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MEMORANDUM FOR BG JOHN GORDON
NATIONAL SECURITY COUNCIL

SUBJECT: Nuclear Warhead Dismantlement/Destruction

Attached is the paper on Nuclear Warhead Dismantlement/Destruction, Issue 6, as requested in your October 4, 1991, Nuclear Initiatives Work Plan. An earlier draft of the paper was circulated for interagency comment and revisions, as discussed in the PCC Subcommittee on November 7, 1991, have been incorporated.

Anthony F. Czajkowski
Anthony F. Czajkowski
Acting Director
Office of Arms Control
Defense Programs

Attachment

cc: Douglas Graham, Office of Secretary of Defense
MG Roland LaJole, Joint Chiefs of Staff
Robert Walpole, Department of State
Bradley Gordon, Arms Control and Disarmament Agency
[Redacted], Central Intelligence Agency
Richard Davis, National Security Council

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Department of Energy Document Review	
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NSC Nuclear Initiatives Work Plan Issue 6:
Nuclear Warhead Dismantlement/Destraction

I. PURPOSE

On September 27, 1991, President Bush proposed beginning "discussions with the Soviet Union to explore cooperation" in three areas, one of which is that, "we should explore joint technical cooperation on the safe and environmentally responsible storage, transportation, dismantling and destruction of nuclear warheads." On October 5, 1991, in his response to the President's initiative, Gorbachev stated Soviet "readiness to enter into a detailed dialogue with the United States on the development of a secure and ecologically sound technology for the storing and transportation of nuclear warheads, the means of using nuclear weapons and the raising of nuclear security". While the specific topic of "warhead dismantlement and destruction" was not addressed by Gorbachev, Soviet response to President Bush's Initiatives included expressions of willingness to discuss all the issues proposed. Unofficial Soviet statements suggest that detailed dialogue in the area of warhead dismantlement could facilitate an otherwise difficult task which could only be carried out over a very long period of time. In response to NSC tasking, this paper outlines topics that might be included in the "warhead dismantlement and destruction" area and addresses how the U.S. should organize efforts to pursue bilateral discussions in this area. Because of extensive commonality between the topics and objectives of the two papers, this paper should be read and discussed in the context of the NSC tasked paper on Implementation of Initiative on Safety and Security (Issue # 5).

II. BACKGROUND

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While the U.S. routinely dismantles retired warheads, having done so since about the mid-1950s,



there is no procedure available for dismantlement. This was also the case for U.S. warheads prior to about 1954 when it was recognized as being necessary to disassemble retired warheads and recover the nuclear materials for recycling and reuse in new warheads. The U.S. now has well exercised, safe, secure, and environmentally

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responsible capabilities for nuclear warhead dismantlement including pre-disassembly staging and post-disassembly material and component recycling, storage, and waste disposition.

In the context of the Presidential Nuclear Initiatives discussions on warhead dismantlement and destruction, the U.S. should pursue as its overall objective the facilitation of Soviet warhead dismantlement and appropriate disposition of the disassembled parts or materials. It is very much in U.S. interests that Soviet warhead dismantlement activities be accomplished in a timely fashion and that they are consistent with responsible safety, security, and environmental standards. Exchanges of information about these activities, in some cases, may enable the Soviets to accomplish some dismantlement operations sooner than otherwise would have been possible. It is assumed in this joint technical cooperation that each side would accomplish its own dismantlement and destruction operations according to a schedule of its own choosing and without direct involvement of representatives of any other party. If one or more Republics should require that nuclear warheads be dismantled or destroyed at facilities other than those located in the Russian Republic, additional problems must be addressed.

An essential precondition for effective implementation of the initiative is that any discussions must not provide to the Soviets -- or through them, to any other state or subnational group -- information on, or access to, sensitive data, technologies, or procedures that could improve their military capabilities, readiness posture, or ability to compromise the reliable operation of U.S. nuclear weapons. Nuclear weapons and materials production processes are of special concern because of the associated nuclear proliferation risks. To ensure full protection of such data, technologies, and procedures, each topic selected for possible discussion with the Soviets must be unclassified or declassified and subjected to thorough "red teaming" before tabling with the Soviets.

III. TOPICS FOR DISCUSSION

During the initial technical discussions the following topics might be discussed with mutual benefit in understanding how the sides might facilitate their own planned stockpile reductions in terms of dismantlement of nuclear warheads.

- A. Nuclear Weapons Management. These general topics are suggested as initial information, important for understanding how the U.S. manages its nuclear dismantlement operations. This, along with comparable characterizations of Soviet procedures and decision making processes, would be shared as general information on each other's weapon dismantlement complex, facility and weapons safety processes, safety standards and criteria, security

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standards, modes of transportation, and safety analysis methodology.

- Roles and responsibilities of Department of Defense (DOD), Department of Energy (DOE), Nuclear Weapons Council (NWC)
- Key surety groups/committees (e.g. Nuclear Explosives Safety Study Group)
- Details on the Department of Energy Personnel Assurance Program (PAP) program for critical duty personnel

This area would be the same as that described for NSC Issue Paper Five on joint technical cooperation on nuclear safety, storage, security, and transportation. Unless there are different technical and policy experts involved, there would be no need to repeat this discussion.

B. Warhead Dismantlement or Destruction Operations. The term "dismantlement" as used here should only be construed as referring to those activities necessary to retire warheads so completely that they could not ordinarily be reassembled into detonable warheads without extensive refabrication of materials and components.

Warheads are disassembled and the subassemblies, components, base materials, or waste materials are disposed of in ways which meet approved safety, security, and environmental standards.

Any nuclear parts remaining from dismantlement of Center or Republic nuclear warheads not destroyed should be afforded especially strict safety and security protection to prevent diversion for unauthorized uses. Non-nuclear parts removed from Center or Republic dismantled nuclear warheads should be destroyed. Since dismantlement of large numbers of warheads is a process requiring years rather than weeks, emphasis on early, irreversible field demilitarization of tactical nuclear weapons held by the Center and the Republics may be a most important option. Demilitarization is discussed more fully in the November 7, 1991, Alessi memorandum on Strawman Measures for Soviet Tactical Nuclear Weapons.

The following areas may be important in discussions with appropriate technical experts from the Center and the Republics:

1. Technology and Processes:

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- General description of U.S. warhead disassembly and disposal
 - Safety specifications for component and subassembly containers
 - Specifications for gravel gerties (disassembly areas) at the DOE Pantex Plant
 - Dismantling operations involving high explosives
 - Disposition or long-term storage of waste high explosive, light metallic compounds, low level radioactive waste, heavy metals in slurry or solution, PCBs, asbestos, tritium, and mixed waste (radioactive plus other hazardous waste materials)
 - Disposition and storage of recovered special nuclear materials (plutonium and enriched uranium), including necessary environmental protection measures
2. Physical Security and Safety Arrangements:
- Safety Orders -- Safety standards and implementation
 - ~~Safety risk assessment methodology as used in U.S. nuclear weapon dismantling facilities~~
 - Radiation safety and standards
 - High explosive safety and standards
 - Environmental monitoring technology
 - Physical security standards and integration of security procedures
 - Security force training/certification requirements
 - Soviet observers at unclassified portions of Nuclear Explosive Safety Study Group studies of weapon ~~disassembly operations and transportation; master studies would be most conducive to unclassified discussions since the issues are treated in a generic fashion~~
3. Nuclear Control Arrangements:
- Two person concept
 - Custodial responsibilities from retirement until completed disassembly

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4. U.S. National Environmental Protection Act (NEPA), Resource Conservation and Recovery Act (RCRA), and Clean Air Act Activities -- Environmental Impact Statement and Environmental Assessment procedures at U.S. nuclear weapon dismantling and material storage facilities.

C. Follow-on Steps. The following are potential steps which may be implemented if initial discussions are assessed as mutually beneficial and both sides agree that further cooperation would be useful. These discussion topics represent yet an increased level of detail and, in some cases involve more sensitive technologies, if sharing such information were judged to be necessary to accomplish the U.S. objective of timely, responsible and safe Soviet warhead dismantlement.

- Specific safety issues associated with weapon dismantlement including transportation to disassembly facility
- Emergency response capabilities for security, safety, and environmental incidents -- expand any information exchange and assistance provided during the Chernobyl episode, including use of the U.S. Atmospheric Release Advisory Capability (ARAC).
- Observation of emergency response exercises
- Joint exploration of plutonium dispersal contamination and exposure concerns and dispersal consequence mitigation concepts
- Joint Nuclear Explosive Safety Study Group (NESSG) safety studies
- Visits to restricted areas of warhead dismantlement facilities and material and component storage facilities
- Conceptual discussion of access control and delay system features for storage facilities, including ~~automated personal identification/validation~~ technology, contraband detection, and passive/active barrier combinations

IV. Organizing U.S. Efforts.

For the U.S., the management, technical, and operational expertise for warhead disassembly and subsequent reuse or disposition of components and materials, including long term storage, resides within DOE. However, because pre-disassembly

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