

SO LITTLE TIME, SO MANY WEAPONS, SO MUCH TO DO

By CHRISTOPHER PAINE and THOMAS B. COCHRAN

The Bush administration is shying away from rigorous verification where it is most needed—the process of dismantling warheads in the disintegrating Soviet Union.

In November, just before Congress adjourned for the year, Senators Sam Nunn and Richard Lugar managed to resurrect bipartisan support for a package to help the disintegrating Soviet Union get rid of its nuclear weapons. The plan, dubbed the "Soviet Nuclear Threat Reduction Act of 1991," focused on the storage, transport, and destruction of warheads and on safeguards against proliferation. It passed overwhelmingly, 86-8.

The vote came after a lobbying visit by officials who run the Soviet nuclear weapons complex. "They made a very compelling case that they do need assistance," Republican Ted Stevens told his colleagues during Senate debate on November 25.

The Senate bill gave the president discretionary authority for—but did not mandate—spending up to \$500 million from the fiscal 1992 defense budget to assist in "planning and resolving technical problems associated with weapons destruction and proliferation." The next day, a House-Senate

appropriations conference committee reduced the figure to \$400 million—less than one-seventh of one percent of the \$291 billion defense budget.

Throughout the Senate's consideration of the Soviet aid package, which also included \$200 million (later reduced to \$100 million) for military transport of humanitarian aid, the Bush administration was silent. Robert Byrd, chairman of the Senate Appropriations Committee, asked Republican supporters of the Nunn-Lugar amendment shortly before the vote, "I take it the president supports this?" Minority Leader Robert Dole responded, "We do not yet know."

After the lopsided vote, Nunn observed, "Everyone I have talked to in the administration—and I have talked to many of them—basically is in favor of this initiative individually, but collectively the best they have been able to muster is that they do not oppose it. That is really not leadership. We did not pass it because the White House was involved. We passed it with a very inactive and inert White House."

The administration's messages on the destruction of nuclear warheads have been decidedly mixed. On the one hand, George Bush's dramatic unilateral initiatives have opened the way for

the destruction of a significant number of nuclear weapons. But since the president's September initiatives and Gorbachev's positive response to them, administration policy on nuclear warhead and fissile material arms control measures has been in limbo. No clear policy direction has emerged, even as the defense and nuclear energy ministries of the former Soviet Union seek U.S. assistance to store and dismantle some 15,000 nuclear warheads.

The rapid political disintegration of the Soviet Union means that the country's nuclear arsenal is no longer securely under the control of an authoritarian central government. Of particular immediate concern is the vast arsenal of tactical nuclear weapons that are not firmly embedded in the command and control system for strategic nuclear delivery systems, but which are stored separately at sites in newly independent republics or deployed with conventional forces in the field.

Worries about a potential breakdown in control of these warheads, along with the swift evaporation of the Soviet military threat to NATO, lay

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A how-to session on warhead destruction

From October 18 to 24, 1991, a Soviet delegation sponsored by the foreign ministry joined U.S. scientists in Washington, D.C., for informal discussions of the verified elimination of nuclear warheads.

The Federation of American Scientists and the Natural Resources Defense Council have been sponsoring unofficial dialogues with Soviet officials on this subject since June, 1991. But the October workshop was strikingly timely, coming as it did after the Bush-Gorbachev disarmament initiatives and while Congress was considering a Soviet aid package.

Among the members of the Soviet delegation were Victor Mikhailov, deputy minister for the defense industry in the Ministry of Atomic Power and Industry (MAPI); Evgeni N. Avrorin, scientific director of the Institute of Technical Physics, one of two Soviet nuclear weapons design laboratories; and Alexei Y. Manzhosov, first secretary of the foreign ministry's Arms Limitation and Disarmament Directorate. (The U.S. Energy Department barred participation of scientists from U.S. national laboratories; only one defied the ban.)

The workshop focused on the weapons to be dismantled under the latest initiatives: artillery shells, land mines, short-range missile warheads, and bombs. Participants agreed that fissile material from these weapons, and others being retired without replacement, should not be used in future weapons—and that the U.S. and Soviet presidents should soon declare this. They recommended that the materials then be stored in a mutually verifiable manner pending later use as nuclear reactor fuel, under international safeguards, or until a plan for permanent and safe disposal is devised.

Participants agreed that plutonium disposal would require further study. Although neither country now uses plutonium in civilian power reactors, MAPI participants said they would like to do so, either in breeder reactors or as mixed-oxide fuel in conventional power reactors. There was general agreement that the highly enriched uranium recovered from nuclear warheads could be fabricated into submarine reactor fuel or converted to oxide form and diluted to low-enriched fuel for use in civilian reactors.

An important step would be for each country to declare both the number of weapons in each category slated for dismantlement and the amount of fissile material they contain. A further "desirable" step would be to declare *total* numbers of warheads in each country's stockpile and total inventories of fissile materials both within and outside of nuclear warheads.

MAPI representatives said that the ministry has a considerable capacity to dismantle warheads but limited storage facilities in the Russian Federation. They said that without technical and financial assistance from abroad, withdrawing and dismantling short-range weapons could take nine years.

Bilateral safeguards should be applied as soon as possible to weapons to be dismantled—even while the weapons are still deployed, in the view of Soviet participants. Warheads or their storage or transport containers could be sealed and tagged; inspectors could immediately begin periodic checks to verify that all weapons are at their declared locations and have not been tampered with before transport to dismantlement facilities. The workshop identified a number of appropriate technical arrangements.

Participants supported a bilateral cutoff in the production of additional fissile material for weapons. While the United States is not now producing either highly enriched uranium or plutonium, the Soviets are still producing plutonium at perhaps three to five of the 14 production reactors that were operating in the mid-1980s. President Mikhail Gorbachev seeks formal negotiations on a fissile material production ban, but the U.S. government has so far declined.

Subsequent meetings were scheduled for Moscow and Kiev; these would include representatives of Ukraine and the Russian Federation.

—C.P., T.B.C.

behind the unilateral reduction and restructuring of U.S. nuclear forces announced by President Bush in a televised address to the nation on September 27. The president announced that all remaining ground-based U.S. tactical nuclear weapons and an unspecified number of naval nuclear weapons would be removed from overseas storage sites and surface ships and destroyed. He challenged the Soviet Union to do the same and declared that "more can be done to insure the safe handling and dismantling of Soviet nuclear weapons." He proposed discussions with the Soviet Union to explore physical security arrangements, command and control, and "joint technical cooperation on the safe and environmentally responsible storage, transportation, dismantling, and destruction of nuclear warheads."

The statement seemed to signal a major change of policy favoring direct controls on nuclear warheads and fissile materials. Since 1988, members of Congress had joined with a number of nongovernment organizations in urging that treaties include provisions for verified dismantlement of nuclear warheads—not just of missiles and other delivery systems; for safeguarding fissile material recovered from the weapons; and for a halt to the production of additional fissile material. The administration was apparently reversing its former opposition to these measures.

But the president did not raise the all-important topic of how destruction of warheads was to be verified. The day after his September speech, the Defense Department put out a Strategic Arms Reduction Treaty fact sheet that included a brief section entitled "Verification of the President's Initiative," referring to the unilateral moves. It stated: "With regard to the SNF [short-range nuclear forces] and naval systems, we do not envision any formal verification regime, although we are willing to discuss possible confidence building measures with the Soviets."

This new flexibility was an abrupt—and welcome—departure from the usual mantra of "effective verification" so often invoked in the past to ward off arms control agreements, such as a nuclear test ban, that the Reagan-Bush team actually opposed purely for policy reasons. But the shift also raised ques-

tions. The administration was suggesting, as the Soviet Union fell apart, that a mere "exchange of information" would suffice to establish the whereabouts and eventual elimination of about 15,000 nonstrategic Soviet nuclear weapons—artillery shells, land mines, short-range missile warheads, air defense warheads, and naval weapons—deployed throughout the republics.

It is puzzling that the administration would shy away from rigorous inspection measures for the storage and elimination of warheads at the very moment when the need and opportunity for such measures is greatest. In the current fluid political climate, a U.S.-Soviet inspection regime could lay the groundwork for a universal nuclear inspection regime under the U.N. Security Council. The International Atomic Energy Agency inspections in Iraq have already increased the understanding of, and the support for, the existing international inspection regime, although it excludes nuclear weapons states. A universal, effective verification system could make it possible for the nuclear powers to slash their arsenals to a few hundred weapons each.

But some elements of the administration are apparently trying to preserve U.S. freedom of action with respect to nuclear materials and warhead production facilities. A senior Soviet arms expert, interviewed during a visit to Washington in October, explained it this way: "The Bush administration is trying to avoid institutionalization of the warhead elimination process." He noted that earlier Soviet attempts to require the elimination of warheads as part of the INF and START treaties had been discouraged by the Reagan and Bush administrations.

Dick Cheney was asked, during a September 28 Pentagon press conference, whether verification was "no longer a fundamental U.S. arms control policy." The defense secretary began with the standard response—"We are always concerned about verification"—but proceeded to cite reasons why "we can undertake these efforts and know that the Soviets are, in fact, responding." The reasons included increased freedom of information and debate within the Soviet Union, the collapsing Soviet economy,

and the "12 different types of on-site inspection" provided for in START.

In fact, START makes no provisions for verifying the dismantlement of warheads, or for safeguarding excess nuclear weapons materials so that they are disposed of or converted to peaceful use. And the "collapsing Soviet economy" actually raises new concerns about whether weapons materials might be sold for desperately needed hard currency.

In its dispersed stockpiles of weapons and fissile materials, the former Soviet Union possesses an estimated 700–1,000 tons of plutonium and highly enriched uranium. These materials are under nominal central authority, but this authority is eroding rapidly—as is the government's financial support of the Soviet Ministry of Atomic Power and Industry (MAPI). This situation creates both the conditions and incentives for unsafeguarded exports to earn hard currency. The individual state-owned enterprises that make up the Soviet nuclear industry may soon begin seeking freelance work abroad; one freewheeling enterprise spun off from the production complex is already doing so [see page 9]. The Russian Federation and the other newly independent republics have virtually no duly constituted legislative and regulatory authority over nuclear-related enterprises and exports. For the moment, the Soviet civil and military nuclear industries controlled by MAPI are essentially self-regulating.

A related concern is that highly trained nuclear engineers and technicians will emigrate and sell their skills to the highest bidders. Evgeni Mikerin, deputy minister in charge of nuclear materials production, told *Nuclear Fuel* European editor Mark Hibbs last October that "two or three" of his top nuclear fuel cycle scientists had already been approached to work for foreign countries. Some 3,000–5,000 MAPI technical employees hold sensitive clearances providing significant access to plutonium fuel cycle and enrichment technology. These skilled people earn less than Moscow bus drivers [see "Survival before Science," December 1991 *Bulletin*].

At the September 28 press conference, Cheney spoke about a process of

"consulting" on the "safe and environmentally sound destruction of nuclear weapons" and on "safeguarding systems." But he described these discussions as "more a sharing of information than it would be a treaty," and suggested that one result might be negotiation of "some kind of memorandum of understanding."

Ironically, during Senate proceedings on the ratification of the Threshold Test Ban Treaty in the fall of 1990, it was the Bush administration that cited the absolute requirement for "validated data"—that is, that no technical verification data would be admissible unless it had been independently gathered or confirmed by U.S. inspectors. This was to justify the use of expensive and highly intrusive monitoring techniques to obtain estimates of Soviet nuclear test yields.

The flip-flop on verification has led to some odd commentary from the Pentagon press office. "We would like them [the Soviet government] to tell us, and the Soviet people, what their actual [warhead] numbers are," noted a September 29 follow-up to the Pentagon press conference. But on October 1, Assistant Secretary Pete Williams declined to reveal the number of U.S. naval tactical weapons that were *not* to be eliminated. "I can't get into those numbers because those are still going to be part of the arsenal," he told reporters. The Bush administration has never disclosed the total number of warheads in the U.S. arsenal.

The September 29 statement went on to explain that the president's initiative "does not depend on our knowing how many weapons the Soviets have" because the "Soviets know how many they have, and they know they have far more than they need." In fact, the Soviets may not know how many warheads they have, or how much weapons-usable material they contain. Operational Soviet weapons are in the custody of several competing military organizations as well as MAPI, and thousands of older weapons may be in storage. Whether an accurate consolidated inventory of all these weapons exists is not known.

There is little doubt that arms control agreements to date exhibit a gross excess of verification per kiloton of disarmament. This is because verification in the past was part of the traditional

Cold War exercise to keep the other side from gaining some hypothetical advantage. Indeed, the administration's reluctance to push forward with nuclear warhead and fissile material controls—even when the U.S. production complex is shut down and Soviet facilities continue to operate—seems to stem from the bureaucracy's inability to think about verification in any other way.

An indication of this is the concern officials have expressed that providing for verification now could only "slow the process down." This was certainly true in the age of the U.S.-Soviet adversarial relationship, when every treaty provision required protracted negotiation. But today, verification measures need only be added to disarmament steps that have already been adopted, and the important measures could be implemented in a matter of months.

The key procedures are these: inventories of U.S. and Soviet nuclear weapons should be immediately declared and verified; identifiers (tags) should be placed on all weapons; and undeployed weapons should be placed in secured storage under bilateral or international safeguards.

For identification purposes, for example, unique plastic castings can be made of a small sector of a warhead casing in about five minutes. These can then be retrieved months or years later, when the warhead is to be destroyed, and compared with a fresh imprint or with the warhead surface itself. This would provide assurance that all warheads identified were actually destroyed.

Proper verification would bring immediate benefits. It would:

- help obtain a more accurate count of the weapons the Soviets have pledged to destroy in parallel with U.S. tactical weapons;
- make it more difficult for new republics or dissident factions to gain control of nuclear weapons on their territory;
- make it more difficult for a future government of the Russian Federation to reverse the decision and redeploy the warheads;
- sharply limit the possibility of ill-advised or clandestine sales of nuclear materials recovered from Soviet warheads;
- establish confidence in future ver-

ification of deeper cuts in nuclear weapons.

Regardless of which verification measures are applied, the process of returning Soviet weapons from their current deployment areas to a central dismantlement facility is likely to be protracted. Political obstacles remain, of course, but an equally pressing problem is the lack of weapons storage sites in the Russian Federation. MAPI officials said during their October visit to Washington that because they had no funds to construct additional storage capacity, some tactical warheads would probably remain in dispersed areas until the year 2000.

During their October visit, Victor Mikhailov, MAPI deputy minister in charge of weapons production, and other Soviet officials made the rounds on Capitol Hill, asking for \$200 million for warhead storage and \$500 million for a new facility to store plutonium components from dismantled weapons.

But the president did nothing. Nunn and his counterpart in the House, Les Aspin, first sought to encourage the president by providing a billion dollars of discretionary defense spending authority for humanitarian relief and military conversion assistance for the Soviets in the 1992 defense bill. But this broadly worded effort was slowed down by jurisdictional objections from the foreign relations committees. It then sank under the "domestic needs first" message of Democrat Harris Wofford's surprise victory over Bush's former attorney general, Richard Thornburgh, for the Senate seat of the late John Heinz of Pennsylvania [see page 3].

The successful package that Nunn and Lugar put together before the end of the session focused narrowly on warhead destruction and storage and on proliferation. But before the president can provide any of the assistance authorized, he must certify, among other things, that the recipient is "forgoing any use of fissionable and other components of destroyed nuclear weapons in new nuclear weapons" and is "facilitating United States verification of weapons destruction." Unless the United States agrees to reciprocal verification, it is hard to see how measures can be implemented that will give the president the information he

needs to make such a certification.

During a press briefing on December 3, a week after the Senate's action and two days after the lopsided referendum favoring Ukrainian independence, the Bush administration was still stalling on the warhead destruction issue. Pentagon spokesman Pete Williams said he had not "seen the language" of the Senate amendment.

"What precisely happens to the control over the nuclear weapons in the Ukraine is something that the Ukraine is going to have to work out with the central Soviet authority," Williams said. The U.S. government "will help in whatever way we can" to dispose of the nuclear weapons on Ukrainian territory. "Precisely what we'll do, I don't think we know yet, but they are aware of our willingness to help if we can."

A reporter asked Williams whether "Secretary Baker should get agreement from the Ukrainians that they have no problem with nuclear weapons on their soil being inventoried, tagged, neutralized, destroyed," and whether "we have the technical capability to promptly provide assistance for that kind of undertaking."

Williams responded: "I don't want to sign on to your scenario as being one that's the most likely, or in any way endorsed by us. . . . We could certainly provide technical assistance and guidance. But specifically what kind of arrangements we're going to work out, even whether we're going to do that, all those arrangements have yet to be discussed."

The sooner the international community can implement a systematic accounting of Soviet warheads, the greater will be our confidence that none of the weapons or their explosive materials have slipped into the wrong hands. And how far the world will ultimately proceed toward deep reductions and eventual elimination of nuclear weapons will depend greatly on the kind of international controls instituted now to track nuclear weapons and materials.

Soviet officials have been seeking both an arms control dialogue and technical assistance in this area. But the U.S. government has yet to demonstrate that it comprehends the full extent of the proliferation danger. Nor does it appreciate the unprecedented opportunity for U.S.-Soviet cooperation to verifiably eliminate the vast bulk of the world's nuclear weapons. ■