



General Distribution

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ISOE INFORMATION SHEET

IAEA TECHNICAL CO-OPERATION PROJECTS ON IMPROVING OCCUPATIONAL RADIATION PROTECTION IN NUCLEAR POWER PLANTS

IAEA Technical Centre - Information Sheet No. 3

The IAEA Technical Centre forms an integral part of the IAEA Occupational Protection programme, the objective of which is to promote the international harmonization of occupational radiation protection through developing safety standards for restricting radiation exposures in the workplace and for applying current occupational radiation protection techniques, and through providing for the application of these standards.

In addition to the Technical Centre's 'routine' collection and distribution of data and information it was found appropriate to formulate a programme for support of the ISOE participants through IAEA. Based upon two consultants meetings involving utilities and regulatory authorities participating in ISOE as well as ISOE Technical Centres, a Technical Co-operation Project on Improving Occupational Radiation Protection in Nuclear Power Plants (NPPs) in Central and Eastern Europe and in the former Soviet Union was launched in 1997.

Taking note of the experience from this project and of information in national project proposals, a second Technical Co-operation project for the Asian region was formulated in 1998. The purpose of this information sheet is to describe these projects and the progress made, at the same time giving an opening for feed back of information from ISOE participants.

RER/9/048 Technical Co-operation Project on Improving Occupational Radiation Protection in Nuclear Power Plants in Central and Eastern Europe and in the former Soviet Union

The general objective of the project is the implementation of the optimization principle in nuclear power plants in accordance with the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The target countries are Armenia, Bulgaria, Czech Republic, Hungary, Lithuania, Romania, Russian Federation, Slovak Republic, Slovenia and Ukraine and the project workplan reflects their needs for support: for occupational radiation protection in general; for the application of the optimization principle (ALARA principle) in particular; and for exchange of feed-back experience, especially on RBMK (Light water cooled, graphite moderated reactors) and WWER reactors.

After one year of project implementation, a meeting was held with representatives from the participating countries to evaluate the experience gained from the activities performed so far and to formulate a proposal for the project programme in 1999-2000. Several participants confirmed that, due to the project, modifications had already been introduced in national regulations and/or plant practices. There was a general consensus that the project should continue along the lines of the original workplan and in order to achieve the objectives of the project the following activities will be continued.

Health Physics Groups

At the start of the project, the highest priority was given to the creation of Health Physics Groups, with priority on WWER and RBMK Health Physicists. These groups should provide the means for exchange of experience on dose reduction techniques, intercomparison of dosimetric results and development of standardized measurements. The groups would also facilitate the dissemination of documents which can improve occupational radiation protection and exchange of information on radiological incidents.

Two meetings were held in 1997 and one in 1998, hosted by Loviisa NPP in Finland, Paks NPP in Hungary and Leningrad NPP in the Russian Federation, respectively. In the last meeting significant improvements in occupational radiation protection were noted. Several participants reported decreasing collective doses although there are still too many individuals receiving more than 20 mSv per year, especially in NPPs of RBMK design. Programmes to implement the principle of optimization are increasingly introduced, resulting in significant dose reductions in some cases. Although it was concluded that significant improvements can be made without major capital investments, the economical situation in some of the countries prevents other improvements, e.g. through automation, contamination control and operational dosimetry. It was also noted that the material distributed through the project has been used.

In future, one meeting will be held per year, after the outage period (end of October-November) lasting for four days, including representatives from commercial NPPs in all phases of the life cycle in the region. The 1999 meeting will be hosted by Bohunice NPP in Slovakia.

International training

Another high priority activity, also an item for discussion in the Health Physicists meetings, is training. A *Training Course on Optimization of Radiological Protection in the Design and Operation of Nuclear Power Plants* was held in Prague, Czech Republic in September 1997, co-sponsored by the IAEA and the European Commission and organized in co-operation with the CEPN, France and the NRPB, UK. Twenty four participants from NPPs and Regulatory Authorities attended. This course was the eighth in a row of such courses sponsored by the European Commission.

One more training course of this kind is planned to be held in St. Petersburg, 18-21 October 1999. This course will also give evidence of the progress made in the region during the last years through presentations of examples on improvement in the implementation of the optimization principle.

Information exchange through participation in ISOE Workshops held in the region is also encouraged through the project. Thus seven persons were supported to participate in the EC/ISOE Workshop on Occupational Exposure Management at NPPs held in Malmö, Sweden in 1998. The same mechanism will be used to facilitate participation in the ISOE Workshop to be held in Spain in the year 2000.

National / Regional ALARA Courses

While international training courses and participation in international meetings are very important and fruitful for those who can attend, only a few persons from each utility or regulatory authority will be reached in this way. The project therefore encourages the organization of national (or, if feasible, subregional) training courses with the objective of presenting tools and structures that can help in implementing optimization of protection at the practical level, particularly through work management, to a target group including middle management and supervisors, maintenance staff and planners.

These courses are expected to last for one to two days and, if needed, an outside expert could be supported by the IAEA. In October 1998 Krsko NPP, Slovenia, organized such a course on 'ALARA in Steam Generator Replacement' with the participation of an expert from France and it is expected that between 10 and 15 such courses will be held during 1999 and 2000.

Workshop for managers

Experience has shown that without the commitment of the management, implementation of optimization is difficult to achieve. To improve the situation in the target countries a Workshop on Implementation and Management of the ALARA Principle in Nuclear Power Plant Operations was therefore organized in Vienna on 22-23 April 1998 with about 40 participants including managers from NPPs and senior staff from Regulatory Authorities. Lecturers were from the target countries as well as from France, Spain and Sweden. A report on this Workshop is given in a separate ISOE Information sheet.

Scientific visits

Experience has also shown the significant value of learning from peers by exchange of technical information and observation of work practices through visits to NPPs or Regulatory Authorities. In the IAEA terminology this is called scientific visits and the project offers such possibilities, based on individual requests or initiated by the IAEA for a group of people. Four individual visits have taken place or are scheduled to take place and a group visit for Regulatory Authority staff is planned for the year 2000.

ALARA tools

During Spring 1998 the software learning programme RADIOR (available in English, French, German, Spanish, Swedish and Russian), co-sponsored by the European Commission and IAEA, was made available cost-free to all interested parties in non-OECD countries through an IAEA license. A Russian translation of the OECD document on Work Management in the Nuclear Power Industry is also available cost-free as IAEA Working Material.

Provision of Materials for Trainers

To provide trainers at the national level with the best available training material on the application of the ALARA principle, the IAEA will collect and collate available material for distribution, in its original language. This package will contain material from the International training courses, case studies, material from the Workshop on Implementation and Management of the ALARA principle in Nuclear Power Plant Operations, the RADIOR software, the document on Work Management in the Nuclear Power Industry, etc.

Provision of Electronic Dosimetry

Operational dosimetry is a crucial element in the optimization process. Most plants in the region have access to such dosimeters, at least to a limited extent. It is foreseen that a limited number of electronic dosimeters, approximately 100 per plant, will be provided to plants where none, or too few, are currently available. The funding for this is expected to come either from recipient countries themselves or from external donors.

RAS/9/022 Regional Model Technical Co-operation Project on Improving Occupational Radiation Protection in Nuclear Power Plants in the Asian Region.

Based on the experience from the regional project described above, national project proposals and information from IAEA OSART (Operational Safety Review Team) missions, a Regional Model Technical Co-operation Project on Improving Occupational Radiation Protection in Nuclear Power Plants in the Asian Region was launched in 1999. The target countries are China, Korea, Pakistan. The purpose of the project is to encourage the development of a commitment at a national level by the concerned plant personnel and the authorities through activities for the Regulatory Authorities, the Managers of Utilities, and the Technical Support Organizations.

To achieve the objectives of the project, Regional Workshops, National Workshops, Technical/Scientific Visits, and Expert Missions will be carried out grouped under the following project elements:

- Management of occupational radiation exposure during maintenance outages
- Information exchange on good practices and experiences
- Workshop for Plant Managers and Regulatory Authorities focused on awareness of optimization of protection
- Syllabus development for training on optimization of protection
- Specific dose reduction problems
- Dose monitoring techniques

The project has been formulated over four years (1999-2002). However, the impact should be visible at the end of the year 2000, when it is expected that through increased collaboration between the target countries there would already be a measurable reduction in occupational exposure. There will also be a better appreciation of the problems and limitations in the different target countries and institutions, which will make possible the completion in the period 2001-2002 of a harmonized/common syllabus for training on implementation of the principle of optimization of protection. This syllabus could eventually also be useful in other regions.