

April 4, 2000

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: Janice Dunn Lee, Director **/RA/**
Office of International Programs

SUBJECT: VISIT OF LEONID BOLSHOV, DIRECTOR, NUCLEAR SAFETY
INSTITUTE, RUSSIAN ACADEMY OF SCIENCES, APRIL 6,
2000

Dr. Leonid Bolshov, Director, Nuclear Safety Institute (known also by the Russia acronym, IBRAE) of the Russian Academy of Sciences, will meet on April 6, 2000, with Chairman Meserve, Commissioner McGaffigan and Dr. William Travers, Executive Director for Operations. Dr. Bolshov is also scheduled to meet with Ashok Thadani and members of the Office of Research. Dr. Bolshov is Co-Chairman of the Executive Committee of the U.S.-Russian Joint Coordinating Committee on Radiation Effects Research. He is in the U.S. to attend the Regulatory Information Conference.

Dr. Travers met with Dr. Bolshov on March 21 during his brief visit to Moscow. Dr. Bolshov's last visit with the Commissioners was on November 8, 1999.

Gordon Fowler of the Office of International Programs will accompany Dr. Bolshov to his appointments.

Attachments: 1. Schedule of Dr. Bolshov's Visit
2. Professional Biography
3. Background and Talking Points

cc: SECY
OGC
EDO
OPA
OCA
CFO
CIO

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415-2329

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SCHEDULE OF MEETINGS, APRIL 6, 2000

9:30-10:00	Commissioner McGaffigan
10:30-11:00	Chairman Meserve
11:15-11:45	William Travers, EDO

BIOGRAPHICAL INFORMATION ON L. BOLSHOV

Doctor of physical and mathematical sciences, Professor Leonid A. Bolshov is the Director of the Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE).

He graduated from the Physics Department of Moscow University in 1970 in theoretical physics and, after holding various research positions, became head of the laboratory in the Troitsk Branch of the Kurchatov Institute of Atomic Energy. His main fields were theory of solid surfaces, laser fusion, and theoretical and mathematical modeling of laser-matter interaction. He received a Candidate of Sciences degree from the Landau Institute for Theoretical Physics and a Doctor of Sciences degree from the Kurchatov Institute.

In 1988, he was awarded the State Prize in physics for his studies of solid surfaces. He has lectured at Moscow Physical-Technical Institute for 15 years as a full professor. He is a chair of the IBRAE-based branch of the Institute.

In 1986, he participated in liquidation of consequences of the Chernobyl accident, including research and development for the core catcher under the 4th unit. His main field after the Chernobyl accident has been nuclear safety studies.

In 1988, he was nominated as First Deputy Director of the new Nuclear Safety Institute of the Russian Academy of Sciences and was elected as Director of the Institute in 1991.

Professor Bolshov is the Vice-Chairman of the Scientific Council on Nuclear Energy of the Russian Academy of Sciences. He is also a member of the other Scientific Councils of the Ministry of Ecology, the Ministry for Atomic Energy and the Russian Academy of Sciences. He is a member of the Board of Editors of two professional magazines and has produced about 150 publications.

His current activities include development of Russian policy on nuclear power, waste management and emergency planning, as well as modeling and system analysis of severe accident phenomena and their radio-ecological consequences.

He is Co-chairman of the Executive Committee of the Joint Coordinating Committee for the U.S.-Russian Cooperative Agreement on Radiation Effects Research.

BACKGROUND AND SUGGESTED TALKING POINTS

IBRAE/NRC Research Agreement

Background

In 1990, NRC entered into an agreement with the Kurchatov Institute to conduct research for NRC involving experimental work with hydrogen and analytical work in code modeling. Under this agreement, the analytical work was done by Prof. Bolshov's organization, the Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE).

In 1995, NRC entered into a separate agreement with IBRAE to:

- continue code modeling
- develop containment failure criteria
- assess NRC's RELAP thermal-hydraulic code using Russian data for low flow conditions

This work was continued in 1997, 1998, and 1999. A paper describing the 1999 work and plans for 2000 was provided to the Commission on March 24, 2000 (SECY-00-0072).

The results of the work have led to code improvements, expanded databases and confirmatory research information for NRC. The work has also helped the Russians become familiar with USNRC analytical tools, safety issues and Western approaches to safety.

NRC Funding for IBRAE is \$80K for FY 2000 (the same as for FY 1999)

IBRAE is also involved in RASPLAV, an NEA-sponsored experimental project to investigate the heat load on a reactor vessel during severe accident conditions.

Suggested Talking Point:

The NRC staff reports that the research that we have done together has been mutually beneficial. Although there have been substantial budget reductions on our research program, we are hoping that we can continue our joint work at the same level as last year.

IBRAE Work for GAN on Core Conversion

Background

Because of the current policy review in the U.S. and in Russia of the core conversion program, the subject should not be broached at this time. However, if Dr. Bolshov initiates discussion, the following should be useful.

IBRAE has an understanding with GAN that it will perform safety analyses for GAN to support licensing of the conversion of the cores of the three production reactors at Tomsk and Krasnoyarsk should the project proceed. These reviews will include examining codes and replicating analyses done by the designers. The issue seems to be whether existing codes can accurately analyze the existing cores, and whether conversion is safe and can be licensed. The initiation of this work depends on conclusion of an agreement between NRC and GAN (which is on hold awaiting clarification of U.S. policy on the core conversion project) and funding by DOD's Defense Threat Reduction Agency.

Suggested Talking Points:

I understand that our two governments are reviewing the core conversion option. In the meantime, it is probably inappropriate to speculate about the future.

Topics Discussed During the Last Visit with the Commissioners (November 8, 1999)

Future of the Nuclear Industry

- Whether the nuclear industry can be revived (through license renewal and industry restructuring);
- The need to stem the decline of expertise in the nuclear field.

Research Needs

- The need to expand research in the international community to compensate for budget reductions domestically;
- The utility of PRA analysis in predicting plant behavior;
- The acceptance of PRA for safety analysis in Russia in order to promote the country's export market.

IBRAE's Work

- IBRAE's close relationship with GAN, but the absence of funding for projects;
- IBRAE's expertise in code development.
- IBRAE's close relationship with Minatom, which has funded projects, particularly on emergency response;

U.S.-Russian Relations

- The effect on NRC's assistance program of U.S. sanctions due to Russia's policy with Iran;
- The status of the core conversion program.