

JSC «Concern Rosenergoatom»

Balakovskaya NPP

Training system for operators and maintenance personnel


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Requirements for training and continuing education of the NPP personnel are governed by

- The law of Russian Federation—
“On the use of nuclear power”.
- Regulation of JSC “Concern
Rosenergoatom” –
«Human resource development for NPP».
- Nuclear Power Plant—
“Regulation ofn training and continuing
education of NPP personnel”.



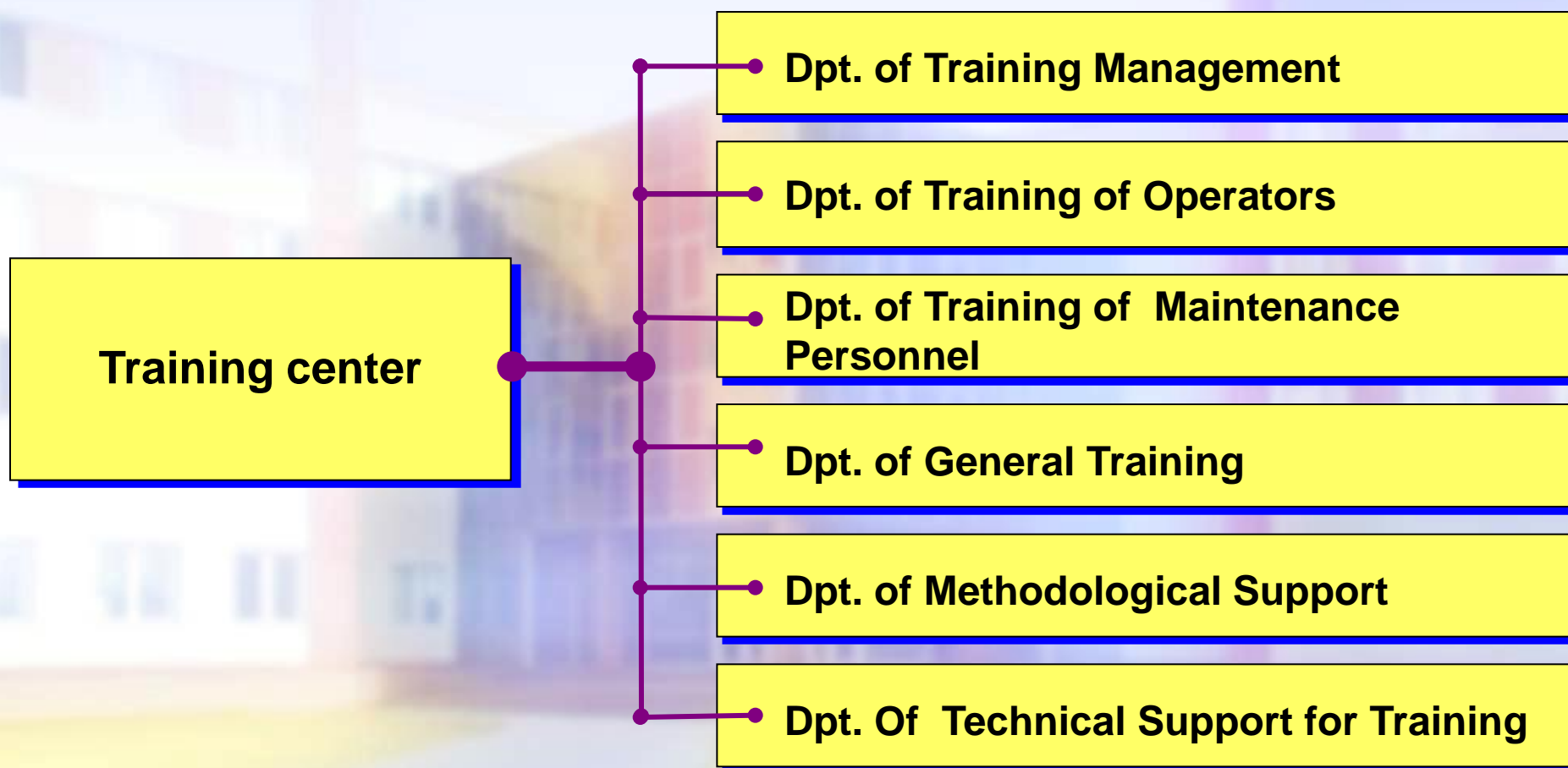
A world map is visible in the background, rendered in a light blue color against a darker blue grid. The map shows the continents of North America, South America, Europe, Africa, Asia, and Australia.

The system of NPP Personnel Training has been developed with taking into accounts of recommendations of IAEA, INPO, current existing experience on the international and national levels

- As a basis for human resource development. Balakovskaya NPP uses the Systematic Approach to Training (SAT) as the most reliable and proved tool in the development of training system



Structure of NPP Training Center



The main objectives of Training Center

- Management of NPP personnel training in the Training Center and other training institutions.
- Evaluation of the efficiency and quality of the training process;
- Improvement and upgrading the training system based on implementation of the new training practices, upgrading the training tools and training methodology;
- Improvement of professional activity of the NPP staff .
- Management of trainini targeted at licensing in the area of use of nuclear power

The Staff of Instructors in the Training Center

- Experience in operation, maintenance, engineering
- University education (technical)
- Experience in management
- Completed training courses in instructor skills
- Participation in programmes supporting training in other NPPs



Equipment and Tools in Training Center (Balakovskaya NPP)

- TC - two buildings (total area 9000m²) :
 - 27 lecture rooms (for theoretical courses);
 - 18 rooms for practical exercise;
 - 4 lecture rooms for teaching regulation procedures;
 - 3 computer classes ;
 - 2 laboratories for psychology training;
 - 1 room for self education;
 - library(16 000 books) reading room for 20 persons;
 - Archive with complete set of documentation for regulations associated with operation and maintenance of NPP (more than 1200 sets.)
- All rooms well furnished and equipped.



Continuing education

- Continuing education – the system of knowledge and skill management for NPP personnel
 - Operators of NPP– 144 hours/ year;
 - Other categories of NPP personnel – no less than 20 hours/year.

Training of operators

- Reactor Unit Operators – 40% of training with the use FSS (Full Scale Simulators).
- Operators-inspectors- training with the use of real equipment reserved for training .

Technical tools for training of operators

- Full Scale Simulator:

- Reference unit № 4 of Balakovskya NPP.

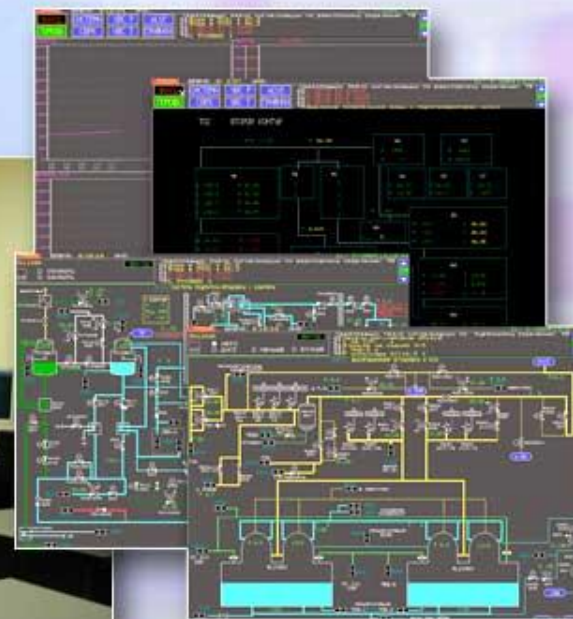


Technical tools for training of operators



■ Analytical simulators:

- Reference unit № 4 of Balakovskaya NPP.

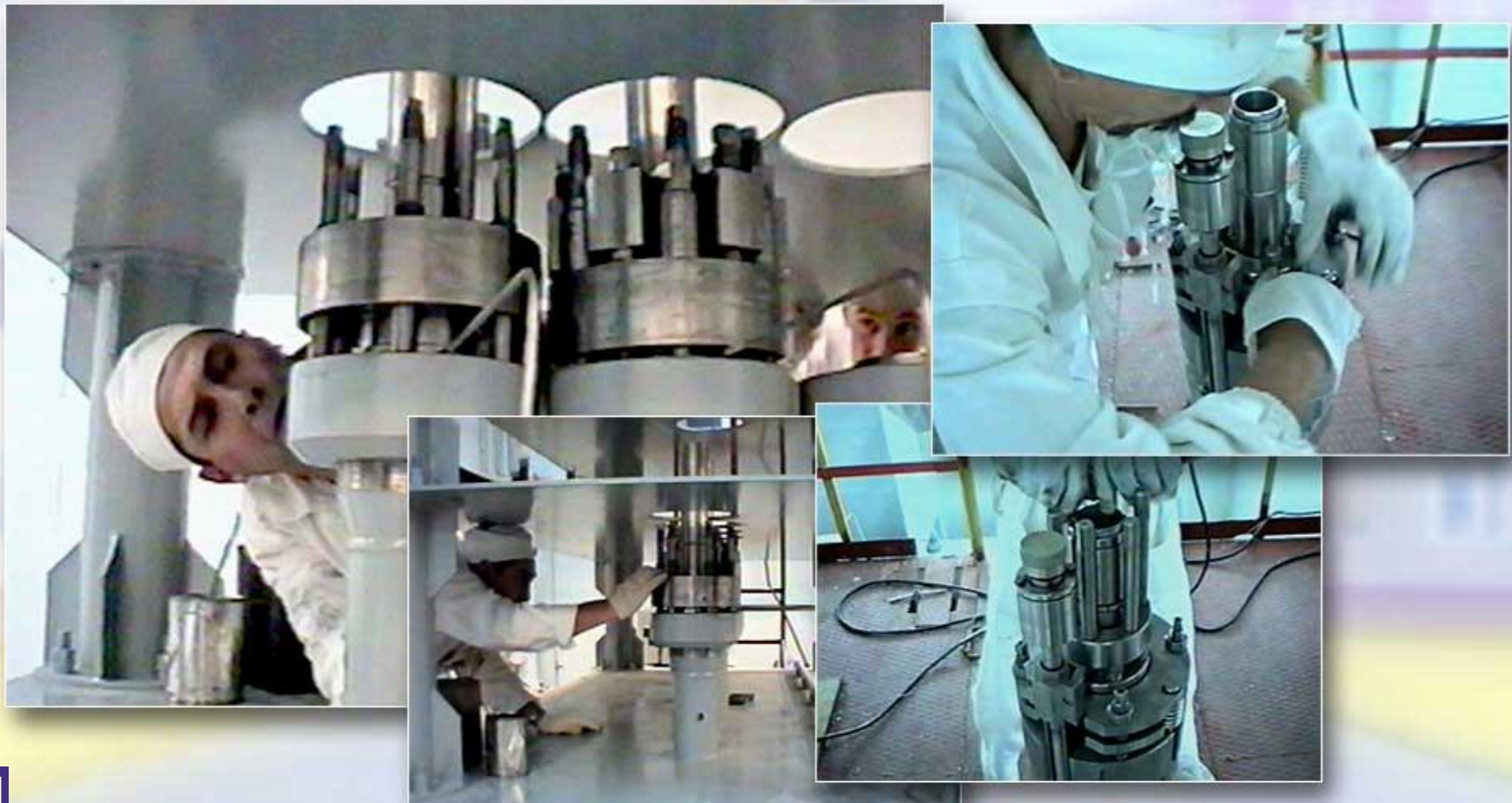


Training of Maintenance Personnel

- Large number of maintenance staff and variety of specializations involved in NPP maintenance was the reason to implement training system which is different from the training system of operators.
- Maintenance period is 8-10 months. For this reason the training of maintenance staff is performed in between of maintenances.

Technical Tools for Training of Maintenance Personnel

- Model of upper reactor equipment:
 - Fragment of reactor equipment.



Technical Tools for Training of Maintenance Personnel

- Stands for teaching electrotechnical disciplines :
 - Laboratory stands for teaching electric circuits, microprocessing techniques etc.



Training of operators and maintenance personnel is provided following the special position-oriented training programmes which include:

- Theoretical courses ;
- Exercises with the use of technical training tools;
- On-the-job training ;
- Evaluation the skills ;
- Duplication in the working place (for operators);
- Getting the license (if needed for a particular job position) .

Training of specialists for foreign NPPs



Training of Foreign NPP Personnel

- Theoretical courses;
- Practical exercises (simulators, laboratories , etc)
- On-the-job training;
- Assessment for the job position.

On-the-Job Training

- Duration – 320 hours.
- Topics:
 - Location of various equipment;
 - Equipment diagnostics ;
 - Training for startup/shutdown of main and auxiliary equipment .

Training of Foreign NPP Personnel in the Training Center of Balakovskaya NPP

- 1999- 2005 – totally 900 foreign specialists :
 - NPP Busher (Iran),
 - NPP Tianwan (China),
 - NPP Kudankulam (India)

Training of Foreign NPP Personnel in the Training Center of Balakovskaya NPP

- Two forms of training:
 - Facility visit to achieve a good understanding of function-location of various NPP facilities
 - Theoretical courses to learn technological processes, instructions, etc

Training of Foreign NPP Personnel in the Training Center of Balakovskaya NPP

- Training was performed by instructors of the Training Center of Balakovskaya NPP
- Chief specialists of Balakovskaya NPP were involved as consultants in reactor physics, diagnostics, etc.



Thank You for Your Attention!

