М И Н И С Т Е Р С Т В О Н А О Т Б Р А Н А Т А

ИНСТИТУТ ПО ОТБРАНА „ПРОФЕСОР ЦВЕТАН ЛАЗАРОВ”

София 1592, бул. „Проф. Цветан Лазаров” № 2, факс: 02/92 21 808, http://di.mod.bg

REVIEW

by Professor Eng. Rossen St. Iliev, PhD,

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on the competition for occupying an academic position

"PROFESSOR"

in the field of higher education 5. “Technical Sciences”, professional field 5.3 “Communication and Computer Engineering”, announced in the State Gazette, issue 81/11.10.2022 and on the website of Defence Institute,

as the only candidate participating is

Col. Assoc. Prof. Dr. Eng. NIKOLAI TODOROV STOIANOV

I. PAPERS SUBMITTED BY THE CANDIDATE ACCEPTED FOR ASSESSMENT

The scientific works and developments of Colonel Assoc. Dr. Nikolai Stoianov represent a significant scientific production – 3 monographs, 3 university textbooks, 1 study, 129 publications, 4 implemented scientific and applied developments (in 3 as a supervisor), 38 research projects (24 of them – international), 25 participations in organizing committees and publishing groups, 35 reviews, etc. Of these, in the announced competition, he participated with forty-seven scientific papers proposed for review. All of them are outside the works that were submitted for the award of his scientific and educational degree "Doctor" and for holding the academic position of "Associate Professor". I accept the scientific works proposed for review as corresponding to the topic of the competition. They can be grouped as follows:

• Monographs – 1 (Appendix 2, II.1.6) and 1 chapter of a collective monograph (Appendix 2, II.1.7);

• Textbooks (university) – 3 (Appendix 2, II.1.3, II.1.4, II.1.8);

• Studios – 1 (Appendix 2, II.1.5);

• Publications – 41, of which 2 articles (Appendix 2, II.2.11 and II.2.12) and 39 scientific reports (Appendix 2, II.3.69, II.3.70, II.3.71, II.3.72, II.3.74, II.3.75, II.3.76, II.3.77, II.3.79-II.3.96, II.98-II.3.111), as the publications, in issues indexed in world-renowned databases, including issues with SJR, are 7, of which 2 are in Q1 (II.3.80, II.3.82), 1 is in Q3 (II.3.110) and 4 are in Q4 (II.3.75, II.3.100, II.3.101, II.3.102).

The scientific research activity of Col. Associate Professor Dr. Nikolai Stoianov, presented for the competition, includes participation in 4 national scientific projects (Appendix 2, II.4.22-II.4.25), in 1 National Scientific Program (Appendix 2, II. 4.31, as an implementation coordinator), as well as in 13 international scientific projects (Annex 2, II.4.26-II.4.30, II.4.32-II.4.39), of which he is the leader in 5 (II.4.25, II.4.32 , II.4.33, II.4.34, II.4.36), in 1 is the scientific supervisor (II.4.35), and in 1 is the project coordinator (II.4.39). In addition to the mentioned projects, he also participated in the development of research programs, methodologies, assignments, descriptions, etc., which I do not review, due to my participation in a large part of them.

Publications submitted for review are in the following languages:

• Bulgarian – 18;

• English – 21;

• Ukrainian – 2.

The authorship of the monographs and textbooks submitted for review is as follows:

• 1 monograph (volume of 334 pages) - by three authors;

• 1 chapter of a collective monograph - co-authored;

• 1 studio – co-authored;

• 1 independent university textbook;

• 1 university textbook - co-authored.

Of the publications submitted for review, 2 are independent works, and in 9 the candidate is in first place.

For joint publications, I found no separation protocols applied, and I assume equal, proportional participation.

II. GENERAL CHARACTERISTICS OF THE SCIENTIFIC-RESEARCH, SCIENTIFIC-APPLIED AND PEDAGOGICAL ACTIVITY OF THE CANDIDATE

Colonel Assoc. Prof. Dr. Nikolai Stoianov graduated from the model polytechnic high school "Sava Savov" in the town of Pirdop in 1992, and obtained his higher military education in 1997 at the High Military School "P. Volov", city of Shumen, specialty "Automated systems for the management of the army". He completed three more master's degrees at the Military Academy "G. S. Rakovski": specialty "National Security and Defence" (2006-2008), specialty "Organization and management of CSI in operational-tactical formations" (2008-2010) and specialty "Strategic management of the defence and armed forces" (2019-2020). He also graduated from CISCO network

academy specialization, holds numerous certificates related to information technologies and the design of automated control systems.

In 2004, Associate Professor Dr. Stoianov completed his doctoral studies and defended his doctoral dissertation at the Institute for Prospective Defence Research, in the scientific specialty 02.21.07 "Automated systems for information processing and management", and in 2014 he held an academic position "associate professor" at the Defence Institute, in the field of higher education 5. "Technical sciences", professional field 5.2 "Electrical engineering, electronics and automation".

Associate Professor Dr. Stoianov is a member of a number of scientific organizations in the country and abroad. He is a member of the board of the STO (Science and Technology Organization) of NATO from the Bulgarian side and is the chairman of the panel “Information Systems and Technology” of the STO of NATO. He is also a member of the Cyber Security Capability and Technology Group at the European Defence Agency (EDA).

Associate Professor Dr. Nikolai Stoianov has been working in the military, scientific and military-scientific field since 1992, which includes various educational institutions and scientific institutes, as well as specialized units for the construction and development of information and communication systems and technologies for the needs of defence and information security systems. He holds leadership positions as a platoon commander, head of the Information Security Department, associate professor at the Defence Institute and currently – deputy director of the Defence Institute.

His scientific output is in the field of automated control systems, information security, the use of autonomous tools to improve the security of objects of special interest, risk analysis of information systems, cryptographic methods and means of security, standards and good practices for information security and cyber security.

The scientific and teaching activities of Col. Assoc. Prof. Dr. Stoianov include the supervision of 7 doctoral students, 2 of whom have successfully defended their dissertations, and the rest are in the process of training or ready to defend their work. He leads CISCO-academy courses, teaches students from New Bulgarian University and UniBIT in disciplines related to information technologies and systems, information security and cyber security. He is the

editor-in-chief of the scientific journal "Journal of Defence & Security Technologies (Print ISSN 2534-9805, e-ISSN 2534-9813), and is a member of the editorial teams of four other journals, one of which is indexed in world known databases (Advances in Military Technology, ISSN1802-2308).

Associate Professor Dr. Nikolai Stoianov participated in 11 Bulgarian and international organizing committees (in 1 he was the chairman, and in 7 he was co-chairman and vice-chairman), he was a member of the jury for awarding the educational and scientific degree "Doctor" (11 in Bulgaria and 1 – in the Czech Republic). He prepared reviews of 3 monographic works (V.31, V.32, and V.33), as well as opinions and reviews for the selection of applicants for the academic positions of "professor" and "associate professor".

From the materials and links provided, it is clear that the candidate has 26 citations in scientific publications, referenced and indexed in world-famous databases with scientific information (Scopus, Web of Science, etc.) and 30 citations in monographs and collective volumes with scientific review.

The candidate fully meets the minimum requirements for holding the academic position of "professor", according to the normative documents.

The scientific and teaching activities of Assoc. Dr. Nikolai Stoianov characterize him as an established scientist with broad knowledge and an original approach to work and leadership of research teams.

III. EVALUATION OF THE CANDIDATE'S SPECIAL TRAINING AND ACTIVITY

Col. Assoc. Prof. Dr. Nikolai Stoianov is an erudite and respected scientist and leader, not only in the Defence Institute where he works, but also in some international organizations and committees, such as NATO, EDA, etc. He has serious scientific training, extensive knowledge in the field of information technology and cyber security, enviable experience in managing and implementing scientific research projects, building automated information systems and security information. An extremely creative and careful researcher and scientist, he is understanding and always ready to give advice to his colleagues and trainees when they need help. Associate Professor Dr. Stoianov has an impressive scientific output, many contacts on a national and

international level, deep knowledge in the field of his scientific research and broad scientific interests.

IV. EVALUATION OF THE MAIN SCIENTIFIC RESULTS AND CONTRIBUTIONS

The candidate's works can be referred to the professional field "5.3 Communication and computer technology", scientific specialty "Information technologies and cyber security" and classified in the following three directions:

• Approaches, models, architectures, research and good practices in the field of information security:

• Cryptographic methods and mechanisms;

• Cyber security and cyber defence.

Published results can generally be divided into scientific, scientific-applied and applied.

The candidate's scientific contributions are focused at enriching existing knowledge and applying scientific approaches in security and defence systems. These may include the proposed approaches for risk management, testing and evaluation of information security in computer systems [II.1.6], approaches for improving cryptographic systems in order to overcome the so-called quantum factor for evaluating new cryptographic schemes and algorithms in generating cryptographic keys [II.3.70], research on creating new "quantum-resistant" cryptographic schemes usable in security and defence systems [II.3.72, II.3.81, II .3.100, II.3.105].

The scientific-applied contributions are in the field of information technology, research and proposals of models and architectures for information security and for cyber security in computer networks and systems. These may include research into existing information security models in new emerging technologies [II.3.83, II.3.91, II.3.102, II.3.106, II.3.109] and cloud architectures [II.3.71, II.3.88], approaches to the design and construction of various cyber-architectures, including basic technological components, aspects and models, as well as cyber security metrics with application in critical information infrastructures [II.2.11, II.2.12, II.3.76, II.3.78, II .3.92, II.3.93, II.3.95], as well as performed analyzes and assessments of cyber security [II.3.85] using a

proposed multi-layer model for cyber security of this infrastructure [II.3.89, II.3.92]; also approaches to modeling the processes affecting the cyber security of information and communication systems, as well as approaches to testing for vulnerabilities, threats and countermeasures to cyber attacks, ways of organizing communication and computer networks, etc. [II.3.84, II.3.95, II.3.96, II.3.97, II.3.98, II.3.99, II.3.101, II.3.107, II.3.108, II.3.110].

The applied contributions are in the field of application of the conducted research in practice in the implementation of various scientific projects, as well as in the training of PhD students. They can include basic theoretical statements for information security in computer networks, approaches to testing and analysis of the security of computer systems presented in the prepared textbooks [II.1.3, II.1.4, II.1.8], analysis of the possibilities for information security in various types of systems – university environments, state administration, systems used by law enforcement bodies [II.3.73, II.3.75, II.3.79, II.3.80, II.3.82, II.3.90, II.3.94], as well as approved approaches and models in a number of research projects.

V. SIGNIFICANCE OF CONTRIBUTIONS TO SCIENCE AND PRACTICE

The significance of the contributions of Col. Assoc. Dr. Nikolai Stoianov can be assessed from the visibility of the publications made in the public space (seven of his publications are in editions indexed in world-renowned databases with SJR), as well as from the applicability of the proposed models, approaches, algorithms, etc. in various realized international and national projects and systems in which he participates or leads.

VI. ASSESSMENT OF AUTHOR'S PARTICIPATION IN RECEIPT OF CONTRIBUTIONS

The analysis of the candidate's systematized scientific production, the writing style, the language constructions used and other signs show the bright authorial presence in them, which convinces me of their originality and that they are the personal work of Associate Professor Dr. Stoianov. I believe that the

authorship in the proposed materials is indisputable. I have not noticed any plagiarism in the submitted research papers.

VII. CRITICAL NOTES AND RECOMMENDATIONS

I find no significant scientific errors or omissions in the scientific papers submitted for review that would affect my final assessment. I recommend the candidate, Assoc. Dr. Nikolai Stoianov, to direct his efforts in the training and preparation of more doctoral students and young scientists with the aim of creating his own team (school) in the field of his scientific work and interests. This undoubtedly will help to realize the necessary continuity between generations in this rapidly developing field of scientific research – information technology and cyber security.

VIII. PERSONAL IMPRESSIONS

I have known associate professor Dr. Nikolai Stoianov for almost 25 years – from our long-term joint work in various institutes and structures related to defence. In our joint activity, he shows himself as a smart, correct, responsive and good colleague, friend and scientist. He never showed arrogance or rudeness, he always respected the person in front of him and protected his dignity. In his work, in his relations with colleagues as well as with students, he offered his help based on broad theoretical knowledge and acquired valuable practical experience.

In his research work, he is consistent and capable of quickly orienting himself and determining the goals and directions of his research, as well as making the necessary efforts to achieve them. He is an organized leader with broad knowledge, deep and enduring research interests in information technology, information security and cyber security.

The analysis of his scientific works, as well as my personal impressions, give me reason to evaluate the candidate as a good researcher and scientist in the field for which he is applying.

IX. CONCLUSION

I express my firm conviction that associate professor Dr. Nikolai Stoianov is a highly educated, capable and correct researcher and scientist. The assessment of his scientific and practical results and contributions give me reason to express my positive opinion and I suggest to the members of the respected scientific jury and the scientific council of the Defence Institute to vote positively that Colonel Associate Professor Dr. Eng. Nikolai Todorov Stoianov should be elected in the academic position **"PROFESSOR"**, in the field of higher education "Technical Sciences", professional field 5.3 "Communication and computer technology", scientific specialty "Information technologies and cyber security".

22.01.2023 **Jury member:**

/S/

Sofia **/Prof. Dr. Eng. Rossen St. Iliev/**