

IAEA staff and new inspectors are shown assembling and testing the operation of the uranium neutron coincidence collar. The equipment is used to measure the uranium content of fresh fuel from light-water reactors.

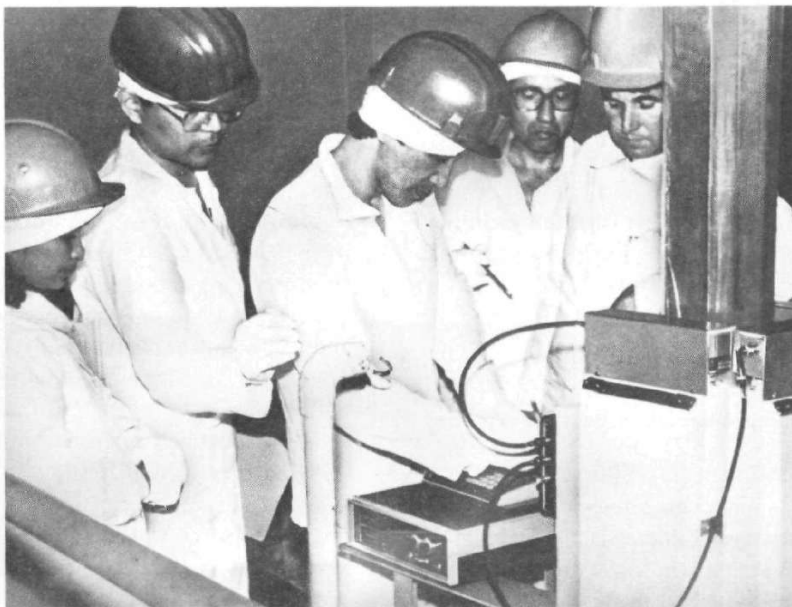
Close-up on safeguards training

A comprehensive inspection exercise in the USSR

Continuous training is provided to IAEA inspector personnel to assure their proficiency in carrying out the mission of the Agency in prohibiting the potential diversion of nuclear material. The number and complexity of nuclear facilities under safeguards have increased since the Agency's founding, resulting in an ever increasing number of inspectors and, concurrently, in the need for higher quality of technical training.

Basic training for newly recruited inspectors and inspection assistants is provided by the Department of Safeguards and training is programmed throughout the working experience of an inspector. Over the years, it has been proven beneficial to utilize the capability and facilities of Member States to provide specialized training at operating nuclear facilities. The training exercise described here is one of those funded by the USSR

IAEA staff and new inspectors are shown measuring the uranium content of a fresh WWER-440 fuel assembly using an uranium neutron coincidence collar.



Training courses sponsored by Member States

Sponsoring Government	Course	Intended for:
Canada	Candu reactors Fuel bundle counter	Experienced inspectors Experienced inspectors
France	Scientific visit (Cap de la Hague)	Experienced inspectors
Japan	Regional SSAC	Member States
German Democratic Republic	Comprehensive inspection exercise (Rheinsberg, Rossendorf)	New inspectors
Sweden	SKI/ASEA (Stockholm)	Experienced inspectors
United Kingdom	Bulk-handling facilities (Springfield/Windscale) Inspectors training (Winfrith)	Experienced inspectors Experienced inspectors
United States	NDA instruments & techniques (Los Alamos) LWR Exercise (Three Mile Island) MOX PIV Exercise (HEDL/Richland, Wash.) Advanced SSAC	New inspectors Experienced inspectors Experienced inspectors Member States
USSR	Comprehensive inspection exercise (Novo-Voronezh) Basic SSAC (Yalta)	New inspectors Member States

and conducted at an operating nuclear facility in the USSR. These support training courses are an effective way of providing the specialized training needed to maintain the proficiency of the inspectorate staff and supplement the training that is offered by the Agency in Vienna. Other such support training courses for inspectors are shown in the accompanying box.

Additional specialized training for members of State safeguards organizations is also provided by certain Member States in courses identified as "State System of Accountancy and Control of Nuclear Material (SSAC)". These supplementary courses, also shown in the box above, are provided as part of a State's Safeguards Support Programme.

The USSR comprehensive inspection exercise

Under the USSR-sponsored programme, new safeguards inspectors and inspection assistants gain field experience in the auditing of records, measurement of fresh and spent fuel,

and the verification of data at a light-water reactor power plant. The exercise is funded by the Soviet Safeguards Support Programme and is administered by the State Committee on the Utilization of Atomic Energy.

Since 1979, five such training courses in the USSR have been conducted for 74 safeguards trainees from 24 different countries. The most recent course, which took place in June 1984, followed introductory training on Agency safeguards. In that course, instruction was given in understanding and using questionnaires covering facility attachments and design information; in auditing records received by the Agency and by the inspector during an inspection; and in familiarizing trainees with equipment, procedures, and techniques for measuring uranium and plutonium content in fuel assemblies.

The inspection exercise in the USSR included a visit to the Kurchatov Institute of Atomic Energy in Moscow, a week at the Novo-Voronezh Nuclear Power Plant, and two days at the Khlopin Radio-

isotope Institute and its Radio-chemical Department at Gatchina. The one-day visit to the Kurchatov Institute outlined the development of nuclear energy in the USSR and served as the kick-off meeting for the training programme, with special emphasis to show that the programme has the support of the technical institutes as well as that of the State Committee.

At the Novo-Voronezh power station, a simulated inspection was conducted covering several important areas: an audit exercise of simulated records that are forwarded to the Agency on a routine schedule; records of internal movements of safeguarded material and burn-up estimates that are received by inspectors at the time of inspection; measurements of fuel material content in selected fresh and spent assemblies; and a final verification to ascertain the quantities recorded and reported to IAEA.

A full day was devoted to the audit exercise, which included a lecture and presentation explaining the internal accountancy system and records auditing. Together, these

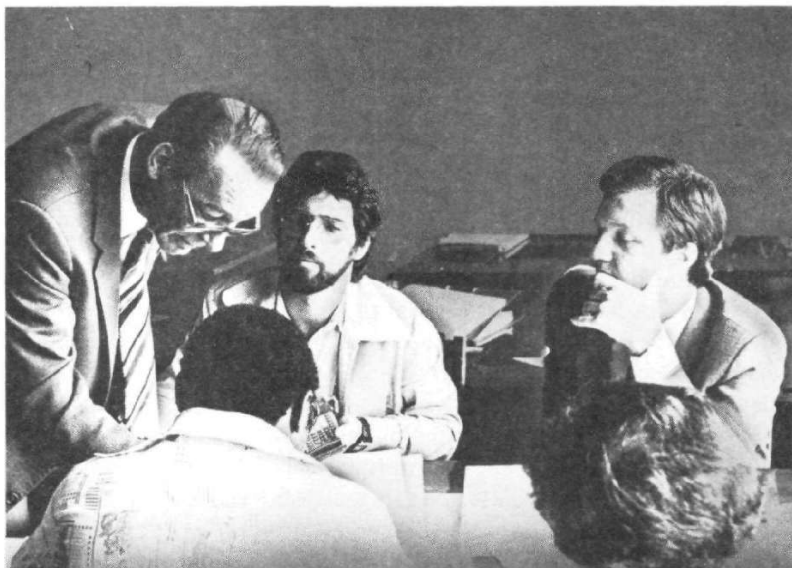
addressed the full component of documents that an inspector would receive at the Agency before an inspection and at a facility during one. Information important to carrying out the audit of station records — such as checking the consistency of records, comparing records with reports, and updating records to the date of inspection — was distributed to participants as part of more individualized instruction.

The audit exercise was followed by lectures on the use of instruments to verify contents of safeguarded nuclear material in fresh- and spent-fuel assemblies from a WWR-440 reactor. Participants later used the uranium neutron coincidence collar in a fresh-fuel storage room and the Silena 1K multi-channel analyser and germanium detector at a spent-fuel storage pond. Readings were taken on a number of assemblies. Following these measurement exercises — which simulated actual procedures during a field inspection — the data were analysed and the results of auditing the accounting documents were evaluated.



IAEA staff and new inspectors, sub-divided into groups of four participants during the auditing exercise, review data.

The course co-ordinator assists participants during the auditing exercise.



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