

Development of the System for Academic Training of Personnel Engaged in Nuclear Material Protection, Control and Accounting in Russia.

Eduard F. Kryuchkov

Moscow Engineering Physics Institute (State University), Moscow, Russia

E-mail address of main author: efk@nr.mephi.ru

National safeguards on nuclear materials (NM) non-proliferation in any country are provided by a system of special measures on NM management (legal regulation, organizing, scientific and technical measures and tools) as well as by a professional culture of people working with NM (non-proliferation culture). The fundamental attribute of any culture, and the non-proliferation culture also, is an availability of a system for reproduction of the specialists - carriers of this culture. Saying about national safeguards systems, one of the key components for existence and development of such a system in Russia is a creation and advancement of the system for specialists training in areas of NM non-proliferation and NM safe management. Unfortunately, when developing and improving the special measures of national safeguards, the specialists reproduction system is often forgotten. A lack of well-skilled specialists is retarding development of national safeguards now. Under today's conditions in Russia, this lack of specialists can become a serious obstacle for resolving the non-proliferation problem in the nearest future. Establishing the fact is a necessary and important step towards definition of long-term strategy for development of nuclear power industry in Russia.

The specialists reproduction is a complex multi-level problem. Solution of the problem as applied to nuclear non-proliferation safeguards can be found through creating the academic system of training, re-training and qualification upgrade of appropriate specialists basing upon the training principles, traditions and approaches established in our country. Today we have only the first successful results in resolving aforementioned problems. The present paper is devoted to discussion of general problems for MPC&A specialists training in Russia as well as to discussion on development of the MPC&A Engineering Degree Program at MEPHI.

Main attention in the present paper is focused at discussing the educational problems in area of nuclear materials physical protection, control and accountability (MPC&A) in Russia. General scheme of Russian educational system is considered with main emphasis on the directions under implementation now, namely academic training system, re-training system and specialists qualification upgrade system in MPC&A area. Russian academic training system consists of the educational programs at various levels: Bachelor of Sciences, Master of Sciences, Specialist (also referred to as an Engineer Degree), and professional re-training of the personnel already working in the nuclear field. Currently, only the Master of Sciences Graduate Program is completely developed for the students training. This is taking place at Moscow Engineering Physics Institute (State University, MEPHI), where the fourth generation of Masters has graduated from in May 2003. The graduates are now working at nuclear-related governmental agencies, non-governmental organizations, universities, and nuclear facilities. Development of the system to produce academically trained Russian MPC&A personnel is therefore well underway.

MEPhI's MPC&A Engineering Degree Program which currently under development is considered in the paper. Analysis of MPC&A needs at Russian nuclear facilities has demonstrated the Engineering Degree Program is the best way to satisfy these needs and the resulting demands for MPC&A specialists at Russian nuclear enterprises. This paper discusses specific features of the Engineering Degree training required by Russian education legislation and the Russian system of quality control as applied to the training process. The paper summarizes the main joint actions undertaken during the past three years by MEPhI in collaboration with the US Department of Energy and US national laboratories to develop the MPC&A Engineering Degree Program in Russia. These actions include opening a new Engineering Degree specialty, Safeguards and Nonproliferation of Nuclear Materials, in the Russian register of specialties; licensing two Russian universities for academic training in the new specialty; developing the curricula for the specialty, including tracks for physical protection and material control and accounting; and recruiting the first student group in 2002.

It is proposed based on MEPhI Master of Science Program "Nuclear Material Physical Protection, Control and Accounting" which is realized at MEPhI since 1997 to create the new International Master of Science Program "Technical Aspects of Nuclear Material Safeguards and Non-proliferation" for training the specialists not only for Russia but for CIS and others countries. During this activity it is possible to use the MEPhI experience in this field (methodology, students manuals, laboratory student manuals and et.al.) and laboratory created at the MEPhI during the last 6 years. This new educational program have to satisfy to international standart for Master os Science level of education.