

**ARMED FORCES ACADEMY
OF GENERAL MILAN RASTISLAV ŠTEFÁNIK**



ABSTRACTS

STUDENTS SCIENTIFIC CONFERENCE

Liptovský Mikuláš, Slovak Republic

May 19, 2011

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MECHANICAL ENGINEERING

INFLUENCE OF THE BOTTOM CHASSIS STRUCTURE TO ANTI-MINE VEHICLE PROTECTION

Peter HALGAŠ

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The Armed Forces Academy of General Milan Rastislav Štefánik

This paper is about the current military situation in the World, which is specific with asymmetric warfare. In this specific warfare insurgents often use improvised explosive devices to destroyed occupant of vehicle. These weapons are very dirty trick and effective. They are often situated under or near the road. In this case is important, that vehicles used in international operations should have the high level of mine blast resistant. Describes formed and spread of shock wave after blast of an explosion. Shock wave has character of spread environmental determinant. When it impact rigid obstacle the pressure and dynamic forces are increased and after they destroy this obstacle. It specifies negative effects of the blast of an explosive device directly situated under a vehicle, vulnerabilities for the occupants or the vehicle construction. The main goal of this paper was aimed to the numerical simulations of different types of vehicles bottoms exposed to mine blast. Compared are these three types: „Single bottom“, „double bottom“ and „V-shape bottom“. Simulations are made by finite element method in program called LS-Dyna based on conditions, which are used to define the protection levels for occupants of logistic and light armoured vehicles. They are written in Slovak defence standard SOŠ 4569 AEP-55, which is base on STANAG 4569 and AEP-55 Volume II. The threat is presented by anti vehicle mine with explosion power of 8 kg TNT that is situated under the middle of vehicle bottom model. Numerical simulations give information about parameters that pose a threat to occupants. In the end to sum the paper up there are some specific comparisons of the solutions for the safety of the occupants, which includes the solutions of the vehicles bottom.

Bibliography:

- [1] *Global Security Org.* Package-Type Improvised explosive devices (IEDs). [online]. 2010. Available: <http://www.globalsecurity.org/military/intro/ied-packaged.htm>
- [2] *Livermore software technology corporation.* LS-DYNA Keyword User's Manual Version 971. Livermore: 2003.
- [3] SATEK, D.: *The theory of the explosion.* Vyškov : VVŠ PV LS Vyškov, 1981.
- [4] *Slovak defence standard SOŠ 4569 AEP-55,* Protection levels for occupants of logistic and light armoured vehicles. Trenčín : 2009.

NOISE LOADING OF CREW AND INDIVIDUAL

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The aim of this work is to show the influence of noise loading on the crew (or individual) of combat vehicle and military technique in the area of grand forces in comparison with noise loading of a personal car, and also of noise loading from automatic assault rifle. The measurements were focused on the detection of noise inside and outside of vehicles while they are at idling and during operation (without shooting). Moreover, measurements were done on self shooting with automatic assault rifles. The result values were then compared. The measurements of this work were made by using 1/3 octave frequency analysis and peak sound levels of noise were also measured through the using of hand-held analyzers of noise type 2250 from Brüel & Kjær firm. Until now was realized an arrangement on decrease noise effect on the operational crew of fighting vehicles (i.e. wearing protective special helmet inter alia as well as for needs of communications). However, the rest of the crew did not protected neither inside vehicles at long-term driving nor at self shooting from automatic assault rifles. Experiences and researches from US army show, that long-term run over threshold noise loading lead unto progressive loss of hearing. At present day as a result of fight in the urban area, let us say close combat fight, is put more emphasis in this area. For the rest of crew are show the advantage to application of head sets. They are to be used on one side as a protection of hearing against severe influences of noise loading, and other side they can serve as communication facility, which make easier communication between commander and individuals.

Bibliography:

- [1] NEMEC, J. (1970). *Hluk a jeho snižování v technické praxi*. (Noise and its decreasing in technical praxis). City: Prague, publisher of technical literature.
- [2] *Technical Documentation Hand-held Analyzer Type 2250 with Microphone Type 4191*. Instruction Manual. Brüel & Kjær, July 2009.
- [3] LISÝ, P., ŠTIAVNICKÝ, M., HRIVŇÁK, E. (2011). *Demaskujúce príznaky pri strelbe z palnej zbrane*. (Unmask symptoms at the shooting from shot-firer weapon – The final review). Liptovský Mikuláš : Armed Forces Academy of General M. R. Štefánik, 2011, pp. 68.
- [4] Technology report – Active hearing protection: The sound of silence: active hearing protection evolves for the front line. In *International Defence Review*, 43, 2010, December, pp. 60-64.
- [5] *Firm materials Nacre's QuietPro+*. Source [online]. Available: <http://www.nacre-us.com>.

TEMPERATURE ANALYS OF THE CAR WHEEL DURING THE BREAKING IN LS-DYNA PROGRAM

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The car wheel is one of the most important elements of a car. During the movement of the car, it must resist many factors, which influence behavior of the car on and off of the road. New cars are faster, therefore a more emphasis is placed to the tire. The tire must be more resistant, of better quality, and meet stringent standards. The appropriate way, how to find a process that arises on the car wheel in a different situation is make a model of the car wheel and then make a simulation to cases we want to examine. I have processed temperature analysis of the car wheel during the breaking in LS-DYNA program in my project.

Bibliography:

- [1] DROPPA, P. a kol. 2007. *Kolesová technika konštrukcia a popis*. Liptovský Mikuláš : Akadémia ozbrojených síl generála Milana Rastislava Štefánika. 2007. 272 s. ISBN 978-80-8040-333-1.
- [2] GESCHIEDLE, R. a kol.: 2007. *Průručka pro automechanika*. Praha : Europa-Sobotáles cz. s.r.o. 2007.
- [3] http://dsp.vscht.cz/konference_matlab/MATLAB06/prispevky/zilak_belavy1/zilak_bela_vy1.pdf

ECONOMICS AND LOGISTICS

LIMITS AND ADVANTAGES OF OUTSOURCING IMPLEMENTATION IN THE ARMED FORCES

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The main theme of the work is devoted to the limits and advantages of outsourcing implementation to the Armed forces structures. The work is discussing about the importance and challenges of providing services this way. A special part is devoted to the modern companies that are aimed on this kind of services and to the pros and cons of such companies. The work is pressing out the main advantages and disadvantages of the outsourcing implementation into the Slovak Armed forces. The practical part will be devoted to the issue of ensuring physical protection of buildings and military areas in the defense, I will focus on financial and non financial aspects of ensuring this security services by possible ways. I will mention a short practical case study with impacts on this sphere from short term and long term view. The work is based on the rich experiences of foreign Armed forces, especially US Armed forces, New Zealand Armed forces and British Armed forces, with outsourcing. From the foreign Armed forces experiences I will mention the way how British Armed forces managed to establish principles of contract signing so that they minimize the risk of critical impact on their military capabilities. The first part discusses the origin of the word, its use in the economy sphere and in the military sphere, and the fields in which I would recommend to apply this modern management method. In the second part I will focus on the threats and opportunities that the implementation of outsourcing in the sector of defense brings to the practice. I will mention the impacts on the strategic capabilities of Armed forces from my point of view. The last part of the work presents a short summary of experiences with outsourcing in the foreign armed forces with focusing on the bad experiences in times of war or emergency situations. In the conclusions of the work I will summarize all the pros and cons of outsourcing implementation.

Bibliography:

- [1] RYDVALOVÁ, P., RYDVAL, L.: 2007. *Outsourcing ve firmě*. Brno: Computer press, 2007. 102s. ISBN 978-80-251-1807-8
- [2] VLACH, J., URSÍNY, D. 2007.: *Ako dobre a správne verejne obstarávať (Praktická príručka - ako vyberať správne postupy a ako pri nich správne postupovať)*. Bratislava : Adin, 2007. 152 s. ISBN 978-80-89244-17-1
- [3] HARAŠTA, P.: Outsourcing vstrojování v podmínkách resortu Ministerstva obrany České republiky. In *Sborník z mezinárodní konference CATE 2007 „Ekonomika, logistika a ekologie v ozbrojených silách“*. Brno : Univerzita obrany, Fakulta ekonomiky a managementu, 2007. ISBN 978-80-7231-254-2
- [4] HARTLE, K.: *Military outsourcing : Uk experience*, [online], [cit. 2010-11-10]. Dostupné na internete: <<http://web.cenet.org.cn/upfile/53057.pdf>>

- [5] NIGARA, K. L., 2004, *Outsourcing in the U.S. Army*, [online], 2004, [cit. 2010-12-02]
Dostupné na internete:
<<http://dissertation.com/book.php?method=ISBN&book=1581122209>>
ISBN-10:1581122209
- [6] WOON, L. J., 2004, *The New Zealand Defence Force-How Does It Stack Up?*, [online],
2004, [cit. 2011-03-06]. Dostupné na internete:
<http://www.almc.army.mil/alog/issues/MarApr04/New_Zealand.htm>

INVENTORY THEORY AND ITS EXPLOITATION IN THE CONDITIONS OF ARMED FORCES

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Theory of inventory is one of the disciplines of operational analyse, which has specific character of solved tasks. Stocks are stored substrates, which are deposited for later use. In my work I am trying to bring basic information about stocks, information about their functions, types and roles in organizations and about inventory management too. The second part is focused on deterministic and stochastic models of inventory theory. Attention of the practical part is focused on possible using of inventory theory in the armed forces conditions. Knowledge from the theory of inventory applied in the conditions of the armed forces is my work's contribution.

Bibliography:

- [1] LAMBERT, D., STOCK, J., ELLTAM, L.: 2000, Logistika, In *Computer press*, Praha : ISBN 80-7226-221-1.
- [2] *Spoločná operačná logistická doktrína ozbrojených síl Slovenskej republiky VDSVAP 41-01*, Bratislava : 2006.
- [3] PEŠKO, Š.: *Stochastické modely 2002-2003*.

LABOUR MARKET ANALYSIS IN RELATION TO THE ECONOMIC CRISIS IN THE SELECTED REGION

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The main thesis theme is the labor market at regional level. Labor market is still necessary to develop to respond flexible to situations in the economy. If there is no stability for labor market between supply and demand, then we need to deal with the concept of unemployment, which is mentioned in a separate chapter. In another part of the theory you will learn how is the labor market linked with the economic cycle and how this market was influenced by the economic crisis in the past and present.

The objective of this work is to analyze the labor market in relation to the economic crisis in the region Zamagurie, which in the labor market is lags behind. For analysis are used data of the statistical office, employment offices, community archives of Zamaguri, questionnaires and web portals. This analysis is evaluated in the practical part.

ANALYSIS AND PROBLEM SOLVING OF THE UNEMPLOYMENT OF RISK GROUPS OF UNEMPLOYED IN SLOVAKIA

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My work is focused on analysis of the problem of unemployment with a focus at-risk populations. The work consists of six separate parts, which are interlinked.

The first part is the theoretical basis developed definitions of unemployment problems, types of unemployment and the impact of unemployment the human psychic.

The second part is devoted to the development of unemployment in the Slovak Republic. Growth of unemployment in the Slovak Republic is here divided into four periods.

The third part focuses on the theoretical definition of risk group of unemployed. In addition to the distribution of selected risk groups of unemployed there are also results with statistical data analysis provided by the Office of Labour, Social Affairs and Family in the Velky Krtis town. So the reader can make an overview of the proportion of which are involved in high-risk groups of unemployed to the total rate of registered unemployed job seekers.

The fourth part is devoted to concrete measures by the Office of Labour, Social Affairs and Family applied for work with risk groups of unemployed. There are also incorporated the results of analysis of effectiveness of these measures, which I made on the basis of analysis of available statistical data and personal interviews with competent persons of the Office of Labour, Social Affairs and Family in the Velky Krtis town.

The penultimate part of the work deals with unemployed ex-professional soldiers. We are dealing here not only the reasons for their unemployment, the instruments to tackle the problem uses the Personnel Office of the Armed Forces of the Slovak Republic, but also the possibilities of its solution.

In the final part of the paper's consist of conclusions and recommendations prepared for the possible solution unemployment of risk groups of unemployed in the Slovak Republic, for which I reached after exact analysis of available statistical data, analysis of the available newspaper articles, interviews with the competent employees of the Office of Labour, Social Affairs and Family in Big Krtíš and based on interviews with unemployed job seekers, who are among the risk groups of unemployed.

Bibliography:

- [1] LISÝ, J. a kol.: *Ekonomía*. 5. prepracované a doplnené vydanie. Bratislava : IURA EDITION, 2005.
- [2] LISÝ, J. a kol.: *Ekonomía v novej ekonomike*. 2. prepracované a doplnené vydanie. Bratislava : IURA EDITION, 2007.
- [3] MARTINCOVÁ, M.: *Nezamestnanosť ako makroekonomický problém*. 2. vydanie. Bratislava : IURA EDITION 2005.

- [4] SAMUELSON, P. A., NORDHAUS, W. D.: *Makroekonomie*. Brno : Computer Press 2004.
- [5] VINCÚR, P.: *Teória a prax hospodárskej politiky*. Bratislava : SPRINT 2006.
- [6] VINCÚR, P. a kol.: *Hospodárska politika*. Bratislava : SPRINT 2000.
- [7] Zákon č. 5/2004 Z. z. o službách zamestnanosti a o zmene a doplnení niektorých zákonov v znení neskorších predpisov.
- [8] Interné dokumenty Ministerstva obrany Slovenskej republiky.
- [9] Interné dokumenty Úradu práce, sociálnych vecí a rodiny vo Veľkom Krtíši.
- [10] <http://hnonline.sk>
- [11] <http://novohrad.sme.sk>
- [12] <http://www.employment.gov.sk/DIS/dis/index.php?SMC=1&id=174>
- [13] <http://www.employment.gov.sk/index.php?SMC=1>
- [14] <http://www.profesia.sk>

POSSIBILITIES OF APPLYING MODERN PRINCIPLES (NEW PUBLIC MANAGEMENT) IN THE MANAGEMENT OF THE ARMED FORCES OF SLOVAK REPUBLIC

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New Public Management is a philosophy that combines the techniques management, which has been successfully applied in the private sector. Government sees as a person who provides services to citizens, understood as their customers, from which accepts feedback and involves them in as far as possible in the management of public affairs. The work is processed theoretical knowledge of management (New Public Management) - namely, economic management tools applied in the public sector and proposed steps to implement them in military formations. Terms of specific advice and recommendations on how the findings can be applied and used in practical activities of managers of different levels of command, and also proposed steps to improve the existing situation. New Public Management represents an approaching in public administration, which uses knowledges and experiences gained in business management and other disciplines to increase efficiency and effectiveness of spending money in the modern bureaucracy. Applying the principles of New Public Management also brings computerization and digitizing capture new opportunities and ways of public administration. In work is implementation computerization in the Armed forces of Slovak republic. Work is dealing with current problems, which equipment service has, what is its current status and possible future development. It examines how to create conditions for functioning of system. Compare the advantages and disadvantages of outsourcing equipment-service, the possible risks, the introduction of e-commerce, the advantages and disadvantages of e-commerce and further improvements that could ensure equipment-service will more effective, more reliable, faster, more flexible and could reduce the number of personnel who participates in this system. Work is dealing about electronic auctions and internal auditing as tools which use New Public Management.

Bibliography:

- [1] BEBLAVÝ, M., SIČÁKOVÁ-BEBLAVÁ, E.: *Inštitucionálne dilemy pri zabezpečení verejných služieb*. Bratislava : Transparency International Slovensko, 2006, s. 9-17, ISBN 80-89244-10-6.
- [2] BENČO, J., LAŠČEK, L.: *Verejný sektor*. Liptovský Mikuláš : Vojenská akadémia, 2002, s. 51, ISBN 80-8040-172-1.
- [3] HARAŠTA, P.: Outsourcing vstrojování v podmínkách resortu Ministerstva obrany České republiky. In *Sborník z mezinárodní konference CATE 2007 „Ekonomika, logistika a ekologie v ozbrojených silách“*. Brno : Univerzita obrany, Fakulta ekonomiky a managementu, 2007. ISBN 978-80-7231-254-2.
- [4] HENDRYCH, D.: *Správní věda. Teorie veřejné správy*. Praha : ASPI, 2003, s. 18.

- [5] REKTOŘÍK, J. a kol.: *Ekonomika a řízení odvětví veřejného sektoru*. Brno : Ekopress, 2002, s. 18, ISBN 80-86119-60-2.
- [6] RUMPEL, P.: *Teritoriální marketing jako koncept územního rozvoje*. Ostrava : Ostravská univerzita, 2001, s. 27.
- [7] SAMUELSON, P. A., NORDHAUS, W. D.: *Ekonomía*. Bratislava : Elita, 2000. s. 36, s. 346, ISBN 80-8044-059-X.
- [8] STIGLITZ, J. E.: *Ekonomie veřejného sektoru*. Vydání 1. Praha : GRADA Publishing, 1997, s. 157- 169. ISBN 80-7169-454-1.
- [9] ŠEFČÍK, V.: *Ekonomika a obrana státu*. Praha : MO ČR, AVIS, 1999.
- [10] *Společná operační logistická doktrína Ozbrojených síl SR VDSVAP 41-01*. Bratislava : Generální štáb Ozbrojených síl SR, 2006.
- [11] <http://www.wellmanagement.biznisweb.sk/>

ELECTRONICAL ENGINEERING

AUTOMATIC RECEIVING AND TRANSMITTING OF MORSE CODE

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Work is concerned with problem of automatic transmitting of Morse code for HARRIS radio. The first part of work characterizes possible ways of radio keying and its application in tactical situations and reasons why we use Morse code. Body solves the program application, which translates classic text into Morse code and that is next in process for transmitting through the use of serial port to the simple circuit for automatic keying. Circuit works as a simple electronic switch for radio HARRIS keying junctions. The same program application translates backward Morse code obtained in audio form from microphone input of soundcard of computer into text. Body form is worked as detail procedures of control application design for RS232 port control in computers, circuit scheme design and program application to receiving, processing and decoding Morse code signal. Work is also concerned with simplifying of various service information broadcastings through the telegram, flash message, plain text or simple chat. In final path of the work possible ways of utilization of this automatic keying and there are proposed possible improvement of simplified communication are summed up.

Bibliography:

- [1] KADLEC, V.: *Delphi - Hotová řešení*. 1. vyd. Brno : Computer Press, 2003. 303 s. ISBN 80-251-0017-0.
- [2] MATYÁŠ, F.: *Spoj-4-1*. 1. vyd. Trenčín : Ministerstvo obrany Slovenskej republiky, 1997. 169 s.
- [3] NEVESELÝ, M., SZÉKELY, J.: *Teoretická elektrotechnika I*. 4. vyd. Bratislava : Alfa, 1975. 214 s.
- [4] PACHECO, X., TEIXEIRA, S.: *Mistrovství v Delphi 6*. 1. vyd. Brno : Computer Press, 2002. 809 s. ISBN 80-7226-627-6.
- [5] SINGH, S.: *Kniha kódů a šifer*. 1. vyd. Praha : Dokořán, 2003. 382 s. ISBN 80-86569-18-7.
- [6] VOBECKÝ, J., ZÁHLAVA, V.: *Elektronika*. 3. vyd. Praha : Grada Publishing, 2005. 220 s. ISBN 80-247-1241-5.
- [7] www.delphibasics.co.uk
- [8] www.harris.com

THE ANALYSIS OF MILLIMETER WAVE BAND RADIOMETERS

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This Thesis is focused on the explanation of information and development from Radiometry field. The Radiometry deals with the observation of electromagnetic radiance of objects. The scientific work consists of two main parts. The first part captures the primary principles of Radiometry, it describes historical development of this discipline and it explains the principle of a radiometric receiver. Also some known formulas are explained in this section and various kinds of radiometric mechanisms, which are applied in many sectors of technical area, are analyzed. There is clarified using a frequency band of the electromagnetic spectrum and what they are used for.

The design of Direct Detection Radiometer model forms the main part of a scientific work. This model was designed in order to remind maximally the real Direct Detection Radiometer with its structure and function in 94 GHz range. The Datasheet of real radiometer has provided the input parameter values. The real Direct Detection Radiometer in 94 GHz range is situated on the Department of electronics. There are designed some blocks, for example the amplifier, the finite impulse response filter, the square detector and non-coherent integrator. The amplifier is used for an amplification of antenna noise and surroundings noise. Filter is important, because it selects the useful frequency band. The next block of square detector is used for a signal determination. And the last block is the non-coherent integrator. It is a sum of previous pulse amplitudes.

The radiometers are very important and necessary instruments, which they are used in the military applications, for monitoring of earth's surface movement and in the Meteorology.

Bibliography:

- [1] MARKO, J.: *Spracovanie signálov rádiometra milimetrového pásma*. Dizertačná práca, Liptovský Mikuláš : 2005.
- [2] SKOU, N.: 1988. *On Microwave Radiometer Systems*. Experiments, Analysis, and Design. Technical University Denmark, Lygby, 1988.
- [3] ŠTEFÁNIK, P.: 2009. *Žiarenie čierneho telesa*. Dostupné na internete: <http://astroportal.sk/astrofyzika/cierne_teleso.html> .
- [4] ŠOSTRONEK, M. a kol.: 2008. *Meranie emisivity textilných materiálov v pásme milimetrových vln*. Liptovský Mikuláš : 2008. ISBN 978-80-8040-344-7.
- [5] *Farran Technology: Datasheet for W-band Direct Detection Module*, Cork, January, 2007.

- [6] PUTERA, J.: 2010. *Číslicové filtre FIR a IIR. Súbor prednášok z predmetu Číslicové spracovanie signálov*. Liptovský Mikuláš : 2010.
- [7] JAKUB, J.: 1997. *Prijímače*. Skriptá z predmetu Prijímače a vysielajúce [cit. 2011.4.4] Liptovský Mikuláš 1997, ISBN 80- 8040-054-7.
- [8] ELSHERBENI, M.: 2004. *Matlab simulations for radar systems design*. New York : 2004, ISBN 1- 58488- 392- 8.
- [9] POZAR, D. M.: 2005. *Microwave Engineering*. John Wiley & Sons, Inc., Hamilton, USA 2005.

SENSORS OF CRANKSHAFT EVOLVES

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The work is dealing with the fundamental methods of measuring non-electrical dimensions, with focusing on measuring the speed of rotating objects. Currently most used method of measuring the non-electrical dimensions, because it has compared to other non-electrical methods more benefits. Next, work is dealing with fundamental components and operating principles of the speed counter, which make for measuring the speed of rotation. In this work we focused specifically on magnetic, mechanical, electrical and stroboscopic speed counters. Speed counters have a great importance, particularly in automotive technology. For example, there are sensors that are used to measure: evolves of crank shaft speed, fuel injection pump, wheel rotation in the ABS, speed of vehicles to the road, the speed of rotation around the longitudinal axis of the vehicle. In conclusion of this work is the processed proposal of the measuring instrument crankshaft of electromotor, which will allow measurement of the count of evolves rotating crankshaft of electromotors with small electric power namely 0,37 kW per second. In proposal was based on block diagrams, which consists of the individual blocks interlinked by appropriate way to my specific sensor of crankshaft evolves. One of the main requirements of sensor is to be prescribed accuracy, therefore the main focus in implementing the proposal was placed on choosing the right clock counter and sensor of sensor. On the basis the selection of clock counter we are looking for a suitable decoder to BCD code, which had translated into code, which means the 7-segment displays. It was important to choose a suitable display unit, for which we have chosen an ordinary LED display. In conclusion of the proposal I have addressed the issue of resetting the clock counter, which was theoretically circuitous. These results from the data processing of measuring instrument of evolves rotating crankshaft can be used for laboratory exercises in the field of sensor technology.

Bibliography:

- [1] GULDAN, A.: *Mikroelektronické senzory*. Bratislava : ALFA technická a ekonomická literatúra Bratislava, 1987.
- [2] JANČÁRY, K.: *Prevodníky fyzikálnych veličín*. Bratislava : ALFA technická a ekonomická literatúra Bratislava, 1985.
- [3] JEDLIČKA, P.: *Přehled obvodu řady CMOS 4000. Díl II*. Praha : BEN technická literatúra Praha, 2001. ISBN 80-901984-2-2
- [4] KULIK, A., OCELÍK, F.: *Automatizačná technika I*. Bratislava : ALFA technická a ekonomická literatúra Bratislava, 1975.
- [5] LAKOTA, B.: *Zobrazovacie systémy II*. Liptovský Mikuláš : Vojenská Akadémia, Liptovský Mikuláš, 2001. ISBN 80-8040-165-9.

- [6] MARTINEK, R.: *Senzory v průmyslové praxi*. Praha : BEN technická literatura, 2004. ISBN 80-7300-114-4.
- [7] TOMAN, M.: *Senzory v automatizácii*. Bratislava : Slovenská technická univerzita v Bratislave, 1999. ISBN 80-227-1281-7.
- [8] TUŠA, S.: *Snímače v motorových vozidlách*. Liptovský Mikuláš, Akadémia ozbrojených síl, 2009. ISBN 978-80-8040-389-8.
- [9] ZEHNULA, K.: *Snímače neelektrických veličín*. Praha : SNTL technická literatura, Praha, 1983.

COMPUTER MODEL OF RADAR SYSTEM

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Objective of this project is to design and realize functional computer model of three-dimensional pulse radar system on the basis of theoretical analysis. Obtaining 3D information, about situation in the airspace, was the first matter to solve. The time-proven construction, with rotating antenna and electronic steering of main radar beam in elevation plane is described. The model was designed by MATLAB® 7.6.0. (R2008a) Simulink®, using common blocks from Simulink Library Browser. It is divided into three main subsystems: transmitter, target & environment and receiver. The Radar transmitter is built around the klystron amplifier that amplifies microwave pulses generated in the shaper of main pulses. The shaper is based on mixing heterodyne and intermediate-frequency signals. Four pulses are radiated successively into space at different frequencies, depending on control commands. The antenna feed elements' design provides for shaping of a four-beam antenna pattern in the elevation plane. The main pulse of a certain frequency corresponds to each beam. Target & environment subsystem simulates the application of radar equation, irradiation of air target, losses and noise. Receiver subsystem accomplishes processing the echo-signal by sensitivity time control device, low-noise amplifying and filtration, i.e. frequency demultiplexing of echo-signals. After the filtration, further processing is provided in four channels of the receiving system. The project is dedicated just to the shaping, amplifying, receiving and envelope detection of radar signal without signal processing. User control console with control buttons, descriptions and visualizations are also part of the model, so it could be used for didactic purposes. This project is intended to be tool of illustrative lectures and experiments for educational purposes. Widespread use of Matlab® family products gives user opportunity not just to run such a simulation and analyze its outputs, but also to modify, enhance and add his, or her, own solutions to the model. Structure of model follows the principles and logic of signal processing, so it is easy to understand even for inexperienced users.

Bibliography:

- [1] LEONOV, S. A., LEONOV, A. I.: *Handbook of Computer Simulation in Radio Engineering, Communications, and Radar*. Artech House, 2001.
- [2] MAHAFZA, B. R., ELSHERBENI, A. Z.: *Matlab® Simulations for Radar System Design*. Boca Raton : Chapman & Hall/CRC CRC Press LLC, 2004.
- [3] OCHODNICKÝ, J., ŠPIRKO, Š., CIBIRA, G.: *Rádiolokácia a Rádionavigácia*. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2008.

MULTIMEDIA TOOL FOR RECEPTION MORSE ALPHABET

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The paper describes a design of multimedia tool for training of Morse alphabet reception. The first part describes a history of Morse code and its evolution up to nowadays. Second part presents methodology of training from beginner level to expert level and shows the way how to improve in Morse code reception skills. Detail description of MORSE TRAINER program is presented in next part. Program offers a few options how to make training: follow lessons order according the signals guide Spoj 51-45 or to define the own user defined lessons. A way how to make reception difficult is to add certain noise level or change transmission speed. Program can be used not only for needs of Armed forces but also for radio amateurs.

Bibliography:

- [1] KALIVODA, M., STEINBAUER, J.: *Spoj-51-45 Metodika výcviku spojovacích specialistů*. Praha : 1978.
- [2] <http://dennik.inet.sk/clanok/11312-historia-pouzivania-morseovej-abecedy/>

LINEAR STABILIZED POWER SUPPLIES WITH OUTPUT VOLTAGE PROTECTIONS

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The work is dealing with the theory of principle of voltage stabilization, the theory of continuous voltage, protection methods and principles of their activities. Currently in the integrated power supply voltage used to allow easier construction of a stabilized power supply. Electronic circuits are powered from voltage and current sources. Voltage power supplies are closer to us, because we meet with them daily (standard battery). For current sources we do not have such practically equivalent and therefore are not so understandable for us. For electronic practice is important to know both types of resources, because it is sometimes preferable to use a voltage source and sometimes use a current source. Voltage stabilizersto maintain its output voltage constant in possibly the widest range of received output current and voltage supplied input.

Based on the theory that I made the proposal a stabilized power supply with discrete components and to compare the operation the stabilized power supply using integrated circuit UA723CN. Both sources are protected by surge protection on input. In a stabilized power supply based on discrete components is also involved in electronic and thermal fuse. In a stabilized power supply based on UA723CN is supplemented by a thermal fuse, current fuse is already directly involved in housing the integrated circuit. Thermal protection is in the implementation of signal character, which shows where the protection reacts, if it is complemented by ventilator, then it works such a thermal protection of power transistors in stabilizers. On both power supply is possible to measure $U_{out}[V]$, $U_{ref}[V]$, $U_{divider}[V]$. These results from the processing of the proposal with a stabilized

Power supply output voltage protections can be used for laboratory exercises in theme: energy sources.

Bibliography:

- [1] KREJČIŘÍK, A.: *Napájecí zdroje I*. 2.vyd. Praha : BEN, 1997. 350 s. ISBN 80-86056-02-3.
- [2] KREJČIŘÍK, A.: *Lineární napájecí zdroje*. 1.vyd. Praha : BEN, 2001. 144 s. ISBN 80-7300-002-4.
- [3] LAKOTA, B.: *Zdroje elektrické energie I*. 1.vyd. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2007, 180 s. ISBN 978-80-8040-337-9.
- [4] MALLAT, J., KROFTA, J.: *Stabilizované napájecí zdroje pro mikroelektroniku*. 1. vyd. Praha : Nakladatelství technické literatury, 1985. 248 s. Typové číslo L26-B3-IV-31/52533.

- [5] bkprecision. *Web bkprecision.com*. [Online] 2009. [Datum: 01.02. 2011.] Power Suplly Guide. Dostupné na internete:
<http://www.bkprecision.com/support/downloads/application_notes/PowerSupplyGuide.pdf>.
- [6] SYROVÁTKO, M.: *Navrhování napájecích zdrojů pro mikroelektroniku*. 1. vyd. Praha : SNTL, 1977, 272 s. ISBN 04-541-77.
- [7] VOBEČNÝ, J., ZÁHLAVA, V.: *Elektronika*. 3. vyd. Praha: Grada Publishing, a.s. 2005. 220 s. ISBN 80-247-1241-5.
- [8] *Web datasheetcatalog.org. Voltage regulator*. [Online] National Semiconductor [Datum: 01.03 2011.] LM723 Voltage regulator. Dostupné na internete:
<<http://www.datasheetcatalog.org/datasheet/nationalsemiconductor/DS008563.PDF>>.
- [9] *Web datasheetcatalog.org. Programmable Voltage rereference*. [Online] ST microelectronics [Datum: 01.03 2011.] TL431 Programmable Voltage rereference. Dostupné na internete:
< <http://www.datasheetcatalog.org/datasheet/stmicroelectronics/4467.pdf> >.
- [10] *Web datasheetcatalog.org. Single Operational Amplifier*. [Online] Fairchild [Datum: 01.03 2011.] LM741 Single Operational Amplifier. Dostupné na internete:
< <http://www.datasheetcatalog.org/datasheet/fairchild/LM741.pdf> >.
- [11] *Web datasheetcatalog.org. Voltage comparator*. [Online] National Semiconductor [Datum: 01.03 2011.] LM311N Voltage comparator. Dostupné na internete:
< <http://www.datasheetcatalog.org/datasheet2/b/0jdkzrg4s3g5gt5t8w0lgcglzfy.pdf> >.
- [12] *Web datasheetcatalog.com. Adjustable, 150mA Precision Voltage Regulator* [Online] Texas Instruments [Datum: 01.03 2011.] UA723CN Adjustable, 150mA Precision Voltage Regulator. Dostupné na internete:
< <http://www.datasheetcatalog.org/datasheet2/1/02jdjfortcg5xeidfsh9rlrrcu3y.pdf>>.

AUTOMATED MEASUREMENT OF RADIATION DIAGRAMS OF ANTENNAS

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This thesis is dealing in general analysis of antennas as main component of radio communication. Theory is principally focused on determination and separation of antennas. Part of the work includes main parameters, which characterize the antennas. For better illustration is one of the chapters focused on ideal models of the radiation diagrams of few chosen antennas. Accordingly is dealing in with influence of changing of mechanical and electrical parameters to shape of the radiation diagrams.

The main focus of the work is creation of the application for automated measurement of radiation diagrams. This should minimize various disturbing influences that have impact to the measurement. Application includes sub application that measures bandwidth of the antenna and resonance frequency. This frequency is used for measurement of radiation diagram of the antenna.

For modeling of the ideal radiation patterns and also for creation of application itself is used software Matlab. For realization of graphic window of an application is used Matlab GUI. Application provides graphic representation of measured values and it is able to display 3D radiation diagram.

Bibliography:

- [1] ČERNOHORSKÝ, D., TICHÝ, J.: *Anténny měření*. Brno : VAAZ, 1971.
- [2] MINÁŘ, J.: *Měření parametrů mikrovlnných antén*. Brno : VAAZ, 1973.
- [3] MATOUŠEK, Z., OCHODNICKÝ, J.: *Plošné antény*. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2009, 76 s., ISBN 978-80-8040-385-0.
- [4] MRÁZ, P.: *Antény rotátor pre radar mm pásma*. Diplomová práca. Liptovský Mikuláš: Akadémia ozbrojených síl generála M. R. Štefánika, 2003, 43 s.
- [5] DOŇAR, B., ZAPLATÍLEK, K.: *MATLAB – Tvorba užívateľských aplikácií*. 1. vydanie.. Praha : BEN – technická literatúra 2004, 216 s.. ISBN 80-7300-133-0.
- [6] HYKEL, A., MATOUŠEK, Z., OCHODNICKÝ, J.: *Šírenie elektromagnetických vln a vodičové antény*. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2006, 151 s. ISBN 978-80-8040-306-5.
- [7] MAKAROV, S.: *Antenna and EM modeling with Matlab*. John Wiley & Sons, Inc., New York, 2002, 284 s. ISBN 0-471-21876-6.
- [8] JOHNSON, R.: *Antenna engineering handbook*. 3rd edition, McGraw-Hill, Inc., New York : 1993, 1511 s. ISBN 0-07-032381-X.

- [9] BALANIS, C.: *Antenna theory – Analysis and design*. 2nd edition, John Wiley & Sons, Inc., New York : 1997, 959 s. ISBN 0-471-59268-4.
- [10] BOYLE, K., HUANG, Yi: *Antennas – From theory to practice*. John Wiley & Sons, Inc., New York : 2008, 379 s.. ISBN 978-0-470-51028-5.
- [11] HÁCHA, B.: *Antény*. Liptovský Mikuláš : VVTŠ ČSSP, 1986, 402 s.
- [12] GALVÁNKOVÁ, I., TURÁN, J., VAVRA, Š.: *Antény a šírenie elektromagnetických vln*. Bratislava : ALFA, 1989, 424 s. ISBN 80-0500-131-2.
- [13] PROKOP, J.: *Šíření elektromagnetických vln*. Praha : ČVUT, 1972, 247 s.
- [14] IKRÉNYI, I.: *Amatérské krátkovlnné antény*. Bratislava : Slovenské vydavateľstvo technickej literatúry, 1964.
- [15] CHATTERJEE, R.: *Antenna theory and practice*. John Wiley & Sons, Inc., New York : 1988, 311 s. ISBN 047-0-20957-7
- [16] VOKURKA, J.: *Antény*. Praha : ČVUT, 1978, 229 s.
- [17] PETRÍK, S.: *Antény a šírenie elektromagnetických vln*. Bratislava :ALFA, 1991, 179 s.

STANDING WAVE RATIO MEASUREMENT IN MICROWAVE FREQUENCY BAND

Tomáš NEMERGUT

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This thesis deals with the influence of the impedance adaptation to antennas activity. It also defines technical parameters describing the impedance adaptation, such as reflection coefficient, voltage standing wave ratio and return loss.

The practical part describes the proposed automated measuring unit for measuring the impedance adaptation.

When designing method for measuring parameters of the impedance adaptation, I have chosen a ferrite circulator as an essential element of the measuring unit. Its properties and principles of operation have given me very good tool for indirect measurement of reflection coefficient, voltage standing wave ratio and return loss.

Automated measuring unit consists of hardware and software part. The basic hardware element is the ferrite circulator PE8400. Software part was created in MATLAB GUI programming and provides measuring of parameters of the impedance adaptation in the frequency range from 1 GHz to 2 GHz.

The last part deals with the measurement of parameters of the impedance adaptation of selected antennas and electronic equipment.

Bibliography:

- [1] ŠOSTRONEK, M., MATOUŠEK, Z.: *Mikrovlnová technika – Základy elektromagnetizmu*. 1. vyd., Liptovský Mikuláš : Akadémia ozbrojených síl gen. M. R. Štefánika, 2010, 88 s. ISBN 978-80-8040-415-4.
- [2] RŮŽIČKA, V., PUNČOCHÁŘ, J.: *Teórie obvodů V – Teórie obvodů s rozloženými parametry – Část I*. 2 vyd. Praha : SNTL - nakladatelství technické literatury, 1978, Číslo publikácie 412-33874, 104 s.
- [3] MATUSZCZYK, J.: *Antény prakticky*. 3. české vyd. Praha : BEN – technická literatura, 2005, ISBN 80-7300-178-0, 239 s.
- [4] TIRPÁK, A.: *Elektronika veľmi vysokých frekvencií*. Bratislava : Vydavateľstvo UK, 2001, ISBN 8022316318, 259s.
- [5] PASTERNAK ENTERPRISES, INC.: *PE8400* [online] Irvine: Pasternack Enterprises, Inc [cit 2011.3.27] Dostupné na internete <<http://www.pasternack.com/Pdf/PE8400.pdf>>
- [6] TYSL, V., RŮŽIČKA, V.: *Teoretické základy mikrovlnné techniky*, SNTL Praha 1989, ISBN 8003001412, 450 s.

MULTIMEDIA TOOL FOR OPERATORS TRAINING OF CNR 9000 RADIO

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The proposal of multimedia tool for operator training on the radio station Tadiran CNR 9000. In introduction radio communication technologies used in Slovak Armed forces and approaches to their modernization are described. In next part technical parameters and features of radio station CNR 9000 are presented. Developed multimedia tool is presented in the last part.

Bibliography:

- [1] *Tadiran: Operator manual for VHF/FM RADIO SETS CNR-9000*, Edition A, 2008.
- [2] <http://www.elbitsystems.com/elbitmain/area-in2.asp?parent=193&num=195&num2=195>

MULTIMEDIA TOOL FOR OPERATORS TRAINING OF HF 6000 RADIO

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The proposal of multimedia tool for operator training on the radio station Tadiran HF 6000. In introduction radio communication technologies used in Slovak Armed forces and approaches to their modernization are described. In next part technical parameters and features of radio station HF 6000 are presented. Developed multimedia tool is presented in the last part.

Bibliography:

- [1] *Tadiran: Operator manual for VHF/FM RADIO SETS CNR-9000*, Edition A, 2008.
- [2] <http://www.elbitsystems.com/elbitmain/area-in2.asp?parent=193&num=195&num2=195>

LOW FREQUENCY SIGNALS IDENTIFIER

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Signals and their analysis are ones of the most important elements of radiolocation, radio reconnaissance and electronic warfare. There is often needed to identify and analyze signals with unknown characteristic. Passive radiolocation is a typical example, where strange signals are received and processed and their identification is the key factor for intelligence gathering.

This paper works up the issue of signals identification either in time and frequency domain. The identification is performed by a simple program created in MATLAB. The main task of this identifier is to demonstrate one of numerous options of solutions how to identify unknown signals using correlation analysis. The strange signal is compared with known signals using correlation coefficient and the identifier evaluates which type the strange signal it is.

The main task of this program is not to identify real signals, but to simulate the process of identification and exploration of the possibilities of identification using the correlation coefficient. In the program there is an option of choosing the type of test signal and the level of the noise distorting this signal. There is the test signal displayed either in time and frequency domain. The outputs are percentage and word evaluation of the identification. In this paper the possibilities of identification (using correlation coefficient) are also processed depending on the level of noise distortion of the signal.

Bibliography:

- [1] NEBUS, F., KURTY, J., KUS, Z.: *Teória signálov I.* 1. vyd. 1998. ISBN 80-8040-066-0.
- [2] NEBUS, F., KURTY, J., KUS, Z.: *Teória signálov II.* 1. vyd. 2001. ISBN 80-8040-147-0.
- [3] NEVŘIVA, P.: *Analýza signálů a soustav.* 1. vyd. 2000. ISBN 80-7300-004-0.

INFORMATICS

THE USAGE OF GIS TOOLS IN THE SLOVAK ARMED FORCES IN THE PROCESS OF PLANNING AND COMMAND OF OPERATIONS

Marián BÁTOSKÝ

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In the theoretical part the work deals with an entity of geographical information systems, its structure and branches, functions, tasks and its relation to other departments of human activity. In present times on the market of map and analytical software dominates the ESRI Company, which applications became a certain standard for work with GIS. In the 2006 this company opened up the first version of extension for ArcGIS Desktop- MOLE (Military Overlay Editor) as an analytical tool for help in command and control systems. MOLE offers a simple way to create, display and edit a sketch of military tactical situations or a position of military units in maps. This application supports the MIL-STD-2525B standard and the NATO APP6a standard. We have get ArcGIS Desktop software together with an extension of MOLE in cooperation with the Topographical department Banská Bystrica in order to its examining and analysis because of its possible use in The Armed Forces of Slovak republic.

Bibliography:

- [1] PEŇÁZ, T.: 2006. *Programové vybavení pro GIS I.* ArcGIS. Ostrava : VŠB-Technická univerzita Ostrava, 2006, 35s.
- [2] KOREŇ, M.: 2008. *Geografický informačný systém ArcGIS.* Vysokoškolské skriptá. Zvolen : Technická univerzita vo Zvolene, 2008, 88 s. ISBN 978-80-228-1947-3.
- [3] *ArcGEO.* 2004. ArcView 9 (Príručka ku školeniu). Bratislava : ArcGEO, 2004, 238 s.
- [4] CHAFFIN, M., SWINEHART, C., KRATTIGER, K., HASSELBECK, T., DOLAN M.: 2001-2005. *Military Overlay Editor 9 User Guide.* USA : Redlands, 2001-2004, 156s., CA 92373-8100.
- [5] *ESRI: ArcGIS9. Co je ArcGIS?* ESRI, USA: 2001-2004, 129 s., CA 92373-8100.
- [6] RAPANT, P. 2002. *Úvod do geografických informačných systémov.* Ostrava : VŠB-TU, 2002. 112 s.
- [7] http://www.gis.sudolska.sk/definicia_GIS.html
- [8] <http://www.gamo.sk/softverove-riesenia:gis:co-je-to-gis>
- [9] <http://www.arcdata.cz/produkty-a-sluzby/software/esri/arcgis-desktop/>

ANALYSIS OF TRAFFIC IN THE WLAN

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My work deals with the possibilities of wifi networks analysis in terms of radio but also in terms of data transferred. Wireless Local Area Network is a flexible data communication system implemented as an extension, or as an alternative to a wired Local Area Network. The wireless network is one that uses wireless data transmission, therefore wireless networks send and receive data through the air, minimizing the need for wired connections. So combine wireless connectivity with user mobility. WLAN also allows greater flexibility and portability than traditional wired Local Area Network, requiring the user's computer to connect with a network cable.

This work consists of three parts. The first part describes the basic wifi standards and specifications, and describes the types of security in wifi networks. Highlights the shortcomings of earlier security but also relatively easy breakability of security. The second part deals with finding a suitable software product for capturing and analysis of broadcast wireless network and their detailed description such as network name, the value of the signal, network channel, network security, vendor's MAC address or even GPS coordinates of the network. I have decided to chose the most suitable software applications in terms of user performance, affordability, but also to the framework. I have described the best program in detail illustrate the capture of broadcast networks. In the third part I was looking for the best program for analyzing traffic in a particular WLAN. I chose a product that is the most widely used network scanners in the market and than I described. Finally, I described the method of capture operation in the chosen network using this software.

WLAN networks are currently widely used and their number is still increasing so it is necessary to know the principle of how to find available networks and how data is transmitted in such networks.

Bibliography:

- [1] *Wi-Fi*. Dostupné na internete: <<http://sk.wikipedia.org/wiki/Wi-Fi>> .
- [2] ZANDL, P.: *Bezdrátové síte WiFi* .Praktický průvodce. 1. vyd. Brno : Computer Press, 2003. 190s. ISBN 80-7226-632-2.
- [3] GUNIŠ, J.: *Komunikačné protokoly*. Košice : PF UPJŠ. Dostupné na internete: <http://www.velkyhores.sk/streda_sks/pocitacove_siete_protokoly.pdf> .
- [4] PUŽMANOVÁ, R.: *Bezpečnost WiFi záleží jen na Vás*. [online]. 20.04.2011 Dostupný na internete: <<http://www.lupa.cz/clanky/bezpecnost-wifi-zalezi-jen-na-vas/>>

THE USE OF NPS IN WINDOWS 2008 TO SECURE ACCESS NETWORKS

Matúš BOŠEĽA

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The primary intention of this work is to explain the secure access network with the use of NPS services in Windows Server 2008. Network Policy Server (NPS) is the Microsoft implementation of a Remote Authentication Dial-in User Service (RADIUS) server and proxy in Windows Server 2008. As a RADIUS server, NPS performs centralized connection authentication, authorization, and accounting for many types of network access methods. The work summarizes and implements modern approaches to secure access and Network Access Protection approach implemented in Windows server 2008. Network Access Protection (NAP) is a set of operating system components that provide a platform for protected access to private networks. The NAP platform provides an integrated way of evaluating the system health state of a network client that is attempting to connect to or communicate on a network and restricting the access of the network client until health policy requirements have been met.

This paper contains an introduction to NAP and instructions how to deploy NAP with the 802.1X enforcement method. The testing environment is based on two Microsoft Windows Servers 2008, where the first one consists of a NPS server and the second one consists of AD DC, DNS server and AD CS. On each of the clients the operating system Windows 7 was installed. One computer was a domain computer and the other one was a non-domain computer. The compliant log-in achieved and the configuration of 802.1X in NAP platform is presented.

Bibliography:

- [1] *Microsoft*. Microsoft TechNet. Network Policy Server. Upravené: 21. 1. 2008. [online]. Dostupné na: < <http://technet.microsoft.com/en-us/library/cc733085%28WS.10%29.aspx> >
- [2] *Microsoft*. Microsoft Download Center. *Network Access Protection Platform Architecture*. Publikované: 6. 2. 2008. [online]. Stiahnuté na: < <http://www.microsoft.com/downloads/en/details.aspx?FamilyID=2f37651e-1749-45c3-996e-53de05d44ef7&displaylang=en> >
- [3] *Microsoft*. Microsoft Download Center. *Step-by-Step Guide: Demonstrate NAP 802.1X Enforcement in a Test Lab*. Publikované: 2. 1. 2010. [online]. Stiahnuté na: < <http://www.microsoft.com/downloads/en/details.aspx?FamilyID=2f37651e-1749-45c3-996e-53de05d44ef7&displaylang=en> >

IT SERVICE MANAGEMENT

Martin DLUTKO

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The Armed Forces Academy of General Milan Rastislav Štefánik

My work deals about IT Service Management focused to Security Management. IT Service Management is dedicated to managing IT systems and services. It is a multilevel concept, which is able to be implemented in small or big corporations. Individual ITSM disciplines depends on each other and share a common interface. Output of a one discipline is used on the other discipline.

First part of my work deals about all levels of IT Service Management but main attention is aimed to Security Management. Second part deals about a lifecycle of an Information Security Management System. This lifecycle is described on a PDCA model which consists of four parts. PLAN (Process Development), DO (Process Implementation), CHECK (Quality Assurance) and ACT (Process Enhancement). Important thing is a Risk Analysis where I try to find risks which can cause data lost or damage corporate network and then managings these risks.

The last part deals about implementation of a security to active components (Router, Switch) and pasive components for a hypothetical corporate network. I have designed security settings to all components of a network from software settings like firewalls, authentication, authorization to physical security. Employees may also represent a risk to a network, so I divided them go groups and set different roles to these groups.

Bibliography:

- [1] LOVEČEK, T.: *Bezpečnosť informačných systémov*, Žilina : EDIS-vydavateľstvo ŽU, 2007. 276s. ISBN 978-80-8070-767-5.
- [2] STRNÁD, O.: *Systémový prístup k riadeniu informačnej bezpečnosti*. Trnava : SP Synergia, 2008. 235s. ISBN 978-80-89291-20-5.
- [3] EISENKOLB, K., GÖKHAN, M., WECKARDT, H.: *Bezpečnosť Windows 2000/XP*. Praha : Computer Press, 2003. 501s. ISBN 80-7226-789-2.
- [4] DUCEK, P., NOVÁK, L., SVATÁ, V.: *Řízení bezpečnosti informací*. Praha : Professional Publishing, 2008. 239s. ISBN 978-80-86946-88-7.

CALCULATIONS IN DATABASE APPLICATIONS

Juraj DUBNÝ

Consultant: Dipl. Eng. Lubomír Semančík, PhD.

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The work deals with options for creating database applications which are being used not only for data storage but also for calculations resulting from requirements on database. The first chapter is devoted to the subject of the work and what does it consist of. The second chapter describes various data processing architectures and their advantages and disadvantages. The third chapter is devoted to the possible implementation of application logic for each of the client-server architectures. The fourth chapter describes the different steps in the design of the database (Registration of courses) from the initial requirements on the database, the initial design, normalization of tables, and the final database design. The fifth chapter describes how database applications are being created using stored procedures and SQL statements.

Bibliography:

- [1] SEMANČÍK, L.: *Databázové systémy*. 1. vyd. Liptovský Mikuláš : Vojenská akadémia, 2004. 115 s.
- [2] BROWN, P., MOORE, D., STONEBRAKER, M.: *Objektově-relační SŘBD analýza příští velké vlny*. 1. vyd. BEN – technická literatura, 2002. 279 s.
- [3] SEMANČÍK, L., LEHOTSKÝ, M.: *Využitie moderných databázových technológií pri tvorbe aplikácií*. 1. vyd. Liptovský Mikuláš : Vojenská akadémia, 2006. 64 s.

PERFORMANCE ANALYSIS OF VPN NETWORKS

Peter JANEČKO

Consultant: Assoc. Prof. RNDr. Lubomír Dederá, PhD.

The Armed Forces Academy of General Milan Rastislav Štefánik

The work deals with Virtual Private Networks (VPNs) and performance measurement of these networks. At present, VPNs are becoming the most universal method for remote access. They enable Service Providers to take advantage of the power of the Internet by providing a private tunnel through the public network and thus realize cost savings and productivity enhancements with the use of remote access applications. VPNs meet the key enterprise requirements on compatibility, security, availability, and manageability. They are extensions of enterprise private intranets across a public network that creates a secure private connection for secure interchange of information across the Internet. The secure connection can connect remote users, branch offices, and business partners.

The work is divided into three parts. The first part deals with the implementation of network security using encryption and hash algorithms, different types of these algorithms, other technological parameters, and their use in the network. The second part deals with the issues directly connected with the VPNs. It discusses the typology of these networks, protocols used in the creation and operation during VPN connections and provides insight into security policies of these networks. The third part is trying to compare performance of different types of VPN networks and protocols that are used to ensure operation in this environment.

VPN networks are currently widely used because of their capability of ensuring secure information interchange. Their number is increasing and therefore it is good to know the principles and possibilities of this promising technology.

Bibliography:

- [1] Cisco Systems, Inc.: *Cisco Networking Academy Program. CCNA Security v 1.0.* [Elektronický učebný text] Cisco Systems, Inc., 2009.
- [2] HUDEC, L.: *PKI (Infraštruktúra verejného kľúča), certifikáty a digitálny podpis.* <http://images.iqm3000.multiply.multiplycontent.com>. [Online] http://images.iqm3000.multiply.multiplycontent.com/attachment/0/SwfWiwoKCEwAAH5hInY1/11_prednaska.pdf?nmid=291337265.
- [3] KOVÁČIK, M.: *Bezpečnosť v Internete, Sieťové nástroje IDS a IPS.* [Online]. <http://download.matus.in/prednasky/sietove%20nastroje%20IDS%20a%20IPS/Sietove%20nastroje%20IDS%20a%20IPS.pdf>. 2006.
- [4] PRIEVALSKÝ, J.: *Kryptológia.* Dostupné na: www.edi.fmph.uniba.sk. [Online] <http://edi.fmph.uniba.sk/~winczer/SocialneAspekty/PrievalskyKryptologia.htm>.

- [5] SPENNEBERG, R.: IPsec *HOW TO*. www.ipsec-howto.org. [Online]. http://www.ipsec-howto.org/ipsec-howto_cz.html. 2003.
- [6] *The Internet Engineering Task Force (IETF): Public-Key Infrastructure (X.509) (pkix)*. www.datatracker.ietf.org. [Online] The Internet Engineering Task Force (IETF). <http://datatracker.ietf.org/wg/pkix/charter/>.

ANALYSIS OF TRAFFIC IN THE WLAN

Ján JOSIPČUK

Consultant: Assoc. Prof. Dipl. Eng. Ján Jakubek, CSc.

The Armed Forces Academy of General Milan Rastislav Štefánik

My work deals with current problems in information security with aspect of confidentiality. The first chapter contains an entry into the issue, the historical development of the area in which the problem is solved, the timeliness and importance of the problem. I will also try to describe the general principles of safe computing. In the second chapter there are elaborated theoretical options and analysis of the current state of the field. The third and the main chapter describes the methods that allow you to create confidentiality for local or network connection and contains a background research of critical (in terms of the vital functions of the organization) products of the Windows platform, in which the disruption may compromise the credibility of the correct operation of the company. In this section, I paid particular attention in protection of computer against outside attacks.

There are described methods of secure access to computer such as the use of fixed passwords, access cards, biometrics, etc. Increasing use of various Internet services and weaker safety of users of such services often attracts fraudsters to obtain sensitive information and abuse the users for their own benefit. These attacks by can be avoided if the user was informed about security and is sufficiently rigorous.

Bibliography:

- [1] EISENKOLB, K., GÖKHAN, M., WEICKARDT, H.: *Bezpečnost' Windows 2000/XP*. Praha : Computer Press, 2003, ISBN 80-7226-789-2 .
- [2] STANEK, W. R.: *Active Directory, Kapesní rádce administrátora*. Praha : Computer Press, 2009. 352 s. ISBN 97-880-2512-555-7.
- [3] STALLINGS, W.: *Cryptography and Network Security. Principles and Practice*, 2.ed., Prentice-Hall, 1999.
- [4] DOBDA, L.: *Ochrana dat v informačních systémech*, Grada 1998.
- [5] Příbyl, J. Kodl.: *Ochrana dat v informatice*, Vydavatelství ČVUT, 1996.

THE USE OF DISTRIBUTED DATABASES

Lubomír MULINKA

Consultant: Dipl. Eng. Lubomír Semančík, PhD.

The Armed Forces Academy of General Milan Rastislav Štefánik

Abstract. This work deals with exploring the possibilities of fragmentation and distributed database systems. It is divided into four parts, where the first section is devoted to explanation of database systems and database management systems, the second section deals with distributed database systems and their capabilities. The third section discusses the design of a relational database using a data model. The fourth section is devoted to the linked database servers, fragmentation, and design of a database application. To create the database and the database application, Microsoft SQL Server 2005 has been used, with the tools such as SQL commands, functions, procedures, and Windows forms.

Bibliography:

- [1] SEMANČÍK, L.: *Databázové systémy*. Liptovský Mikuláš : Vojenská akadémia Liptovský Mikuláš, 2004. ISBN 80-8040-230-2, 115s.
- [2] SEMANČÍK, L., DEDERA, L.: Niektoré možnosti vplývajúce na kvalitu spracovania údajov v informačných systémoch. In *KIT 2007* [elektronický zdroj] komunikačné a informačné technológie : zborník príspevkov : 3. – 5. 10. 2010, Tatranské Zruby, Slovensko. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2007. ISBN 978-80-8040-325-6, 5s.
- [3] SEMANČÍK, L., DEDERA, L.: Spolupráca databázových serverov pri realizácii výpočtov aplikačnej logiky. In *KIT 2009* [elektronický zdroj]: komunikačné a informačné technológie. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika, 2009. ISBN 978-80-8040-376-8, 6s.
- [4] SEMANČÍK, L., DEDERA, L.: *Distribuované spracovanie údajov v databázových aplikáciách*. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika. Liptovský Mikuláš, 2010. ISBN 978-80-8040-411-6, 66s.

ANALYSIS AND VERIFICATION OF SELECTED IP ATTACKS IN IP NETWORKS

Tomáš ONDRUŠ

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IP attacks are dramatically growing problem of our times. Improvement of protection is clearly necessary. All regular crimes (like extortion, racketeering, theft, deception ...) you know from your life, can also be found in a somewhat altered but equally dangerous form in cyber space. These crimes are performed thanks to security weaknesses and great ingenuity of attackers. Every day, hackers find new security weaknesses and ways how to bypass protection of our computers.

In this work we are analyzing and verifying potential of selected IP attacks as a first step of building the defense strategy. To protect against an attack, we need to know how it works.

The selection of attack in the practical part of this work was based on the previous analysis. We decide to verify a strong of defense of the internal network and impacts of strait attacks in the internal network.

New and richer capabilities of the internal attackers were proved to be critical. Direct access to victim, lower requirements on the power of attack, no powerful firewalls, wider transfer bandwidth and much more, will fall in the attacker's hands if they can change their status from external to internal presence.

With the tests we want to show impact of the attacks and importance of protection against internal attacker. The equal importance in the protection against external and internal attacker is highlighted. Results are throwing new light on the value of infiltration for attackers and forcing us to use the more restrictive network policies. Organizations should be prepared to conduct regular evaluation of the latest attacks and responses to them.

Bibliography:

- [1] HATCH, B., LEE, J., KURTZ, G.: (2001). *Hacking Linux Exposed: Linux Security Secrets & Solutions*. Osborne: McGraw-Hill
- [2] WeberWalter, N. (April, 20089). *DoS and DDoS attacks and protection again them (1)*. Source. [online]. Available at: <http://www.svetsiti.cz/view.asp?rubrika=Technologie&clanekID=324>
- [3] IBM. (2010). *Ip Packet Filter Firewall*. Source. [online]. Available at: <http://publib.boulder.ibm.com/infocenter/iserics/v5r4/index.jsp?topic=/rzatj/packetff.htm>
- [4] Microsoft. (2001). *IP packet filters*. Source.[online]. Available at: <http://technet.microsoft.com/en-us/library/cc723291.aspx>

ANALYSIS OF TRAFFIC IN THE LAN

Dávid PAVLÁK

Consultant: Dipl. Eng. Miroslav Ďulík, PhD.

The Armed Forces Academy of General Milan Rastislav Štefánik

In my work i deal with the analysis of traffic on the LAN (Local Area Network). Practical puprose of my work is cath an analyze traffic in network.

The work is divided into several parts. In the first part, I focused on the teoretical description of commonly used protocols in the LAN and the detailed description of the model ISO/OSI and it's individual layers. In the next selection I decrbe the possibility of some programs to monoitor and analyze traffic on the LAN. Each of these programs I tried and I choose program Wireshark with which I then process the last part of my work. In this part, i caught two times fiveteen minutes of traffic in our schol network. First capture i did at the morning when the traffiic was small and the second capture was at the afternoon when was much bigger traffic on the network. I analyzed then these data using the program Wireshark and its analytical tools. Evaluation and comparsion of these data is the main part of my work.

Bibliography:

- [1] OREBAUGH, A. et al.: Wireshark a Ethreal. Vydanie prvé, Brno: 449 s. ISBN 978-80-251-2048-4.
- [2] DOSTÁLEK, L., KABELOVÁ, A.: *Velký průvodce protokoly TCP/IP a systémem DNS*. Vydanie druhé, Praha, 435s. ISBN 80-7226-323-4.
- [3] KOŠTÁL, D., STAUDEK, J.: *Protokolová zostava TCP/IP*. 12s
- [4] PETERKA, J.: *Co je čím v počítačových sítích*. Praha : 237 s.

**MANAGEMENT AND HUMANITIES
SCIENCES**

PROJECT MANAGEMENT IN TERMS OF THE ARMED FORCES OF THE SLOVAK REPUBLIC

Renáta BARCÍKOVÁ

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This paper is focused on project management and explains the basic concepts of project management issues in the civil sector as well as the military organization. Nowadays more and more not only large companies but also small businesses take advantage of project management for effective planning and development of the company. The Armed forces are not the exception.

Projects in the Ministry of Defence of the Slovak republic are treated like projects in the civilian sector with the difference that they need to adapt the methodology of planning in OS SR. Projects in military sector are solved through Directive on project management which is the authoritative document management projects in this sector.

The main aim of this paper is to use theoretical knowledge for creating the specific project for education of professional soldiers of the Armed Forces of the Slovak republic. The main aim of this paper is to create a project. The paper analyzes the process for preparing the course for effective communication which is planned to the smallest details.

Bibliography:

- [1] VŠETEČKA, P., BELAN, L.: *Projektový manažment – 1.* Liptovský Mikuláš : Akadémia ozbrojených síl, 2006. ISBN 978-80-8040-298-3.
- [2] NĚMEC, V.: *Projektový management.* Bratislava : Grada Publishing, 2002. ISBN 80-247-0392-0.
- [3] ROSENAU, M. D.: *Řízení projektů.* Brno : Computer Press, 2003. ISBN 80-7226-218-1.
- [4] BRUCE, A., LANGDON, K.: *Riadenie projektu.* Bratislava : Vydavateľstvo Slovart, 2003. ISBN 80-7145-756-6.

PROFESIONALIZATION OF ARMED FORCES AS AN IMPORTANT PART OF MILITARY REFORM

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In a competitive work is a problem solution of the professionalization of the armed forces, which is a very important process, especially for the armed forces of those countries that are, or even just want to be part of NATO. Just participation in NATO is likely the best option for these countries in the current state of the security environment.

The main goal of this work is to inform its readers about the difficult process of professionalization of armed forces, which implements as a main part of the military reform in response to changes occurring in the global (world) security environment. These changes necessitated a new definition of roles and functions of the armed forces, which could fill and implement completely professional armed forces. However, because there is no exact "template" to implement professionalization, because each country responds to these changes differently, process of professionalization of armed forces is under review in particular parts from its causes to its realization from different perspectives. Competition work is composed of four main chapters. The first three parts of the work are theoretical, the fourth part is practical.

The first chapter describes the changes, which were made in the security environment as the main reason of the need for military reform and, therefore, professional armed forces. Conclusion of the initial chapter is devoted to the reform of the security environment and military security.

The second part describes the development of military reform in the Slovak Republic since 2002 and the main causes of its failure till that time. Briefly, here is mentioned a document the Armed Forces of the Slovak Republic - Model 2010, according to which were made fundamental changes former Slovak Army and Model 2010 became the major model for the process of professionalization OS SR.

The penultimate section analyzes the factors, which activate process of professionalization, processes, methods and phases of professionalization and in the not least rank also changes in the military profession and features and military professional leading roles as the main representative of fully professionalized armed forces.

The final practical chapter is inducted our own research of views of different groups of citizens of the Slovak Republic to fully professionalized armed forces of the Slovak Republic and the analysis of the current interest of respondents in the service in them.

We believe that this work will benefit its readers and to the evaluation of research they will create at least an approximate picture of the current views and opinions of citizens of the Slovak Republic of the Armed Forces of the SR, as the main instrument to ensure the defense of the country.

Bibliography:

- [1] HOFREITER, L.: 2006. *Securitológia*. Liptovský Mikuláš : Akadémia ozbrojených síl generála M. R. Štefánika so sídlom v Liptovskom Mikuláši, 2006. ISBN 80-8040-310-4, ISBN 978-80-8040-310-2.

- [2] POLONSKÝ, D.: 2005. Ozbrojené sily Slovenskej republiky v predvstupovom procese do NATO. In *Vývoj slovenskej spoločnosti v 90. rokoch a na začiatku 21. storočia – trendy, problémy, perspektívy*. Bratislava: Slovenská sociologická spoločnosť pri Slovenskej akadémii vied, 2005. ISBN 80-85447-12-6.
- [3] GREGOCKÁ, J.: 2003. Profesionalizácia, reforma a príprava príslušníkov ozbrojených síl Slovenskej republiky. In *Aktuálne otázky profesionalizácie ozbrojených síl Slovenskej republiky vo svetle prístupových procesov do NATO*, Zborník z medzinárodnej vojensko – vedeckej konferencie. Liptovský Mikuláš: Stacionárna účelová tlačiareň Vojenská akadémia v Liptovskom Mikuláši, 2003. ISBN 80-8040-222-1.
- [4] ČUKAN, K., POLONSKÝ, D., ŠKVRNDA, F. 2005. Sociologické pohľady na úplnú profesionalizáciu ozbrojených síl. Bratislava : MO SR, 2005. ISBN 80-88842-91-3.
- [5] DONNELLY, J. H., Jr., GIBSON, J. L., IVANCEVICH, J. M., 2002. *Management*. Praha: GradaPublishing, 2002.
- [6] HUNTINGTON, S. 1957. *The Soldier of the State*. Harvard University Press (nekorigovaný preklad VPA Praha).
- [7] RADVAN, E. 2002. Profesionalita versus profesionalizmus. In *Vojenství XXI století*, Sborník příspěvků z mezinárodní konference. Brno: Vojenská akademie, 2002.
- [8] KNOBLOCH, F. 1993. Profesionalizace armády. In *Slovník vojenského profesionála*. Praha: Ministerstvo obrany, 1993.
- [9] NUCIARIOVÁ, M. 1990. Změny ve vojenském povolání. Konfrontace interpretativních modelů. In *Vojenský profesionál a problémy profesionalizace armád*. Praha: VÚSV, 1990.
- [10] DANDEKER, Ch., WATTS, P. 1990. Moderní vojenské povolání. Profesionalismus, byrokratická organizace a moderní národní stát. In *Vojenský profesionál a problémy profesionalizace armád*. Praha: VÚSV, 1990.
- [11] CHOJNACKI, W. 2002. Sociological Aspects of Tendency Institutional – Organizational Development of Army at the Beginning of XXI Century. In *Vojenství XXI. století*. Sborník příspěvků z mezinárodní konference. Brno: Vojenská akademie, 2002.
- [12] DOWNESOVÁ, C. 1985. To Be or Not to Be a Profession. In *The Military Case*. London: Defence Analysis, 1985. Vol.1, No. 3.
- [13] Foss, J. W. 1990. Command. In *Military Review*. No. 4.
- [14] <http://www.mod.gov.sk/12/materialy-a-dokumenty.php?mnu=11>, otvorit' zložku model 2010
- [15] <http://www.mosr.sk/data/files/832.pdf>
- [16] <http://www.zakon.r3.sk/zbierka-zakonov-ciastky/6913-zakon-o-ozbrojenych-silach-slovenskej-republiky-c-3212002-zz>

GENESIS OF ARAB - ISRAELI WARS IN THE 2nd HALF OF 20th CENTURY

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The work is focused on the Arab - Israeli conflict, namely the origins of armed struggles and wars as such. Conflict is one of the longest-running conflicts in the world and it is also possible to put this conflict to one of the most brutal and bloodiest conflicts, which mankind had to face and must therefore be paid to this conflict and to work with him. It is not easy to understand the nature of the Arab - Israeli conflict. There are many factors that need to know one of them is the history of how individual states involved in conflicts and wars and history of specific operations taking place in the Middle East. Work should provide a basic study of the various steps during which the conflict developed. Emphasis was placed on the provision of information concerning the various stages with as neutral a way, because neutrality is to resolve this conflict, one of the most important means by which the peacekeepers must have. The work builds on the work "Analysis of current world conflicts" from L. Hofreiter and focuses on the dynamics of the conflict.

Bibliography:

- [1] NOVOTNÝ, A. 2004: *Slovník medzinárodných vzťahov*, Magnet Press Slovakia, 2004, 1-336.
- [2] CHAPMAN, C. 2003: *Či je země zaslibená?*, Volvox Globator 2003, ISBN 80- 7207-507-1.
- [3] HERZOG, Ch. 1982: *Arabsko izraelské války*, Nakladatelství Lidove noviny 2008, ISBN 978- 80- 7106- 954-6.
- [4] HOFREITER, L. 2008: *Teória a riešenie konfliktov*, Akadémia ozbrojených síl generála Milana Rastislava Štefánika 2008, ISBN 978- 80- 8040- 347- 8.

SECURITY RESEARCH

Monika KUČIAKOVÁ

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Deals with analysis of action units of the armed forces of the Slovak Republic in foreign operations. The main objective was to characterize the key tasks of peacekeeping operations in which they operate our troops, organization and methodology of training before deployment in international crisis management operations. The last part of the work the research, which analyzes the environment, threat and ways of combat activity of the conflicts arising in emergency situations.

THE IMPACT OF ORGANIZATIONAL CULTURE TO MOTIVATION OF PEOPLE IN ORGANIZATION

Jana PASTORČÁKOVÁ

Consultant: PhDr. Jaroslav Nekoranec, PhD.

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The work is aimed to clarify the phenomenon of organizational culture in connection with increasing of individuals and group efficiency in organizations. On the theoretical basis from various authors and the information gathered from empirical research we would like to point to the need of developing the organizational culture by its management and also to its contribution to mastering the psychology of inner and outer motivation of employees. The theoretical part includes two separate chapters.

In the first one we advance theoretical base of society culture, definitions of organizational culture, its sources, elements and by the end we provide some useful advice how to do its diagnostics. The aim of the second chapter is to inform the reader with several theories of motivation, which the organizational culture is a part, and with its influence to efficiency. The third chapter is devoted to the research of culture in particular organization and we consequently recommend specific steps to its improvement.

Bibliography:

- [1] ARMSTRONG, M.: *Řízení lidských zdrojů*, Praha : Grada Publishing, a.s., 2002, 856 s., ISBN 80-247-0469-2.
- [2] DĚDINA, J., ODCHÁZEL, J.: *Management a moderní organizování firmy*, Praha : Grada Publishing, a.s., 2007. 324 s. ISBN 978-80-247-2149-1.
- [3] LUKÁŠOVÁ, R. a kol.: *Organizační kultura*, Praha : Grada Publishing, 2004. 248. ISBN 80-247-0648-2.
- [4] ROBBINS, S. P., COUTLER, M.: *Management*, 7. vyd. Praha : Grada Publishing, 2004. 600 s. ISBN 80-247-0495-1.
- [5] BROOKS, I. 2003.: *Firemní kultura*. Brno : Computer Press, 2003. 296 s. ISBN 80-7226-763-9.
- [6] BLÁHA, J., MATEICIUC, A., KAŇÁKOVÁ, Z.: *Personalistika pro malé a střední firmy*, CP Books, a.s., Brno, ISBN 80-251-0374-9.
- [7] ŠKVRNDA, F.: *Slovenská vojenská sociológia na začiatku 21. storočia*, Bratislava: Ministerstvo obrany Slovenskej republiky, 2008. 217 s., ISBN 978-80-89261-26-0.
- [8] BLAŠKOVÁ, M.: *Manažment ľudských zdrojov*. Žilina : Žilinská univerzita 1998, ISBN 80-71000-549-5.
- [9] WAGNEROVÁ, I.: *Hodnocení a řízení výkonnosti*. Praha : Grada Publishing, a. s., 2005, 128s. ISBN 978-80-247-2361-7.

- [10] MAYEROVÁ, M.: *Stres, motivace a výkonnost*. Praha : Grada Publishing a.s., 1997, 132s., ISBN 80-7169-425-8.
- [11] ULRICH, D.: *Místovské Řízení Lidských Zdrojů*, Praha : Grada Publishing a.s., 2009, 272s., ISBN 978-80-247-3058-5.
- [12] HITKA, M.: *Motivačný program organizácie ako súčasť integrovaného systému riadenia*. MVK Logisticko-distribučné systémy. Zvolen : TU Zvolen, 2003. ISBN 80-228-1240-4.

WOMEN IN THE ARMED FORCES OF THE SLOVAK REPUBLIC

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Slovak women served in military as the nurses in the 15th century. Their number in certain time was at the minimum level. Nowadays, the Armed forces of the Slovak republic are employing 1 115 professional female soldiers. They primarily serve in human resources, logistics and healthcare. On the contrary, there is already first women Slovak paratrooper and a helicopter gunship pilot. They perform their duties responsibly at home but also in international crisis management. Their contribution as a part of a military organization is invaluable. However, the problem of the gender stereotypes and glass ceiling as well, which impedes the professional soldier to overcome the prejudices of others and thus take the same position as their male colleagues have in connection with equal career opportunities. Therefore, it is necessary to examine mentioned problems for maximum integration of women in the armed forces and ultimately to ensure the efficient functioning of the Armed forces of the Slovak republic as a whole.

Purpose of this work is providing a comprehensive picture of the function of women in the Armed Forces of the Slovak Republic in an attractive and clear format. This work is only devoted to little theoretical basis, since the main objective of this work is to clarify to reader the issue of exposure of women in the Slovak armed forces in the past, nowadays (with emphasis on equal opportunities) and also their expectations and objectives aimed to the future and carried out through empirical research . The work itself is divided into five main chapters.

The first chapter is devoted to explanation of basic concepts related to the main topic of the work. Effect of the Slovak female soldiers in the past is described in another chapter. The chapter is also enriched by specific names of the participants of fighting during World War II. The third chapter contains unpublished information and figures on the professional soldier in Slovak armed forces nowadays. All data are current through close cooperation with the Ministry of Defence and Armed forces general staff of the Slovak republic. The fourth chapter focuses on equality of opportunity between men and women in Armed forces of the Slovak republic. Special attention is devoted to a different physical fitness of male and female soldiers. The last chapter embodies the process oriented to research on how the female cadets – as future officers - perceive their career opportunities in the armed forces and what kind of conditions are created by their supervisors.

Women were, are and will be the part of the Slovak armed forces. Thus it is appropriated, the armed forces use their potential and skills. Firstly, they must ensure adequate conditions for their work and subsequent career.

Bibliography:

- [1] BEAUVOIR, S.: 1967. *Druhé pohlavie*. Bratislava : Obzor, 1967.
- [2] BLÁHA, A. I.: 1968. *Sociologie*. Praha : Academia, 1968. ISBN 509-21-875.

- [3] BOSÁ, M., MINAROVÍČOVÁ, K.: 2006. *Rodovo citlivá výchova*. Bratislava : EsFem, 2006.
- [4] CASSIN - SCOTT, J.: 2007. *Ženy ve válce 1939-1945*. Brno : Computer Press, 2007. ISBN 978-80-251-1790-3.
- [5] Český svaz bojovníků za svobodu 1992. *Ženy bojující v zahraničných jednotkách za druhé světové války*. Praha : Naše vojsko, 1992. ISBN 80-206-0363-8.
- [6] ČUKAN, K. a kol.: 2002. *Verejná mienka v armáde*. Bratislava : MO SR, 2002.
- [7] DITRICH, B.: 2000. *Báječné ženy na létajících strojích*. Knižní klub 2000.
- [8] HAMAJ, P.: 2005. *Sociologické aspekty vojenskej práce a profesie*. Liptovský Mikuláš : Akadémia ozbrojených síl, 2005. ISBN 80-8040-252-3.
- [9] HAVLÍČKOVÁ, L.: 2003. *Fyziologie telesné záteže*. 2. vyd. Praha : Karolinum, 2003. s. 203. ISBN 80-7184-875-1.
- [10] KŘÍŽKOVÁ, A. 2004. *Management genderových vzťahu – postavení žen a mužů v organizaci*. Praha : Management press, 2004. ISBN 80 – 7261 – 117 – 8.
- [11] MATIS, J., HAMAJ, P., MARTINSKÁ, M. 2008. *Sociológia armády, Základy sociológie vojny a armády pre príslušníkov ozbrojených síl Slovenskej republiky*. Liptovský Mikuláš : 2008. ISBN 978-80-8040-362-1.
- [12] MATIS, J. 2002. *Spôsob života a životný štýl*. Liptovský Mikuláš : 2002.
- [13] PIETRUCHOVÁ, O., MESOCHORITISOVÁ, A. 2007. *Rodová rovnosť v organizácii – stručná sprievodkyňa*. Okat, 2007.
- [14] POLONSKÝ, D., MATIS, J. 1994. *Profesionalizácia armády a príprava vojenských profesionálov*. Liptovský Mikuláš : Vojenská akadémia SNP, 1994.
- [15] POLONSKÝ, D. a kol. 2005. *Profesionalizácia ozbrojených síl*. Bratislava : MO SR, 2005. ISBN 80-8040-267.
- [16] *Správa z medzinárodnej konferencie Role rovných príležitostí v prosperitě podniku*. 2004. Praha : Zentiva, 2004.

Articles:

- [1] *Červené barety* č. 2, ročník V z 15. 5. 2005 s. 11.
- [2] HAMAJ, P. 2005 *Nerovnosť šancí mužov a žien na trhu práce*. In *Zborník príspevkov z vedeckej konferencie Kvalita života a rovnosť príležitostí - z aspektu vzdelávania dospelých a sociálnej práce*. Prešov : Grafotlač Prešov, 2005. ISBN 80-8068-425-1.
- [3] HAMAJ, P., MATIS, J. 2007. *Ženy v Ozbrojených silách slovenskej republiky*. In *Kobiety w grupach dyspozycyjnych społeczeństwa*. Socjologia. XL. Wroclaw. ISSN 0239-6661, 2007.
- [4] KMOŠENA, M. 2003. *Štandardy povolání a proces profesionalizácie Ozbrojených síl Slovenskej republiky*. In *Zborník z medzinárodnej vojensko-vedeckej konferencie Aktuálne otázky profesionalizácie ozbrojených síl Slovenskej republiky vo svetle prístupových procesov do NATO*. Liptovský Mikuláš : Vojenská akadémia, 2003. s. 163–168.

- [5] LAUBACH, L. Comparative muscular strength of men and women: A review of the literature. *Aviation, Space and Environmental Medicine*. In *Vojenské rozhledy*. ISSN 1210 – 3292. 2006 roč. 15 (47), č. 2.
- [6] MARTINSKÁ, M. 2005. Etický rozmer tolerancie a akceptácie inakosti vo vojenskom prostredí. In *Zborník z medzinárodnej vojensko - vedeckej konferencie Organizačná kultúra ozbrojených síl a etika vojenských profesionálov - etika v príprave a činnosti vojenských profesionálov*. Bratislava : Liptovský Mikuláš: GŠ OS SR, Akadémia ozbrojených síl, 2005. s. 195 – 199. ISBN 80-8040-273-6.
- [7] MARTINSKÁ, M. 2006. Sociálna pozícia žien v armáde. In *Zborník referátov z výročnej konferencie Slovenskej sociologickej spoločnosti pri Slovenskej akadémii vied Slovensko v nových kontextoch – výzvy pre sociologickú vedu*. Nitra : Slovenská sociologická spoločnosť pri SAV, 2006. s. 123-125. ISBN 978-80-85447-14-9.
- [8] MARTINSKÁ, M. 2008. Ženy v ozbrojených silách. In *Sociológia pre armádu a bezpečnosť*. Liptovský Mikuláš : Bratislava: MO SR, 2008. ISBN 978-80-89261-17-8.
- [9] MARTINSKÁ, M. 2010. Stratégia rodovej rovnosti. In *Vojenská osveta 2010: spoločenskovedné semináre: 2. časť*. Liptovský Mikuláš : Personálny úrad OS SR, 2010. ISBN 978-80-970322-2-7. s. 26-49.
- [10] MATIS, J. 2005. Kvalita života vojenských profesionálov a kultúra vojenskej organizácie. In *Zborník z pracovného seminára Organizačná kultúra ozbrojených síl Slovenskej republiky*. Bratislava : MO SR, 2005. s. 33 – 39.

Internet sources:

- [1] http://assembly.coe.int/Mainf.asp?link=/Documents/AdoptedText/ta06/EREC17_42.htm
- [2] http://hnonline.sk/1-10025630-22430465-k04100_detail-d2
- [3] <http://www.slovník.aspekt.sk/default.aspx?smi=1&ami=1&vid=107>
- [4] http://www.army.cz/avis/vojenske_rozhledy/2003_1/127.htm
- [5] <http://www.druhasvetova.sk/view.php?navezclanku=zeny-%E2%80%93-parasutistky-v-ii-svetovej-vojne&cislocclanku=2007020009>
- [6] <http://www.etrend.sk/podnikanie/riadenie-a-kariera/bariery-zenskej-kariery/131423.html>
- [7] <http://www.gender.gov.sk/index.php?id=87&sID=5fe6b36fb82d6f83b8e979f2f59f341b>
- [8] <http://www.mod.gov.sk/4984/profesional-13-marca2008.php?PHPSESSID=cd731ce911d94f9d83f49c480e460650>
- [9] http://www.nato.int/issues/women_nato/index.html
- [10] <http://www.ruzovyamodrysvet.sk/sk/vrchne-menu/slovnicek-pojmov>
- [11] <http://www.sme.sk/c/1857890/musia-zeny-volit-medzi-karierou-a-rodinou.html>

SPECIFIC FORMS OF COMMUNICATION OF MILITARY MANAGER

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Communication is a way of communicating between people, but also occurs in the animal kingdom and throughout nature. The higher form of intelligence needs the higher form and method of communication that may not be only verbal, as so many people involved. Without communication, man was like a stone, dead. Communication is an everyday part of our lives. We meet with it in all our steps. It is a natural part of each meeting, the point of view. Without good communication can work well in any company.

Leadership people in the military organization requires that military professionals know a rational incentive to communicate. Communication style, the way it affects his subordinate commander, his motivation has an impact on increasing combat readiness. Nowadays, it is necessary to find a better way of communicating with management and workers, because their tasks are more difficult and puts the emphasis on correct execution of the tasks required.

The work presents the specific forms of communication of military manager. The study presents the managerial communication, its background, social communication, communication in organization, communication process, the basic forms of communication and priority attention to specific forms of communication such as coaching, mentoring, leading creative teams, lobbying, negotiation, business negotiation, crisis communication and intercultural communication. Part of this work is the exploration of knowledge of specific forms of communication manager and the rate of use of these specific forms of communication in the practice of military officers.

Bibliography:

- [1] BĚLOHLÁVEK, F.: 2003. *Desatero manažera*. Brno : Computer Press, 2003. 90 s. ISBN 80-7226-873-2.
- [2] BĚLOHLÁVEK, F.: *Jak řídit a vést lidi*. Brno : Computer Press, 2005. 100 s. ISBN 80-251-0505-9.
- [3] BRUMOVSKÁ, T., MÁLKOVÁ-SIEDLOVÁ, G. 2010. *Mentoring – výchova k profesionálnímu dobrovolnictvu*. Praha: Portál, 2010.150 s. ISBN 978-80-7367-772-5.
- [4] CLEGG, B., BIRCH, P.: 2004. *Intenzivní kurz vedení lidí*. Brno : Computer Press, 2004. 258 s. ISBN 80-251-0356-0.
- [5] ERNEKER, J . 1994. *Sociálna komunikácia v policajnom manažmente*. Bratislava : Akadémia PZ, 1994.
- [6] ERNEKER, J. 1991. *Sociální komunikace a vedení lidí v armáde*. Bratislava : Vysoká vojenská pedagogická škola, 1991. 92 s.
- [7] GURGOVÁ, B., KMOŠENA, M., TOMÍČEK, F.: 2005. *Osobnosť manažéra a komunikácia v manažmente*. Bratislava: MO SR, 2005. 149 s. ISBN 80-8040-264-7.

- [8] JAŠŠOVÁ, E. 2001. *Profesionalizácia sociálnej komunikácie v armáde*. Bratislava: MO SR, 2001. 108 s. ISBN 80-88842-41-7.
- [9] KHELEROVÁ, V. 2006. *Komunikační a obchodní dovednosti manažera*. Praha : Grada Publishing, 2006. 144 s. ISBN 80-247-1677-1.
- [10] KHELEROVÁ, V. 2010. *Komunikační a obchodní dovednosti manažera*, Praha : Grada Publishing, 2010. 144 s. ISBN 978-80-247-3566-5.
- [11] KRUGER, W. 2004. *Vedení týmu*, Praha : Grada Publishing, 2004. 108 s. ISBN 80-247-0780-2.
- [12] MAJTÁN, M. 2003. *Manažment*, Bratislava : Sprint, 2003. 424 s. ISBN 80-89085-17-2.
- [13] MIKULÁŠTÍK, M. 2003. *Komunikační dovednosti v praxi*. Praha : Grada Publishing, 2003. 361 s. ISBN 80-247-0650-4.
- [14] MULLER, K., LABOUTKOVÁ, Š., VYMĚTAL, P. 2010. *Lobbing v moderních demokraciích*. Praha : Grada Publishing, 2010. 255 s. ISBN 978-80-247-3165-0.
- [15] OLIVER, D. 2005. *Jak uspět při vyjednávání*. Brno : Computer Press, 2005. 88 s. ISBN 80-251-0686-1.
- [16] PETRUFOVÁ, M., KURHAJCOVÁ, L., BELAN, L., ŠULC, P., NEKORANEC, J. 2009. *Manažérska komunikácia*. Liptovský Mikuláš: Akadémia ozbrojených síl, 2009. 208 s. ISBN 978-80-8040-370-6.
- [17] ROBBINS, S., COULTER, M. 2004. *Management*. Praha : Grada Publishing, 2004. 600 s. ISBN 80-247-0495-1.
- [18] STACKE, É. 2005. *Koučování pro manažery a firemní týmy*. Praha : Grada Publishing, 2005. 154 s. ISBN 80-247-0937-6.
- [19] SUCHÝ, J., NÁHLOVSKÝ, P. 2007. *Koučování v manažerské praxi*. Praha : Grada Publishing, 2007. ISBN 978-80-247-1692-3.
- [20] SZARKOVÁ, M. a kol. 2002. *Komunikácia v manažmente*. Bratislava : Ekonóm, 2002. ISBN 80-225-1585-X.
- [21] VALIGURSKÝ, J. 1999. *Komunikačný proces a jeho zvláštnosti v podmienkach armády: rigorózna práca*. Liptovský Mikuláš: Vojenská Akadémia, 1999.
- [22] VETRÁKOVÁ, M. 2002. *Komunikácia v práci manažera*. Banská Bystrica: UMB, 2002. ISBN 80-8055-630-X.
- [23] VŠETEČKA, P., BELAN, L. 2006. *Projektový manažment*. Liptovský Mikuláš : VA, 2006. 168 s. ISBN 80-8040-298-1.
- [24] VYMĚTAL, Š. 2009. *Krizová komunikace a komunikace rizika*. Praha : Grada Publishing, 2009. 176 s. ISBN 978-80-247-2510-9.

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Abstracts of Students Scientific Conference 2011

May 19, 2011

Issued by: Armed Forces Academy of General Milan Rastislav Štefánik,
Liptovský Mikuláš, Slovak Republic

Edited by: Anna Romančíková

Number of pages: 60

Number of copies 30

ISBN 978-80-8040-422-2