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## MEMORANDUM

Proposals of the Nuclear Weapons Institutes of the Russian Federation, VNIIEF and VNIITF, (Arzamas-16 and Chelyabinsk-70) and US National Laboratories, LANL and LLNL, for collaboration in the fields of the surety, reduction, and nonproliferation of nuclear weapons, and scientific research.

The heads of the Institutes/Laboratories have conducted historic exchange visits during the month of February 1992. They recommend to their ministries/departments scientific and technical collaboration with the following objectives, areas and methods:

### I. Objectives of Joint Scientific and Technical Collaborations

1. To enhance safety and security of nuclear weapons during reduction and dismantlement,
2. To prevent the proliferation of nuclear weapons knowledge by weapons scientists from the institutes/laboratories and plants and to promote conversion/diversification,
3. To prevent the proliferation of nuclear weapons to nonnuclear states and seizure of nuclear weapons by terrorists,
4. To develop mechanisms for joint nuclear emergency response,
5. To enhance the safety of nuclear weapons remaining in the stockpiles of Russia and the United States,
6. To prevent unauthorized use of remaining weapons in the stockpiles of Russia and the United States,
7. To promote the protection and clean up, where necessary, of the environment at the nuclear weapons facilities.

### II. Areas of Scientific and Technical Collaboration

Collaboration in some scientific and technical areas can address the objectives without damaging national security while benefitting all parties:

1. Nuclear weapons safety issues, including
  - modeling and experimentation to investigate the sensitivity of explosives,
  - discussions of nuclear weapons safety standards and criteria;

- development of technical requirements for transportation and storage containers for nuclear warheads and their components.
2. Development of technologies for nonproliferation of nuclear weapons, including
    - detection and disablement of stolen or improvised nuclear devices,
    - development of accountability mechanisms for nuclear materials,
    - detection and analysis of potential nuclear weapons proliferation,
    - development and monitoring and verification technologies.
  3. Nuclear weapons emergency/accident response, including
    - Exchange of data and models relating to the dispersal of radioactive material,
    - Equipment and training of special accident response teams.
  4. Nuclear materials and processing, including
    - Design of safe facilities for disposal of nuclear materials,
    - novel methods of waste treatment.
  5. Research and development on environmental protection and cleaning, including
    - advanced techniques of monitoring and characterization of pollutants,
    - advanced cleanup techniques.
  6. Scientific research for peaceful purposes, including
    - controlled thermonuclear fusion,
    - superhigh magnetic fields,
    - properties of matter and processes at high energy densities,
    - synthesis of new materials,
    - mathematical modeling.
  7. Civilian technologies, including
    - medicine,
    - ecology and environment,
    - safe nuclear power.

### III. Methods of Scientific and Technical Collaboration

1. To ensure that the important issues of nuclear weapons are addressed with the fullest consideration for safety, security and nonproliferation by technical experts with experience in nuclear weapons design and engineering we propose to our governments to establish a Scientific and Technical Council for Nuclear Weapons Surety, Reduction and Nonproliferation. This council will coordinate the collaboration of the nuclear

weapons institutes of the Russian Federation and the U.S. weapons laboratories, and advise their respective government ministries/departments.

The Council includes representatives of the following organizations:

VNIIEF(Arzamas-16)  
VNIITF(Chelyabinsk-70)  
Lawrence Livermore National Laboratory  
Los Alamos National Laboratory  
Sandia National Laboratories

2. The proposed forms of collaboration will include working groups, symposia, seminars, consultations, joint experiments, joint projects, exchange of experts, for visits and fellowships, publication of joint monographs and reference materials, as well as conclusion of direct agreements for specific technologies and equipment.

3. All forms of collaboration shall be realized without revealing national secrets of either side and shall prevent proliferation of nuclear weapons and nuclear weapons knowledge.

All parts of this memorandum of proposals are subject to approval by the U.S. Department of Energy and the Ministry of Atomic Energy of the Russian Federation.

Both sides agree not to release this memorandum to the public until it is approved by both government ministries/departments.

VNIIEF Director      VNIITF Director      LANL Director      LLNL Director

V. Belugin      V. Nechai      S. Hecker      J. Nuckolls

*Original signed on 2/29/92*