

# It's seven minutes to midnight

**C**hicago, February 27, 2002: Today, the Board of Directors of the *Bulletin of the Atomic Scientists* moves the minute hand of the “Doomsday Clock,” the symbol of nuclear danger, from nine to seven minutes to midnight, the same setting at which the clock debuted 55 years ago. Since the end of the Cold War in 1991, this is the third time the hand has moved forward.

We move the hands taking into account both negative and positive developments. The negative developments include too little progress on global nuclear disarmament; growing concerns about the security of nuclear weapons materials worldwide; the continuing U.S. preference for unilateral action rather than cooperative international diplomacy; U.S. abandonment of the Anti-Ballistic Missile (ABM) Treaty and

U.S. efforts to thwart the enactment of international agreements designed to constrain proliferation of nuclear, chemical, and biological weapons; the crisis between India and Pakistan; terrorist efforts to acquire and use nuclear and biological weapons; and the growing inequality between rich and poor around the world that increases the potential for violence and war. If it were not for the positive changes highlighted later in this statement, the hands of the clock might have moved closer still.

The *Bulletin of the Atomic Scientists*, founded by a group of World War II-era Manhattan Project scientists, has warned the world of nuclear dangers since 1945. The September 11 attacks, and the subsequent and probably unrelated use of the mail to deliver deadly anthrax spores, breached previous boundaries for terrorist acts and should have

been a global wake-up call. Moving the clock's hands at this time reflects our growing concern that the international community has hit the “snooze” button rather than respond to the alarm.

## Troubling trends and missed opportunities

More than 31,000 nuclear weapons are still maintained by the eight known nuclear powers, a decrease of only 3,000 since 1998. Ninety-five percent of these weapons are in the United States and Russia, and more than 16,000 are operationally deployed. Even if the United States and Russia complete their recently announced arms reductions over the next 10 years, they will continue to target thousands of nuclear weapons against each other.

Furthermore, many if not most of

the U.S. warheads removed from the active stockpile will be placed in storage (along with some 5,000 warheads already held in reserve) rather than dismantled, for the express purpose of re-deploying them in some future contingency. As a result, the total U.S. stockpile will remain at more than 10,000 warheads for the foreseeable future. Russia, on the other hand, seeks a verifiable, binding agreement that would ensure retired U.S. and Russian weapons are actually destroyed, a position we support.

Despite a campaign promise to rethink nuclear policy, the Bush administration has taken no steps to significantly alter nuclear targeting doctrine or reduce the day-to-day alert status of U.S. nuclear forces. If Russia is no longer an adversary, what is the rationale for retaining the ability to incinerate more than 2,000 Russian targets in as little as 30 minutes (or at all)?

Meanwhile, the U.S. national weapons laboratories, with the support of some in Congress, are hard at work refining existing warheads and designing entirely new weapons, with a special emphasis on those able to attack and destroy hardened and deeply buried targets. And to ensure that such new designs can be tested, the U.S. administration seeks to shorten the time required to resume testing to as little as twelve months—a move that can only encourage other countries, including India, Pakistan, and China, to consider resuming testing. Although the United States has not conducted a full-scale test since 1992—and the administration says it has no plans to resume testing at this time—it refuses to recognize the overwhelming international support for the Comprehensive Test Ban Treaty (CTBT) and refuses to participate in international meetings to discuss implementing the treaty. Should the required signatories, including India and Pakistan, fail to ratify the CTBT, thus jeopardizing its entry into force, the world will lose an essential tool in halting the further de-

velopment and spread of nuclear weapons.

Russia and the United States continue to maintain enormous stockpiles of fissile material. Russia has more than 1,000 metric tons of weapon-grade uranium and about 140 metric tons of weapon-grade plutonium, and the United States has nearly 750 metric tons of weapon-grade uranium and 85 metric tons of weapon-grade plutonium. (Just 55 pounds—25 kilograms—of weapon-grade uranium, or 17.6 pounds of plutonium—8 kilograms—are needed to construct a rudimentary nuclear weapon.)

Fortunately, of the hundreds of attempted smuggling transactions involving radioactive materials that have been thwarted since 1991, the vast majority involved materials that were not weapons usable or were of insufficient quantity to construct a nuclear weapon. Only 18 of these cases involved the theft of weapon-grade uranium or plutonium from facilities in the former Soviet Union. At the same time, Al Qaeda operatives were actively seeking to acquire radioactive materials to fashion either a crude nuclear weapon or a radiological dispersion device, commonly known as a “dirty bomb.”

The increase in the number of smuggling attempts in recent years serves as a clear warning that surplus nuclear weapons and weapons materials may not be entirely secure. Yet since 1991, successive U.S. and Russian administrations have failed to push for either a full inventory of weapons and materials, or for measures to confirm their destruction. As a result, it is now essentially impossible to verify whether all materials in the United States and Russia are accounted for or whether all weapons are secure. This quan-



dered opportunity has enormous security ramifications.

The U.S. administration's decision to withdraw from the ABM Treaty is a matter of great concern. The administration's rationale—that the treaty is a relic that endangers U.S. security interests—is disingenuous. Regrettably, the United States was unwilling to consider any compromise that would have preserved the basic framework of the treaty, and therefore blocked pursuit of a compromise that would have allowed additional testing but maintained some limits on defenses. Abandoning the treaty will have serious repercussions for years to come.

The crisis between India and Pakistan, touched off by a December 13 terrorist attack on the Indian parliament, marks the closest two states have come to nuclear war since the Cuban Missile Crisis. When the hands of the clock were moved forward in 1998, to nine minutes to midnight, it was in part in anticipation of just this sort of scenario.

Nuclear proliferation continues to pose dangers, both regionally and internationally. Of the countries most often described as seeking nuclear

weapons and/or ballistic missiles—Iraq, Iran, and North Korea—North Korea has repeatedly signaled its willingness to turn back, including a decision last year to extend its unilateral moratorium on missile flight tests through 2003. Yet the U.S. administration has abandoned negotiations with that country, and in his State of the Union message, President George W. Bush lumped all three countries together as an “axis of evil,” warning that, “The United States of America will not permit the world’s most dangerous regimes to threaten us with the world’s most destructive weapons.” The preference implicit in this statement for preemptive force over diplomacy, and for unilateral action rather than international cooperation, is likely to complicate efforts to defeat terrorism and strengthen global security.

The confluence of the rise of extremists who sacrifice their lives for their cause combined with weapons of mass destruction is an especially worrisome development. So too is the increased awareness since September 11 that terrorists need not manufacture or purchase fissile materials to fashion a crude nuclear weapon or release dangerous amounts of radiation. They need only attack poorly guarded nuclear power plants and nuclear weapons facilities, which contain sizable quantities of these materials. Significantly, President Bush acknowledged on January 29, 2002, that diagrams of U.S. nuclear power plants were found among Al Qaeda materials in Afghanistan.

When resetting the clock we have often noted that the growing disparities between rich and poor increase the potential for violence

and war. Poverty and repression breed anger and desperation. Charismatic leaders with easy answers prey on the dispossessed and disaffected, channeling their anger into dangerous and destructive activities. The global community must recognize these facts and do much more to address them. The success of the war on terrorism depends not only on disrupting and destroying terrorist organizations, but also on eradicating the conditions that give rise to terror.

We therefore fully support the statement circulated by *Bulletin* sponsor John Polanyi and signed by 110 Nobel laureates last December, which reads in part, “The only hope for the future lies in cooperative international action, legitimized by democracy. . . . To survive in the world we have transformed, we must learn to think in a new way.”

### Some welcome developments

At the same time, we want to recognize some welcome trends. Since we last set the clock in 1998, the 187 governments party to the Nuclear Non-Proliferation Treaty, including the major nuclear powers, agreed to a comprehensive set of commitments and measures to enhance nonproliferation and fulfill long-standing nuclear disarmament pledges. These agreements were rightly heralded as a political breakthrough, but the real test will be in how seriously the nuclear powers take their obligations to implement the practical steps to which they have agreed. In this regard, we welcome France’s dismantling of its Pacific nuclear test site and military reprocessing facilities and commend Britain’s research program on verifying multilateral reductions in nuclear weapons as early steps in the right direction.

U.S. funding and technical assistance continues to make significant and cost-effective contributions to international security by working to ensure that Russian nuclear weapons are dismantled, and that nuclear ma-



terials and nuclear expertise do not leave Russia. Much remains to be done, however. After initially questioning the value of these cooperative programs, the Bush administration now seeks to increase their funding.

Since 2000, Russia has urged the United States to agree to reductions in the two countries' arsenals to 1,500 warheads each. President Bush's announcement in November 2001 that U.S. "operationally deployed strategic warheads" would be reduced to between 1,700 to 2,200 by 2012—an intention reaffirmed in the administration's Nuclear Posture Review in January—is positive news. It is also the first major commitment to reducing nuclear weapons made by either the United States or Russia since 1997. Although there are serious questions about how permanent these reductions will be, and how long they will take to enact, they are nevertheless an important step away from the grotesque levels of the Cold War.

### What it would take to turn back the clock

As a first step in moving toward a safer world, we urge the United States and Russia to commit to reduce their nuclear arsenals to no more than 1,000 warheads each by the end of the decade. Each side should be free to choose its own means for achieving this goal, but both should commit, in writing, to transparency and verification provisions to ensure that the cuts are carried out and the delivery systems and warheads dismantled. Both countries should commit to storing and disposing of the resulting fissile material in a manner that makes the reductions irreversible. In addition, each side should commit to destroying at least half of the inactive weapons it currently stores within five years, and commit to destroying them all within 10 years.

These reductions must include tactical nuclear weapons as well. Signif-

icantly, the Bush administration's Nuclear Posture Review calls for studying whether the navy should be permitted to retire its nuclear-armed cruise missiles. If these weapons were retired, only about 150 air force bombs stored in seven European countries would remain in the U.S. operational tactical stockpile. We urge the swift retirement and destruction of all tactical nuclear weapons in Europe, and strongly encourage all states with nuclear weapons to begin negotiations to eliminate these weapons worldwide.

We also urge the United States and Russia to finally recognize the end of the Cold War by abandoning the practice of maintaining thousands of nuclear weapons on high alert, ready to be fired within minutes. This practice, born of fear and uncertainty during the Cold War, is a dangerous anachronism.

Significantly greater funding must be provided to secure and safeguard nuclear weapons and weapons materials in Russia, the United States, and elsewhere. For example, the current level of U.S. funding to assist Russia with such efforts is less than a third of the \$3 billion annual expenditure recommended by an Energy Department task force last year. If weapons materials and expertise are not more tightly controlled, no city in the world will be safe from nuclear attack.

A Fissile Material Cut-off Treaty must be placed back on the international arms control agenda. Every year that passes without a verifiable means of stopping the production worldwide of nuclear weapons materials makes the task of constraining nuclear proliferation more difficult. In addition, as part of such an agreement, all states with fissile material



inventories should declare their current holdings and submit to an international verification and transparency regime that would continuously monitor surplus inventories and develop safe, effective, and permanent disposal options.

The United States should reconsider its plans to walk away from the ABM Treaty in June. As the U.S. intelligence community recently concluded, ballistic missiles are neither the most likely nor the most destructive threat facing the United States.

Other measures that would increase global stability include a ban on the deployment of space-based weapons, whether designed to damage or disrupt satellites or to attack targets on the ground or in the air; full adherence by all parties to the Chemical Weapons Convention; and the resumption of negotiations on a verification protocol for the Biological Weapons Convention. Stronger international support for the global movement to limit the spread of small arms and to ban land mines, which each year maim or kill tens of thousands of people, most of them innocent civilians, would also be a welcome and necessary development.

The clock is ticking. ❄