities that use applications are shown in Fig. 5 [14].

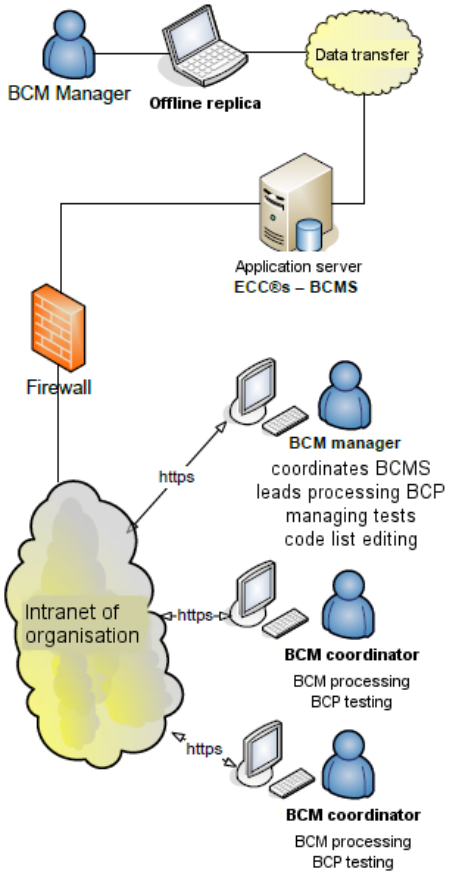


Fig. 5 Scheme and the links between entities [14]

## VI. Conclusion

Discussing the paper includes plans for business continuity management that helps organizations in private and public sectors to minimize consequences of emergencies. The aim of this thesis was to use a system approach to the management of business continuity (BCMS) and apply it to the military. The

procedure known as PDCA was applied for operations that performs the University of Defense in the activation of forces and means within of the integrated rescue system.

Responsible employees who are implanting in emergencies at the nuclear power plant Dukovany and Temelin must have an overview of the activities performed and the course of the plan. Activities carried out in various stages of the plan are managed and evaluated by using an application Military Continuity Management System, which was developed for this purpose and adapted to meet the requirements of the selected unit.

## ACKNOWLEDGMENT

Results presented in this article were obtained as a part of the solution of the project by Specific research with the topic Business Continuity Management System in Crisis Management (research project No. SV15-FVL-K106-12-MAL).

## REFERENCES

[1] Czech Republic. Act. 2000. No. 239/2000, Coll. on Integrated Rescue System, as amended. In: *Collection of Laws*, no. 73, pp. 3461 – 3474. ISSN 1211-1244.
[2] BS 25999-1 Business continuity management - Part 1: Code of practice, London: British Standards Institution, 2006.
[3] BS 25999-2 Business continuity management - Part 2: Specification, London: British Standards Institution, 2007.
[4] Sharp, J. *The Route Map to Business Continuity Management. Meeting the Requirements of BS 25999*. British Standards Institution, 2008. p. 117. ISBN 978-80-254-3992-0. Available at WWW <http://www.isq.org.il/News_Doc/ Perspektivy Kvality_2015.pdf>.
[5] Urban, M. In *Perspektivy, kvality*, vol. 1. No. 3. 2015. ISSN 1805-496.
[6] Smíd, A. Risk analysis Consultants. Available online at WWW <http://www.rac.cz/rac/ homepage.nsf/CZ/BCMS>
[7] TORABI, S.A., H. REZAEI SOUFI and Navid SAHEBJAMNIA. A new framework for business impact analysis in business continuity management (with a case study). *Safety Science*. 2014, 68: 309-323. DOI: 10.1016/j.ssci.2014.04.017. ISSN 09257535.
[8] Business Continuity Management. Available online at WWW <http://www2.deloitte.com/content/dam/Deloitte/cz/Documents /technology/cz_en_rizeni_kontinuity_cinnosti.pdf>
[9] Kotulova, H. Business continuity plans and their apply to industrial accident. In *Požárních ochrana*. 2010. ISBN 978-80-7385-087-6.
[10] Business Continuity Management. Available online at WWW <http://www.bdo-it.cz/cz/rizeni-kontinuity-cinnosti-organizace-bcms>.
[11] Czech Republic. Government regulation 2008. No. 465/2008 Coll. on calling the Czech Army´s soldiers for fulfilling tasks of Police of the Czech Republic at radiation break down at nuclear power stations.
[12] Czech Republic. Directive of the Chief of General Staff of the Army of the Czech Republic of deployment of forces and means the Army of the Czech Republic within the Framework of the Integrated Rescue System. Praha. 2011. p. 40.
[13] Ministry of Defence. Zona 2015. Available at www <http://www.army.cz/scripts/modules/diary/action.php?id=3952>.
[14] Military continuity plans. ZLD. 2014.

**R. Hajkova**, born in Valtice. She studied at University of Defence, at the Department of Emergency Management.
**J. Paleček**, born in Nové Město na Moravě. He studied at University of Defence, at the Department of Emergency Management.

**H. Malachova**, born in Opava, 1980. She studied at Military University of the Ground Forces in Vyskov, Czech Republic, specialization the Environmental Protection, 2005. She studied at Masaryk University, Brno, Czech Republic, specialization the Regional Development and Administration, 2009. In 2011 she defended her doctoral thesis in study program Troops and Civil Defence, University of Defence, Brno, Czech Republic, obtained Ph.D. degree.

She worked at Science-information Department of University of Defence, from 2008 till 2014, where she was engaged in project management in area of educational and scientific projects. At present time, she works as a scientific assistant at Department of Emergency Management at Faculty of Military Leadership of University of Defence, Brno, Czech Republic. She occupies herself with issues concerning crisis management, security and logistics security management. She participates in projects on national and international levels.

**A. Oulehlova,** born in Jindřichův Hradec. She graduated in the study field National Defence Economics from the University of Defence, Brno, Czech Republic, 2006. Her Ph.D. she obtained in branch of Troops and Civil Defence at the University of Defence Brno, Czech Republic, in 2009. Since 2007 she has been working in Department of Emergency Management, Faculty of Military Leadership, University of Defence, Brno, Czech Republic. At present time, she works as a head of Emergency Management Group.

She is the author or co-author more than 40 publications in impact journals, peer review journals, conference proceedings, textbooks, etc. She was a research worker and a co-worker of more than five national and internal university projects. She deals with issues of environmental security and risk assessment.