



# The First Atomic Power Station and International Co-operation in the Peaceful Uses of Atomic Energy

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**"17 hours 45 min. Turbine operation started"** — these few words, noted in the log-book for 27 June 1954, marked the fruition of an aspiration long cherished by Soviet scientists to put in the service of man atomic energy, which had until then served only the gods of war and destruction, by harnessing it to generate commercial electric power. The labours of Soviet scientists, engineers, technicians and workers were embodied in the stone, metal, glass, complex structures and other parts and components of the first atomic power station, which has now become a monument to the technical progress of mankind.

The planning, design and construction of the first atomic power station were the result of long, intensive work by Soviet specialists. In February 1956, the scientist in charge of nuclear affairs in the Soviet Union, Academician I.V. Kurchatov said, "Our success in this undertaking was due in large measure to the fact that the institutes, which the great Lenin strove to establish as early as 1918 - 1920, persisted in their theoretical research on the laws of atomic structure, the laws governing chain reaction and the laws of the structure of the atomic nucleus. It was this theoretical work that paved the way for the atomic technology we are now developing". The paths then marked out have led to an extensive peaceful utilization of atomic energy in the Soviet Union, demonstrating once again the peace-loving attitude of the Soviet State.

The Soviet Government's announcement of 1 July 1954 about the start-up of the first industrial atomic power station was made against the background of the long and difficult dialogue then going on about the military uses of atomic energy and helped to show, in a convincing manner, how the energy of the atom could be used peacefully, for the good of mankind as a whole, and how the efforts of the Soviet Government were bent in that direction. This very fact supplied a fresh impetus to the anti-war social movement carried on by the partisans of peace, and to the Pugwash movement which was being launched at that time by scientists from many countries in order to discuss problems of nuclear disarmament, international scientific co-operation and the use of modern scientific and technological achievements to improve the life of mankind.

It is worthy of note that the start-up and successful operation of the first atomic power station in the Soviet Union took place on the eve of the ninth session of the United

Nations General Assembly, in December 1954, which — not uninfluenced by this event — unanimously adopted a resolution entitled "International co-operation in developing the peaceful uses of atomic energy". The session recommended the convening of an international technical conference of the representatives of Governments on the problems of the peaceful uses of atomic energy, which was duly held at Geneva in August 1955 and went into history as the First International Conference on the Peaceful Uses of Atomic Energy. At this conference, which was attended by the representatives of 70 countries, Soviet scientists presented 102 papers, together with a demonstration model of, and a film about the first industrial atomic power station. The station in fact became the centre of attention among participants at the conference. An announcement by V.I. Wechsler that the Soviet Union was completing construction of a 10 GeV accelerator, the most powerful in the world at that time, also aroused a great deal of interest.

Soviet scientists likewise participated with great success in subsequent Geneva Conferences, continuing to share their achievements in the peaceful uses of atomic energy with scientists from other countries. Three years later at the Second Geneva Conference, in 1958, a film was shown on the first line plant of the Siberian Atomic Power Station, which even at that time had attained a capacity 20 times higher than that of the first station. At the same conference a paper on the nuclear power plant installed in the atomic ice-breaker "Lenin" was presented. At the Third Geneva Conference, in 1964, models of the four atomic power stations then in operation in the Soviet Union were demonstrated. The new "Romashka" facility designed for direct conversion of nuclear energy to electricity, was of particular interest to the public; at the moment of demonstration it had already operated for a long time and was the only facility of its kind. At the Fourth Geneva Conference, in 1971, Soviet scientists demonstrated the 70 GeV Serpukhov accelerator, the largest at that time, as well as a model of the high-capacity RBMK boiling-water reactor, and reported on the progress of Soviet science in fast reactor and controlled nuclear fusion research.

The first atomic power station did much to promote international co-operation in the peaceful uses of atomic energy. At the 20th Congress of the Communist Party of Soviet Union, in 1956, Academician I.V. Kurchatov said, "We, Soviet scientists, would like to work on the solution of this most important scientific problem of mankind with scientists from all over the world, including those from America, whose scientific and technical achievements we hold in high esteem."

This being our steadfast humanistic stand, our country was one of the founder Members of the International Atomic Energy Agency (IAEA). The IAEA, which represents more than 100 States, keeps its Members broadly informed of the latest developments in atomic science and technology, arranges the provision of assistance to interested countries in connection with their activities and research in the peaceful uses of atomic energy, and applies safeguards to such activities in accordance with the Treaty on the Non-Proliferation of Nuclear Weapons.

The Soviet Union consistently supports the wide range of activities of the Agency and takes an energetic part in the implementation of its programmes and activities, especially in relation to safeguards, the International Nuclear Information System (INIS), environmental protection work and the provision of technical assistance to developing countries; it supplies, moreover, Soviet instruments and equipment to

interested countries. The Soviet Union also actively participates in other bodies established under the auspices of the United Nations and the IAEA such as the United Nations Scientific Committee on the Effects of Atomic Radiation, the International Nuclear Data Committee and so on.

The strengthening and development of international relations in atomic science and technology is absolutely essential to the further progress of mankind. During his visit to Moscow State University in 1965 the famous Danish scientist Niels Bohr said, "The contemporary achievements of science have been made possible through the co-operation of scientists from all over the world". People began to realize this with striking clarity even at a time when the peaceful atom had just appeared on the world stage. The establishment in 1956 of the Joint Institute of Nuclear Research (JINR) at Dubna, the largest international research centre of the socialist countries, the doors of which are always open to other countries as well, was a good example of how the efforts of many nations could be united on a friendly basis.

The JINR grew out of two Soviet scientific laboratories engaged in work on high-energy particle physics. The 680 MeV synchrocyclotron in operation in these laboratories and the 10 GeV synchrophasotron, construction of which was just being completed, were bequeathed to this newly established international centre by the Soviet Government. During the years of its existence, the JINR has constantly studied and improved its methods of organizing collaboration and has developed its material infrastructure. At present it employs more than 3000 persons, of whom more than 600 are scientists. The team of scientists from socialist countries has achieved notable successes in nuclear physics and has quite rightly come to occupy a leading place in the world science, on a par with international centres such as the European Organization for Nuclear Research (CERN).

In April 1955, the first Agreements on the provision of scientific and technical assistance by the Soviet Union for the construction of research reactors and accelerators, and for the training of personnel, were signed. These Agreements made it possible in a short time to establish atomic research centres in socialist countries, and some of these centres have now become large research institutions. Even in the early stages of collaboration nine reactors, six cyclotrons and seven radiochemical and radiophysical laboratories with modern equipment and instruments were constructed and put into operation with Soviet technical assistance. More than 1000 highly qualified Soviet specialists were sent to member countries of the Council for Mutual Economic Assistance (CMEA) alone. More than 3000 specialists and young scientists have studied and received training in the Soviet Union. In the first stage of collaboration joint work on power plant construction was carried out with the German Democratic Republic and the Czechoslovak Socialist Republic. During the construction of atomic power stations in these countries, just as in the rest of the world during those years, there arose fundamental problems which had to be solved before a correct direction could be given to the development of atomic power. The overall plan of socialist economic integration adopted at the 25th session of the Council for Mutual Economic Assistance laid down a broad programme of nuclear power development for CMEA member countries. Thus, while initially the Soviet Union provided scientific and technical assistance to fraternal countries for the development of a national scientific research base, we have now reached the stage where equal partners are collaborating in making available the results of their

joint work for the well-being of their own peoples and of the peoples of other countries, and for the strengthening of peace throughout the world.

In 1955 the Soviet Union began collaborating with various countries. By now more than 35 agreements have been signed and have entered into force, providing for extensive contacts, exchanges of delegations, joint projects and the construction of reactors and various other facilities related to the peaceful uses of atomic energy.

The commissioning of the first nuclear power station in the Soviet Union could not but affect the development of nuclear power in the rest of the world, a form of power which in the coming decades will determine the energy balance of our planet.

The first atomic power station became a scientific laboratory, a treasure house of experience and a forge for training personnel.

Since it went into operation it has been visited by more than 2000 delegations, 60 000 persons in all, including eminent scientists like Homi Bhabha, John Bernal, Sigvard Eklund, Glenn Seaborg, Gustav Herz, Francis Perrin and many others. They all recognized the great significance of the first atomic power station. Jawaharlal Nehru wrote in the visitors' book that he had been glad to visit the station and was fascinated by it; it helped one, he said, to visualize the future which was already unfolding.

The first atomic power station symbolized the triumph of the human intellect, the inexhaustibility of scientific progress and the unflinching aspirations of the peoples of the world for peace. These aspirations, together with the efforts of men of good will and expanding international collaboration, contributed in large measure to the signing of the Moscow Test Ban Treaty in 1963, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies in 1967, the Treaty on the Non-Proliferation of Nuclear Weapons in 1968, the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and Ocean Floor and in the Subsoil thereof and, quite recently (1973), the agreement between the Soviet Union and the United States of America on averting the threat of nuclear war.

The general relaxation of international tension inspires confidence in durable peace and in the future progress of mankind.