

RUSSIAN NAVY PERSONNEL TRAINING IN NUCLEAR MATERIAL ACCOUNTING, CONTROL AND PHYSICAL PROTECTION

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1. Introduction

Within the border of an Agreement between RF Ministry of Defense (MoD) and US Department of Energy (DOE) with direct participation of Russian Research Center “Kurchatov Institute” (RRC KI) Material Protection, Control and Accounting (MPC&A) systems were modernized at a large number of nuclear hazardous sites (NHS) of RF MoD, in particular, at the sites of RF Navy.

For operation of modernized MPC&A system qualified personnel is needed, therefore RRC KI in cooperation with RF Navy representatives developed and started implement training for RF Navy personnel in MPC&A issues.

However, the development practice and the operation experience of the upgraded MPC&A systems at Northern Navy Fleet sites have demonstrated that the personnel training and the technical maintenance of these complex systems can be achieved by the creation of a specialized regional training and technical center. The contraction of such center - the Kola Training and Technical Center (KTC) – began in 2001 in Severomorsk in close cooperation with US DOE national laboratories.

2. MPC&A training program for RF Navy personnel

At the beginning stage RRC KI specialists developed one training course on MPC&A Fundamentals. It was implementing in two two-weeks stages. On average 20 people were trained during such training course. Our experience shows that quality of the training became lower if number of trainees more than 20.

Upon completion of each training course it was jointly discussed. The discussion was held with participation of organizers of the training course, lecturers and trainees. In the result of such discussions requirements for modernization of this training course were defined. Specialists of RRC KI in cooperation with RF Navy training center took place in modernization of this training course. In the result of joint efforts MPC&A Fundamentals training course was modernized.

During implementation of this training course it became obvious that in addition to this MPC&A Fundamentals training course it is necessary develop detailed training courses for more qualitative and deep training of RF Navy personnel, which would take into account specific of different levels and specialties of RF Navy specialists, who work in MPC&A field of activity at the RF Navy NHS.

Therefore it was decided develop four more training courses:

1. Training course for the Site Security Service Chiefs
2. Training course for the NHS Commanders
3. Training course for Highest Command
4. Training course for inspectors of RF MoD

Each training course has been developed in several stages. First stage was a draft of the training course which was implemented for one group of the trainees. After joint discussion the shortcomings of the training course were defined and they were corrected at the next stage – modification of the training course. Second implementation of the training course usually has been implemented without any remarks. Even if trainees made some comments, they were minor and during implementation of the next training course they were taken into account.

It should be noticed, that after completion of each training course the trainees filled out special evaluation sheets where they reflected their evaluation of the training course, comments and wishes. Such practice was proposed by American specialists and it should be noticed, that it is a good practice and it gave us a good result. As the result we developed high level training courses for different RF Navy specialists in MPC&A field of activity. During evaluation of quality of organization and implementation of the training courses by American experts RRC KI have got a high score.

For implementation of such training RRC KI has not a special training and material base. Therefore all training courses were developed taking into account absent of certain training equipment for implementation of practical sessions that was compensated with quality of implementation of theoretical sessions. Nevertheless some practical sessions have been implemented as far as possible at operated MPC&A systems of the Center.

RRC KI has a very good base for implementation of inspector training course. The matter is that each inspector training course should have an MPC&A training inspection as a final stage.

Nuclear materials physical protection inspection was implemented at one of the RRC KI facilities, which is located outside of the main territory of the Center, has it own quipped perimeter and is as a stand alone site. From organization and implementation of a training inspection point of view this is very convenient because inspection is implemented like on a separate site, not at the facility.

In the course of implementation of MC&A inspection we used another RRC KI facility – Central storage facility, which contains a lot of nuclear materials in different forms and packages. Certain measuring equipment was demonstrated for the trainees; some nuclear materials were measured, and during training inspections certain mistakes in MC&A system were made intentionally, and in the course of training inspection inspectors should have detected these mistakes.

During the period of 1998 – 2007 the following training courses were held within the framework of the MOS officers training program in the RRC KI:

1. Two-week training courses in MPC&A Fundamentals for the RF Navy nuclear sites – for ten groups of Navy representatives. The total number of the trainees was more than 220 people.
2. Two-week inspector training courses – for six groups of RF MOD representatives. The total number of the trainees was about 80 people.
3. One-week training course for commanders of RF Navy nuclear sites. Three training courses were held. The total number of the trainees was about 40 people.
4. Two two-week training courses for the PPS Chiefs of the RF Navy nuclear sites. The total number of the trainees was about 30 people.
5. Two training courses for a group of Strategic Rocket Force (SRF) representatives. The total number of the trainees was 16 people.
6. One training course for superior commanders, attended by about 30 people.

In general more than 400 representatives of the RF MOD were trained in various areas of the MPC&A.

3. Stages of the creation and technical characteristics of KTC

As it was mentioned before, personnel training and technical maintenance of modernized PPS can be achieved by the creation of a specialized regional training and technical center.

The design work of the KTC began at the end of 2001, and its construction began the middle of 2002.

The KTC is a complex of functionally interconnected buildings and facilities, that is a part of the architecture of Severomorsk (the area is 0.66 hectares).

The KTC complex includes:

- training building;
- training test site of technical security devices (TSD);
- workshops;
- training entry control point (ECP);
- training vehicle inspection point;
- distribution electrical substation;
- modular diesel electrical station;
- engineering utilities.

The training and administrative part of the Center includes the training classrooms, rooms for practical sessions, library, a large conference room and two small conference rooms, MPC&A maintenance workshops, rooms for instructors and administrative personnel of the Center.

The technical security devices are installed at the test site; they transmit signals to the control panels of the data acquisition and processing systems and entry control systems located in the main building of the KTC. A specific feature of the test arrangement is that the trainees have a possibility to watch the operation of the technical devices of the test site through the windows of training classrooms containing the control panels.

The Kola Technical Center has unique technical training facilities, and technological basis for the training of all categories of specialists of nuclear sites in MPC&A.

The specialized training classrooms are unique for the training of PPS control panel specialists, specialists in interior and perimeter detection devices, CCTV, and entry control systems. The classes take place in classrooms, laboratories, computer classrooms and at the test site, that are equipped with technical devices, equipment and hardware required for practical exercises and laboratory work.

In the training of the engineers and technicians, more than 40% of the training time is dedicated to the practical work (PPS maintenance, hardware adjustment and tuning).

It was necessary to perform the following work to organize the MPC&A training of the RF MOD representatives in the KTC:

1. To train MPC&A instructors for the KTC.
2. To develop the training programs, and training and methodology documentation for

the KTC.

With this purpose representatives of the RRC KI, Eleron and Escort Center in cooperation with the RF MOD have carried out the following work:

1. Development of the documentation on the training process planning for the RF Navy.
2. Development of the Guidance on the preparation of the MPC&A training programs for the RF Navy specialists.
3. Development of the KTC training programs in MPC&A
4. Development of the requirements for the training management system; the analysis of the available commercial systems in this area.
5. Development of the Guidance on the evaluation of the training courses quality in the KTC.
6. Development of the training courses catalogue for the KTC.
7. Development of the training and methodological documentation for 20 nuclear material physical protection training courses at the RF MOD sites, and 2 communication systems training courses.

The instructors of the Center have undergone a special training on the basis of RRC KI, and main PPS development and production organizations: Eleron and Escort Center. The instructors have undergone the methodological training and probation in the leading Navy Training Center named after Osipenko (Obninsk).

The KTC plans to hold the following MPC&A training courses for the RF Navy personnel:

1. One training course in MPC&A fundamentals.
2. Nineteen training courses in physical protection systems.
3. Two training courses in communication systems.

For convenient presentation of a list of the training courses RRC KI specialists in cooperation with RF Navy representatives developed a Catalogue of all KTC training courses.

The training duration will vary depending on the training course. Thus, the badge station operators will be trained during one week, and the training of the PPS system operators will continue for five weeks.

The training programs are developed in such a way as to allow the trained personnel to independently operate and maintain physical protection systems installed at RF Navy sites of the Kola region.

To improve the efficiency of the training the classrooms are equipped with modern training hardware, such as computers, multimedia projectors and other training aids.

In 2001 a new Program "MPC&A Culture" (nuclear materials security culture) was initiated. Within the framework of this Program two two-hour training modules, devoted to nuclear materials security culture for different categories of the trainees, were developed for the KTC:

1. For implementation of MPC&A Fundamentals
2. For inspectors training
3. For commanders training

By the present time almost all work on development of training and methodological documentation for the KTC completed and it started his operation as a training center.

4. Conclusion

The implementation of the nuclear material MPC&A upgrades program at the RF NOD sites, and the creation of the KTC in particular, is a most successful example of a non-traditional approach to the cooperative programs with the USA, as well as fruitful interactions between the RF MOD and the US DOE.

RF Navy personnel training program is a part of the MPC&A improvement program at the RF MOD sites and, therefore, a correspondent attention should be paid to it.

Next stage – to sustain the MPC&A systems efficiency and reliability both at the RF Navy sites, and at other RF MOD sites to assure an adequate security of nuclear and radioactive materials, and of nuclear facilities – directly will depend on the training system of personnel, who operate modernized MPC&A systems.

The experience of organization and implementation of training in RRC KI, as well as creation of the KTC, will be expanded to another RF MOD sites as needed.