

## Radii Ivanovich Ilkaev (on his 80th birthday)

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October 9, 2018 was the 80th birthday of the distinguished Russian scientist and organizer of nuclear-weapons activity, Radii Ivanovich Ilkaev. His merits and achievements are great and diverse. Radii Ivanovich Ilkaev is one of the brightest and greatest outstanding figures to work on the creation of nuclear weapons.

R I Ilkaev's main contributions to the nuclearization of our country were the design of special products with unique characteristics and the assurance of their reliability and safety.

The theoretical models were developed and unique experimental information concerning the behavior of substances in the region of high energy densities was obtained under the guidance and with the personal participation of R I Ilkaev.

R I Ilkaev is an eminent organizer of scientific and technical activity in the development of nuclear weapons and scientific and technical maintenance of the Russian nuclear arsenal, science-intensive nonnuclear armament, and scientific and technical cooperation.

Radii Ivanovich Ilkaev was born in the village of Tutura in the Irkutsk region into the family of a teacher. In 1956, he finished secondary school in the town of Pushkin (now Tsarskoe Selo) with Gold medal. In 1961, he graduated from the Faculty of Physics of Leningrad State University, majoring in theoretical physics, and went to work at the All-Union Scientific Research Institute of Experimental Physics (VNIIEF, now the Russian Federal Nuclear Center (RFNC)—VNIIEF, Sarov, Nizhny Novgorod region), where he has been working till the present day.

From 1961 to 1988, R I Ilkaev worked in the Theoretical Department of the Institute, where he moved from an entry-level scientist to the Leading Researcher in the development of nuclear and thermonuclear charges, Head of the Theoretical Department. During this time, he became a distinguished scientist who made a great contribution to the development of physico-mathematical methods related to the creation of nuclear weapons and elaboration of particular arms systems. In the same period, a number of special products natural experiments were carried out under his direction and with his personal assistance. R I Ilkaev took part in more than ten nuclear tests.

R I Ilkaev is the most prominent investigator of boosting, which is exclusively important for thermonuclear weapon efficiency. He is a founder of scientific schools in the field of boosting and nuclear weapons safety.

For the development of an original research method combining thorough theoretical studies and fine experimen-



Radii Ivanovich Ilkaev

tal potential using unique equipment, R I Ilkaev was awarded the 1968 State Prize of the USSR.

He proposed original physical solutions and substantiated their scientific feasibility and reliability. On this basis, the custom products that were an effective response to new types of armaments in the USA were produced under his guidance. For his work in this area, R I Ilkaev was again awarded the State Prize of the USSR in 1981.

In 1968, he defended his Candidate of Sciences thesis, and in 1980 his thesis for the degree of Doctor of Sciences in Physics and Mathematics.

For the design of custom products with new properties heightening the efficiency of armament systems, R I Ilkaev was awarded the 1994 State Prize of the Russian Federation.

R I Ilkaev's activities have always been aimed at solving a wide range of the most important issues concerning ensuring nuclear weapons security. A series of theoretical and experimental studies in this area was done by him personally and with his participation. In recent years, he has paid great attention to the development of new approaches to ensuring the prevention of special-purpose products from unauthorized use.

From 1988 to 1993, R I Ilkaev was Head of the leading construction division and the First Deputy Chief Constructor, and from 1993 he was the First Deputy Research Supervisor of VNIIEF.

One of R I Ilkaev's achievements during those years was his well-directed activity aimed at maintaining the integrity of RFNC–VNIIEF and of the nuclear weapons complex of Russia.

From 1996 to 2007, R I Ilkaev was Director of RFNC–VNIIEF, from 2008 to 2016 Research Supervisor at RFNC–VNIIEF, and from 2017 an Honorary Research Supervisor at RFNC–VNIIEF.

At the present time, the scientific and technical deployment, efficiency, reliability, and safety of the Russian nuclear arsenal are being maintained in the absence of direct natural tests of the nuclear component. The solution to this problem being worked out by the Nuclear Center under the scientific guidance of R I Ilkaev constitutes one of the most complicated scientific and important practical problems directly related to the protection of Russia's national security.

In 2000, he was elected a Corresponding Member and in 2003 a Full Member of the Russian Academy of Sciences (RAS). For his outstanding scientific achievements, R I Ilkaev was rewarded A D Sakharov Gold Medal of RAS in 2006, and in 2017 he was elected a member of the Bureau of the Division of Physical Sciences of RAS.

He is Chairman of the Scientific and Technical Council (STC) of the Nuclear Weapons Complex (NWC) of the State corporation (SC) Rosatom (STC NWC SC Rosatom), Deputy Chairman of STC SC Rosatom, Chairman of the Special Council of the Higher Certification Committee (HCC), Chairman of the STC section of the Military-Industrial Complex (MIC), Chairman of three dissertation councils of RFNC–VNIIEF, Chairman of the section of STC NWC SC Rosatom for special systems on new physical principles, Head of the subfaculties of the National Research Nuclear University — Moscow Engineering Physics Institute (NRNU MEPhI) and the Moscow Institute of Physics and Technology (MIPT), Head of the Volga regional center of the Russian Academy of Rocket and Artillery Sciences (RARAS), and a member of the RARAS Presidium.

R I Ilkaev took an active part in implementing the great achievements in the development of laser techniques with the production of concrete specimens.

Radii Ivanovich's many years efforts in the development of fundamental research have been aimed at the advancement of the Nuclear Weapons Complex in the absence of nuclear tests and have been supported by the government of the country and the State Corporation Rosatom. At the present time, RFNC–VNIIEF plays a determining role in working out a long-term program of fundamental studies.

A unique multistage system of specialists' training with Khariton School readings as an important part was organized on the initiative of R I Ilkaev and with his most active participation. Radii Ivanovich has continuously headed the Organizing Committee of this remarkable school for 18 years already. Hundreds of senior school-children from dozens of towns in our country participate in the work of this school.

For scientific and technical achievements in strengthening the national security of Russia, R I Ilkaev received the 2nd, 3rd and 4th degree Orders of Merit for the Fatherland, the acknowledgment of the President of Russia, the Order of Honor, the Marshal G K Zhukov State Prize, and the Prize of

the Russian Government. R I Ilkaev was awarded the honorary title of Honored Worker of Science of RF.

R I Ilkaev attaches great importance to the popularization of scientific and technical progress in the Nuclear Weapons Complex and to the activities of luminaries of Russian and world science. In 2016, the Prize of the Presidium of RAS was given for a series of books about the creative life of Academicians Yu B Khariton, A D Sakharov, Ya B Zel'dovich, and I V Kurchatov. One of the authors of these books is R I Ilkaev. The basis of R I Ilkaev's efficient work is intergenerational continuity and continuity in achievements.

R I Ilkaev's keen sense of personal responsibility and creative potential give rise to great respect.

For his merits and achievements in the life of society R I Ilkaev was given the ranks of Honorable Citizen of Sarov, Honorable Citizen of the Nizhny Novgorod region, and Honorable Citizen of the Republic of Mordovia.

R I Ilkaev has well-deserved authority among scientists and specialists at RFNC–VNIIEF, the atomic branch of national science, and the Russian Academy of Sciences, as well as among the leaders of our country and the region.

We heartily wish you, dear Radii Ivanovich, many years of sound health, new advances in work, strength of mind, and fulfillment of your most daring undertakings for the benefit of our Motherland!

Happiness and good fortune to you and your family!

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