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Primed and Ready

A Cold War mind-set still dominates the United States and Russia, aggravating the risk of nuclear theft – or accidental nuclear war.

By Bruce G. Blair, President, World Security Institute

This article was first published in Bulletin of the Atomic Scientists in January/February 2007.

AMERICAN AND RUSSIAN political rhetoric attaches the highest priority to imposing ironclad control over their nuclear arsenals. The two nations cooperate extensively and devote substantial resources to achieving this aim, but both nations are shooting themselves in the foot by allowing hoary Cold War priorities to take precedence. The anachronistic mind-set of the Cold Warrior still dominates their nuclear establishments, their agendas, and their relationship in ways that deeply undermine their efforts to contain “loose nukes.” They spend 25 times more money to preserve their Cold War nuclear deterrent postures than they spend on shoring up security against theft.

Since the inception of the Cooperative Threat Reduction program (more commonly known as the Nunn-Lugar program) 15 years ago, the United States has invested roughly \$1 billion each year toward preventing the theft of Russian nuclear weapons and materials. The money goes toward improving security at hundreds of nuclear sites; deactivating nuclear warheads; destroying nuclear submarines, missiles, and bombers; converting bomb-grade uranium into civilian nuclear reactor fuel; and enabling nuclear weapons scientists to pursue civilian careers.

In terms of preventing theft, the Nunn-Lugar effort has made considerable progress. More than half of the Russian weapons and materials facilities (some experts say 80 percent) are now under more stringent safeguards. Military morale and well-being in the Russian nuclear sector are also being steadily restored, thanks to oil profits filling the government coffers and Russian President Vladimir Putin’s increases in military spending.



NUCLEAR ARSENALS

COUNTRY	WEAPON TOTAL
Russia	15,000
United States	10,000
France	348
Britain	200
China	200
Israel	75-200
Pakistan	60
India	40-50
North Korea	5-12*

Source: Estimates derived from Bulletin/Natural Resources Defense Council Nuclear Notebook data.

All numbers are approximate.

Weapon total includes entire nuclear stockpile.

*Maximum number possible from estimated plutonium stockpile.

Bruce G. Blair was a nuclear missile launch officer in the early 1970s.

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35th

ANNIVERSARY

A look back...

This year's issues of the *Defense Monitor* will highlight decades of contributions to U.S. defense policy.

NUCLEAR AFTERMATH

The more than 26,000 nuclear weapons spread across the globe have the potential to devastate the world's population and make vast areas of land uninhabitable. A summary of some of the effects of nuclear weapons, by the numbers:

477,713

The number of fatalities within a 5-kilometer (3-mile) radius of a single 15-kiloton (the yield of the Hiroshima bomb) airburst above Mumbai, India;

228,648 people would be severely injured.

130,000 The number of fatalities within a 43-kilometer (27-mile) radius of a single 1-megaton nuclear weapon detonated on the surface of Detroit during a workday; only 20,000 of the 250,000 inhabitants in the area would be uninjured.

290 The peak wind velocity (miles per hour) within a 5-kilometer (3-mile) radius of a 1-megaton airburst.

8 The minimum number of years it would take ground zero to return to background levels of radiation after the Detroit detonation, assuming no decontamination.

19 The number of 475-kiloton warheads required to wipe out 25 percent of Britain's 1999 population.

9 The kilometer radius within which mass fires can be expected from a 475-kiloton airburst in an urban area.

5,000 The approximate megatonnage of global nuclear arsenals.

4.5 The duration, in days, of a 5,000-megaton war, in which one Hiroshima-sized bomb was dropped every second.

250,000+ The number of people who could be exposed to significant levels of fallout if a 400-kiloton earth-penetrating nuclear weapon were dropped on North Korea's Pukch'ang air base.

Sources: Office of Technology Assessment, "The Effects of Nuclear War," 1979; Natural Resources Defense Council (NRDC), "The U.S. Nuclear War Plan: A Time for Change," 2001; Matthew Mckenzie et al., "The Risks and Consequences of Nuclear War in South Asia," in *Out of the Nuclear Shadow* (2001); Carnegie Endowment for International Peace; Department of Military Affairs, state of Montana; NRDC.

U.S. suspends Comprehensive Test Ban Treaty negotiations

But a large portion of Russia's nuclear stockpile remains insecure and will remain so for many years. The deterioration of nuclear forces and command-and-control systems has been arrested but not reversed. As long as the United States and Russia continue to operate their nuclear forces on a Cold War footing, their cooperative efforts to secure the Russian stockpile from theft or unauthorized use will fail.

There are two competing priorities here. One is the Nunn-Lugar effort to "lockdown" the Russian stockpile to fixed, secure locations. The other, in both Russia and the United States, is to maintain standard deterrent postures in which each side's nuclear forces stand ready at all times to fight a large-scale nuclear war with the other. Contrary to popular belief, the two sides still aim thousands of nuclear weapons at each other to satisfy nuclear guidance from both the Kremlin and the White House.

To understand how these priorities work at cross-purposes, it helps to be familiar with how nuclear forces are operated today. First, portions of both nations' strategic missile arsenals are kept on hair-trigger alert. If both sides sent the launch order right now, out of the blue, without any warning or preparation, thousands of nuclear weapons – the equivalent in explosive firepower of about 70,000 Hiroshima bombs – could be unleashed within a few minutes.

Second, if early warning satellites or ground radar detected missiles in flight, both sides would attempt to assess whether a real nuclear attack was under way within a strict and short deadline. Under Cold War procedures that are still in practice today, early warning crews manning their consoles 24/7 have only three minutes to reach a preliminary conclusion. Such occurrences happen on a daily basis, sometimes more than once per day.

Third, if an apparent nuclear missile threat is perceived, then an emergency teleconference would be convened between the president and his top nuclear advisers. On the U.S. side, the top officer on duty at Strategic Command in Omaha, Neb., would brief the president on his nuclear options and their consequences. That officer

Mark Sugg editing tape. Mark is now Series Producer of WSI's PBS program *Foreign Exchange with Fareed Zakaria*



Monitor skeptical and concerned about planned deployment of new U.S. nuclear weapons in Europe

is allowed all of 30 seconds to deliver the briefing.

Then the U.S. or Russian president would have to decide whether to retaliate, and since the command systems on both sides have long been geared for launch-on-warning, the presidents would have little spare time if they desired to get retaliatory nuclear missiles off the ground before they – and possibly the presidents themselves – were vaporized. On the U.S. side, the time allowed to decide would range between zero and 12 minutes, depending on the scenario.

Russia operates under even tighter deadlines because of the short flight time of U.S. Trident submarine missiles on forward patrol in the North Atlantic. Such rapid implementation of war plans leaves no room for real deliberation, rational thought, or national leadership. Even

CDI produces “War Without Winners” film.

in today’s post-Cold War political environment with relatively good relations between Russia and the United States, there is inherent risk of human or technical error that results in a mistaken or unauthorized launch.

Keeping hundreds of missiles on hair-trigger alert – armed, fueled, targeted, and poised to launch as soon as they receive two or three short, coded computer commands – also raises the question of whether they could be fired by unauthorized actors who manage to hack into the nuclear communications networks or even the actual launch circuits. It may not be as farfetched as many think.

During the 1990s, an in-depth investigation of U.S. nuclear weapons safeguards conducted by the Federal Advisory Committee on Nuclear Failsafe and Risk Re-

CLOSE CALLS • Political imbroglios

BERLIN CRISIS (Summer 1961)

The Soviets push for control of Berlin. President John F. Kennedy mulls over his nuclear options while remaining fiercely protective of Western interests in the city. “We cannot and will not permit the Communists to drive us out of Berlin, either gradually or by force,” he tells the American public in a July televised address. “For the fulfillment of our pledge to that city is essential to the morale and security of Western Germany, to the unity of Western Europe, and to the faith of the entire free world.”

CUBAN MISSILE CRISIS (October 1962)

For 13 days, the world teeters on the edge of all-out nuclear war, as Kennedy confronts the Soviets about their nuclear weapon installations in Cuba. Heightening the tension further, both nations conduct intercontinental ballistic missile tests during the standoff. “I found myself in the difficult position of hav-

ing to decide on a course of action which would answer the American threat but which would also avoid war,” Soviet Premier Nikita Khrushchev wrote in *Khrushchev Remembers*. “Any fool can start a war, and once he’s done so, even the wisest of men are helpless to stop it – especially if it’s a nuclear war.”

SOVIET-SINO FEUD (1969)

Border skirmishes escalate into Soviet hints of severe – and potentially nuclear – retaliation. “[KGB officer Boris] Davydov asked point-blank what the U.S. would do if the Soviet Union attacked and destroyed China’s nuclear installations,” read an August 1969 State Department memo written by then-Special Assistant for North Vietnam William Stearman. “I replied by asking him if he really meant this to be a serious question. He assured me that he was completely serious and went on to elaborate.”

YOM KIPPUR WAR (October 1973)

After Israel mobilized its nuclear forces during the war’s opening stages, the United States follows suit in the fighting’s waning moments, placing its nuclear forces on high alert when Soviet Premier Leonid Brezhnev implies his country might enter the conflict. The move worried even staunch U.S. allies. Per a British Joint Intelligence Committee assessment, “We are inclined to see the U.S. response as higher than necessary to achieve the desired effect.”

KARGIL CONFLICT (1999)

The long-standing Kashmir dispute receives a nuclear sheen, with both countries supposedly ready to launch their nuclear missiles after yet another clash in the contested mountain region. Two years later, tensions rise again, following a terrorist attack on the Indian parliament. “Who will strike first?” asks the *Economist*.

Monitor dedicates 6 issues to nuclear weapons and nuclear war fighting debate

duction found several deficiencies that terrorists could exploit to gain some control over the weapons. For instance, the committee found an electronic backdoor to the naval communications network used to transmit launch orders to U.S. Trident missile submarines. Unauthorized individuals, including terrorists, could have hacked into the network, seized control over land-based naval transmitters, and sent a nuclear launch order over the airwaves to the subs. Today, military computers are constantly under assault by hackers, and the vulnerability of nuclear command, control, early warning, and communications systems to unauthorized electronic intrusion is worthy of serious concern and analysis.

Why take these real risks for unnecessary, anachronistic deterrent purposes? The United States and Russia could greatly strengthen their nuclear security and safeguards by standing down their nuclear missiles, taking them off of hair-trigger alert, and extending the time needed to launch them from the current period of seconds to a much longer period of days, weeks, and eventu-

Monitor blasts \$80B two-year military budget increase

ally years. By physically de-alerting their forces, the two nuclear rivals would buy a large margin of safety against a host of dangers and risks of an apocalyptic magnitude.

Russia and the United States need to deepen their cooperation beyond Nunn-Lugar and realign their nuclear postures to fit with the current political reality, for the sake of nuclear security on both sides. This has become clear to me in personal terms through hundreds of conversations with Russian nuclear experts and was driven home most vividly on New Year's Eve, 1999, when I joined up with a group of Russian and U.S. military officers in Colorado.

Readers may remember that our countries set up a joint center there to monitor the rollover from 1999 to 2000, in order to prevent an accidental nuclear war from being triggered by the computer bug dubbed Y2K. Despite spending billions of dollars to rid their military and intelligence computer networks of this so-called millennium bug, the two countries took the additional precaution of bringing their early warning officers together to

CLOSE CALLS • False Alarms

DANGEROUS COINCIDENCE (November 1956)

In arguably the most frigid days of the Cold War, a collection of perilous happenstances registered by U.S. early warning centers (an unidentified jet in Turkish airspace, Soviet MiGs prowling Syria, and rumors of bellicose Soviet naval maneuvers) prompts the United States to twitch its nuclear trigger finger.

TALE OF THE WRONG TAPE (Nov. 9, 1979)

North American Aerospace Defense Command (NORAD) computers show a full-scale, preemptive Soviet strike against U.S. nuclear positions under way. For six minutes – be-

fore recognizing it as a false alarm – U.S. military officers fear the worst. The culprit: a NORAD technician who mistakenly loaded a simulation into the system without marking it as such.

A SOVIET GLITCH (Sept. 26, 1983)

The Soviet early warning system indicates that the United States has launched five nuclear missiles at the Soviet Union. Disobeying orders, Stanislav Petrov, a lieutenant colonel in the Soviet Strategic Rocket Forces, decides against informing his superiors, correctly thinking a system malfunction occurred. "I couldn't believe that all of a sudden some-

one would hurl five missiles at us," Petrov told *Mosnews.com* in 2004. "Five missiles wouldn't wipe us out. The U.S. had not five, but a thousand missiles in battle readiness."

A RESEARCH ERROR (Jan. 25, 1995)

A communiqué from the Norwegian government detailing the launch of a research rocket intended to gather scientific information about the Northern Lights never reaches the Russian military. Without the warning, Russian radar operators – for a few minutes at least – believe they may be under nuclear attack when the rocket begins behaving like a U.S. Trident missile.



CDI produces a
"Nuclear War Prevention Kit"

President Reagan announces plans to devise a
missile shield against nuclear attack –
later known as Star Wars



jointly interpret the near real-time data from U.S. satellite and ground radars used to detect enemy missile launches. These officers' job was to diagnose any missile launch reports coming from these sensors during the rollover period, to ensure that they were not caused by Y2K bugs. I was allowed to watch this joint operation as the clock ticked down to midnight around the world. We were, of course, all jubilant as the rollover proceeded without a hitch from one time zone to another.

This joint center was actually a prototype for a permanent joint center that was to be built in a Moscow suburb. Its purpose was to prevent false alarms of nuclear missile attacks from triggering World War III and to share intelligence and real-time data on ballistic missiles being developed and tested by proliferant states such as Iraq, Iran, North Korea, and many others. If we had finished building this joint center, today both the United States

and Russia would be closely monitoring the test of North Korea's Taepodong II ICBM, which is being designed to loft a nuclear bomb to targets many thousands of miles away. We would be jointly tracking nuclear missile proliferation around the world. We could have invited China and other interested parties to become partners in the venture.

The center unfortunately was not built, stalled over a minor dispute about who would assume liability for construction accidents. This is one small but telling indicator of the level of priority actually accorded nuclear safety and proliferation by the White House and the Kremlin. It is lower than most people realize. If we were really serious about it, and wise, we would end the nuclear hair-trigger status quo, de-alert, cut the liability knot, and open this joint center in Moscow. ■



Proponents Lose Sight of New Warhead's Arms Control Implications

Why we need a strategic reassessment of the role and purpose of nuclear weapons in the 21st century

Philip Coyle, Senior Advisor

ON MARCH 2, 2007, the Bush administration made a decision with potentially far reaching consequences. The Nuclear Weapons Council, a committee comprised of senior military, defense and energy department officials selected the Lawrence Livermore National Laboratory to lead the development of a new Reliable Replacement Warhead (RRW) for U.S. Trident Submarine Launched Ballistic Missiles (SLBMs).

Over time, the aim of the RRW program will be to gradually replace other existing U.S. nuclear weapons types, such as U.S. Air Force ICBMs, with new designs.

The basic premise behind the RRW is that, unlike the existing nuclear weapons in the U.S. stockpile, these new weapons will not be tested in full-scale underground nuclear tests. If funded, the RRW program would lead to a new class of nuclear weapons which would gradually replace present-day weapons. Potentially this could lead to new types of weapons or new missions for nuclear weapons.

The first motivation for the RRW program is to sustain nuclear weapons design skills at the U.S. nuclear weapons design laboratories – Los Alamos and Lawrence Livermore. These laboratories will use non-nuclear testing techniques and advanced computer simulations to take the place of underground nuclear tests, now prohibited by the Comprehensive Test Ban Treaty (CTBT) which the U.S. government signed in 1996. The CTBT has not been ratified by the U.S. Senate, but the United States has not conducted an underground nuclear test since 1992.

Other stated goals for the RRW program include revitalizing the Department of Energy (DOE) nuclear weapons production complex to make it more responsive and efficient, increase safety and use control, reduce the number of non-deployed nuclear weapons, increase warhead longevity, reduce the need for nuclear testing, ease nuclear weapons manufacturing and maintenance, and reduce costs overall.

Whether the RRW can actually result in all these gains is now being debated in congressional hearings. For example, the very name “Reliable Replacement Warhead,” is questionable since it is not determined that such new warheads would in fact be more reliable than those already in the U.S. nuclear stockpile. They might well be less reliable because they would not have been tested in full-scale underground nuclear tests, and because of the plan to add new safety and security features will inevitably reduce overall reliability, however desirable those features might otherwise be.

The National Nuclear Security Administration (NNSA), the part of the DOE responsible for nuclear weapons, has been approaching the RRW as a largely technical and managerial matter. However, in recent congressional hearings the RRW has been attacked not so much for engineering, manufacturing, and cost issues, but for the arms control and nuclear proliferation issues it raises.

For example, at a House Energy and Water Appropriations hearing on March 29, 2007, former senator and

“War Without Winners II” documentary produced; watched by millions featuring U.S. and Soviet citizens discussing nuclear war and survival

long-time chairman of the Senate Armed Services Committee, Sam Nunn, summarized the situation this way: “On the RRW itself, if Congress gives a green light to this program in our current world environment, I believe that this will be misunderstood by our allies, exploited by our adversaries, complicate our work to prevent the spread and use of nuclear weapons ... and make resolution of the Iran and North Korea challenges all the more difficult.”

In short, Nunn and other witnesses have questioned how the RRW might impact nuclear non-proliferation efforts worldwide.

As Nunn elaborated, “I will leave it to others who have full access to classified material to discuss whether there is an urgent and imperative case for an RRW program at this time, but I can only say that I have not seen it. I can see, however, that we will pay a very high price in terms of our overall national security if Congress gives the approval to go forward with this program.”

“Mr. Chairman,” Nunn said, himself no stranger to the responsibilities of congressional oversight, “I believe that we need a strategic reassessment of the role and purposes of nuclear weapons in the 21st century and an urgent change in direction with both vision and steps. This change in direction should precede congressional decision on the RRW. I would not fund additional work on the RRW at this time.”

At the same hearing, former Secretary of Defense William Perry noted that maintaining the capability of U.S. nuclear weapons designers would be important if we ever needed to design more nuclear warheads. But Perry also noted that present U.S. nuclear weapons will retain their capability for 50 to 100 years, particularly if the United States continues to downsize its nuclear arsenal. He summarized saying, “On balance, I believe that we could defer action for many years on an RRW program, and I have no doubt that this would put us in a stronger position to lead the international community in the continuing battle against nuclear proliferation, which threatens us all.”

Monitor addresses the nearly \$300B 1985 military budget

Considering such strong testimony from such highly-regarded statesmen, the arms control implications of the proposed RRW program do not appear to have been thought through by the Defense Department, NNSA or the DOE laboratories. For example, if the tables were turned, and Russia and/or China had learned how to build new nuclear weapons without full-scale nuclear testing, and were building them, and if the United States had not figured that out and was not building them, the U.S. Congress and the administration would be calling for swift action. We’d hear ringing alarm bells like we haven’t heard since Sputnik.

The U.S. effort to reduce the nuclear test readiness posture to 18 months and the U.S. proposal to build new nuclear weapons without nuclear testing could be viewed by other countries as provocative and overly aggressive policies that undermine our moral authority to argue that other nations should forgo nuclear weapons. In effect, with the proposed RRW, the United States would be saying to North Korea and Iran, “Do as I say, not as I do.” Surely that inconsistency would not be lost on anyone in the international community.

Interestingly, the design chosen on March 2 was selected because it already had been successfully tested underground many years ago, and put on the shelf. As such, this design is not a demonstration of the premise of the RRW, namely that U.S. nuclear weapons can be developed without the benefit of nuclear testing. ■

Author Philip Coyle is a senior advisor to the president of World Security Institute and Center for Defense Information; Coyle is a recognized expert on U.S. and worldwide military research, development and testing, operational military matters and on national security policy and defense spending. This month he is also CDI’s Spotlight Scholar. Read more about him on page 9.



First National Women's Conference to Prevent Nuclear War held on Capitol Hill, chaired by Joanne Woodward

CDI analyzes Strategic Defense Initiative (SDI) missile shield plans

4 Monitors make the case for nuclear arms reductions

WSI LAUNCH

New Project to Eliminate Nuclear Weapons

By Bruce G. Blair, President

AS YOU KNOW, CDI staff members have long recommended decreasing America's, and the world's, reliance on nuclear weapons. I, too, have personally devoted my career to raising awareness of the danger posed by our nuclear arsenal. For these reasons, I am delighted to share with you a bold and comprehensive effort we are beginning with the goal of eliminating nuclear weapons globally.

The need is critical. Recently, former Secretary of Defense Bill Perry has said that there is a 50 percent chance of a nuclear terrorist strike on the United States by 2010. Other experts have said that the next American president will face a nuclear crisis – the consequences of which could be global and catastrophic. While there is only a small window of time to avert nuclear catastrophe, there are stirrings, from surprising quarters, of a new and historic effort to do just that.

On Jan. 4, 2007, George Schultz, Henry Kissinger, Bill Perry and Sam Nunn wrote an op-ed in *The Wall Street Journal* calling for the elimination of nuclear weapons. Three weeks later, Mikhail Gorbachev responded with his own statement supporting their urgent call to action. These tough-minded realists join a growing bi-partisan group of political and military leaders that has declared that the only solution to the nuclear threat – eliminating nuclear weapons globally – can and must be achieved.

New Project

To turn this vision into a reality, the World Security Institute is launching an initiative that brings together a top-flight team with expertise in politics, policy, communications, diplomacy and military affairs. Our effort will

THE PROJECT WILL INCLUDE:

- A documentary film for theatrical distribution produced by Lawrence Bender, the Academy Award-winning producer of *An Inconvenient Truth*
- Comprehensive policy reports detailing the path to zero nuclear weapons
- A public education program that includes online and media communications, opinion leader presentations, and opportunities for civic participation

involve a comprehensive outreach campaign to the policy-making community, the media and the general public. The campaign will be launched with a documentary feature film for worldwide theatrical release produced by Lawrence Bender, the Academy Award-winning producer of *An Inconvenient Truth*. The film will demonstrate that the only lasting solution to the nuclear danger is to eliminate nuclear weapons globally – and that this goal can be achieved.

Please send your thoughts and suggestions about this effort to me and to Project Director Matt Brown (former Rhode Island secretary of state) at CDI. I hope that you will support our endeavor – financially, and with your ideas and your involvement – and I will look forward to keeping you apprised of our progress.

America's Defense Monitor staff. Mark Sugg (2nd from right) and Glenn Baker (far right) today are senior staff in WSI's Azimuth Media division.



CDI hosts a first time conference of over a dozen U.S. and Soviet admirals and generals in D.C.

CDI's America's Defense Monitor television program begins broadcasting to over 300 cable TV stations

Likely steps toward nuclear abolition include

Nuclear states declare policies of no first-use and no use against non-nuclear states

Nuclear states verifiably de-alert nuclear arsenals to reduce risks from accidental, erroneous or unauthorized use

All states agree to a verifiable moratorium on the development of nuclear weapons

All states ratify the Comprehensive Test Ban Treaty

The international community establishes a comprehensive, global system for verifiably monitoring and securing nuclear weapons and materials

The United States and Russia begin by simultaneously and verifiably reducing the total number of warheads in their strategic arsenals into the hundreds and eliminating all short-range nuclear weapons; all other nuclear weapon states join in next stages of simultaneous verifiable reductions, down to global zero

All states destroy decommissioned weapons and halt production of fissile material for new nuclear weapons ■

**SCHOLAR SPOTLIGHT:
Philip Coyle**



Work in Progress

Providing commentary and insights to the media and to public affairs groups on Iran's nuclear programs, on North Korea's nuclear weapons development and testing program, on U.S. nuclear weapons programs or initiatives, on U.S. defense spending, on ballistic missile defense, and on a wide variety of defense procurement programs.

Background

Current Position: Senior Advisor to the president of World Security Institute and Center for Defense Information; member of the American Association for the Advancement of Science (AAAS) Nuclear Weapons Complex Assessment Committee

Previous Positions: Assistant Secretary of Defense and Director, Operational Test and Evaluation (DOD), 1994 to 2001; Principal Deputy Assistant Secretary for Defense Programs in the Department of Energy (DOE) in the Carter administration; Laboratory Associate Director and Deputy to the Laboratory Director, Lawrence Livermore National Laboratory, where he worked from 1959 to 1979 and 1981 to 1993.

Media Interviews

Coyle writes articles for various media outlets and journals regarding nuclear weapons, arms control and missile defense matters. He is regularly cited in U.S. and foreign news publications, and has appeared on the *News Hour with Jim Lehrer*, *60 Minutes II*, the History Channel, *NBC Nightly News*, CNN and NPR, among several others.

In-Depth

Philip Coyle is a recognized expert on U.S. and worldwide military research, development and testing, national security policy and defense spending. Coyle joined the Center for Defense Information in 2001 and has worked, and continues to work – in several capacities – in the national security field.

As director of Operational Test and Evaluation for the Defense Department, Coyle had responsibility for overseeing the test and evaluation of over 200 major defense acquisition systems. He reported to the secretary of defense and to Congress on the adequacy and results of DOD testing programs. Coyle was called upon regularly to testify before Congress and to brief congressional staff on the status of major defense acquisition programs.

In 2005 and 2006, Coyle served on the Defense Base Realignment and Closure Commission (BRAC), appointed by President George W. Bush and nominated by Speaker of the House Nancy Pelosi, D-Calif. The commission was responsible for determining which U.S. military bases and facilities needed to be closed or realigned beginning in late 2005.

Currently, Coyle is working on a new study of nuclear attribution and nuclear forensics, being jointly sponsored by the American Physical Society Panel on Public Affairs and by AAAS. His research involves clarifying the current capability and future potential of nuclear forensics and identifying what steps could be taken to fully realize the potential for nuclear forensics to enhance global nuclear deterrence.

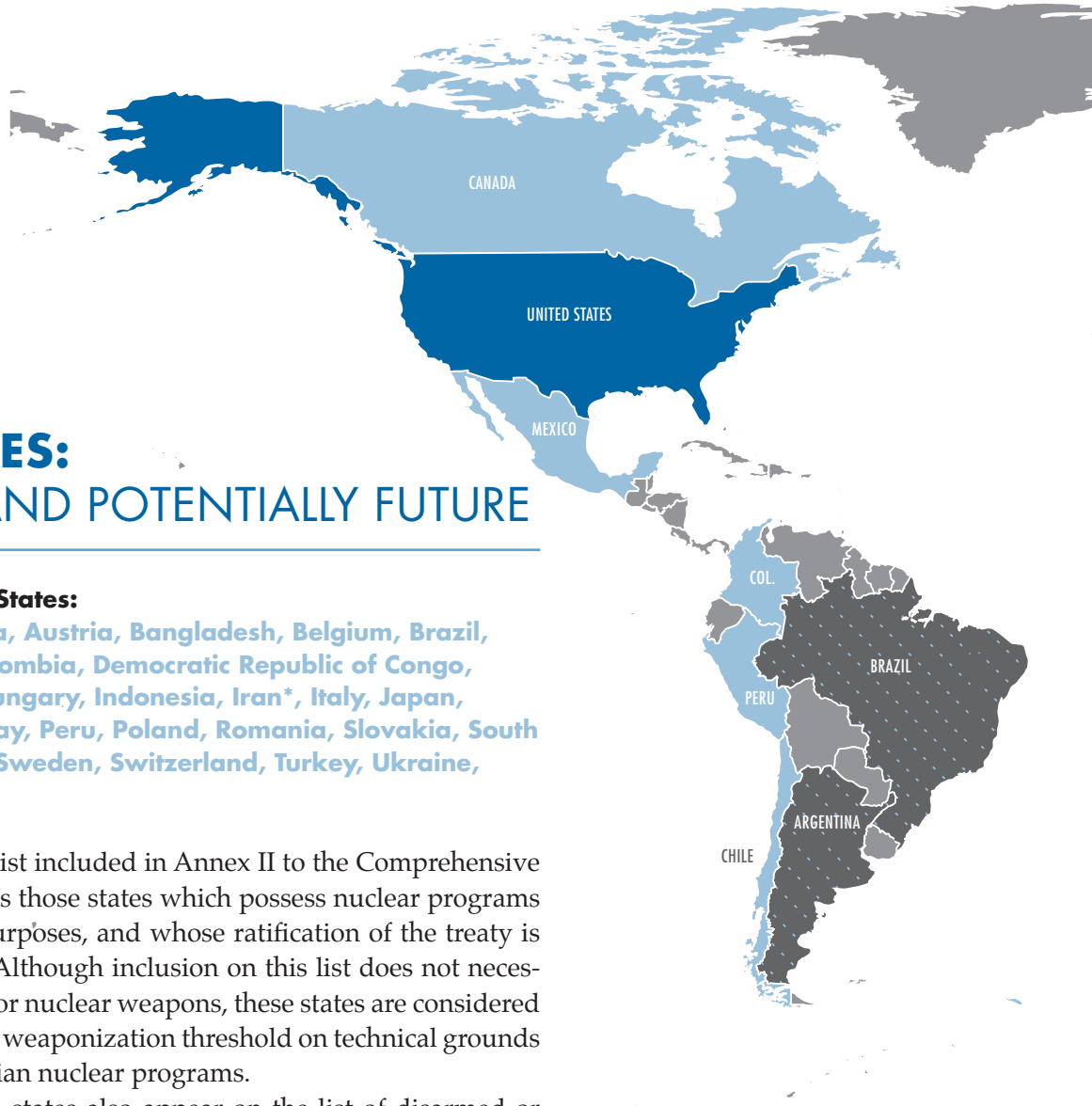


Photo: Peter Jacobs

CDI's Women's Agenda supports production of a play about nuclear war. *The Depot* was performed at the Kennedy Center.

INF Treaty eliminates over 1,000 U.S. and Soviet nuclear weapons targeting Europe

- Potential
- Disarmed
- Current
- Disarmed but potential



NUCLEAR STATES: PAST, PRESENT AND POTENTIALLY FUTURE

Potential Nuclear Weapons States:

Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, Colombia, Democratic Republic of Congo, Egypt, Finland, Germany, Hungary, Indonesia, Iran*, Italy, Japan, Mexico, Netherlands, Norway, Peru, Poland, Romania, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine, Vietnam

This category is based on the list included in Annex II to the Comprehensive Test Ban treaty. The Annex lists those states which possess nuclear programs for energy or other civilian purposes, and whose ratification of the treaty is required for entry into force. Although inclusion on this list does not necessarily suggest a state's desire for nuclear weapons, these states are considered by the treaty to be closer to the weaponization threshold on technical grounds than those states without civilian nuclear programs.

Note that several of these states also appear on the list of disarmed or abandoned weapons programs.

* Iran is actively pursuing a nuclear program which involves both uranium enrichment technology and a heavy-water reactor capable of producing plutonium. While Iran insists that these facilities are intended for peaceful uses only, the international community is currently engaged in a standoff with Iran over its refusal to cooperate fully with the International Atomic Energy Association (IAEA) as required by the UN Security Council.

Chart data prepared by CDI Research Assistant Brian Ellison

Source: Comprehensive Test Ban Treaty, Annex II to the Treaty, List of States Pursuant to Article XIV <http://www.fas.org/nuke/control/ctbt/text/artbyart/annx1.htm>

1988



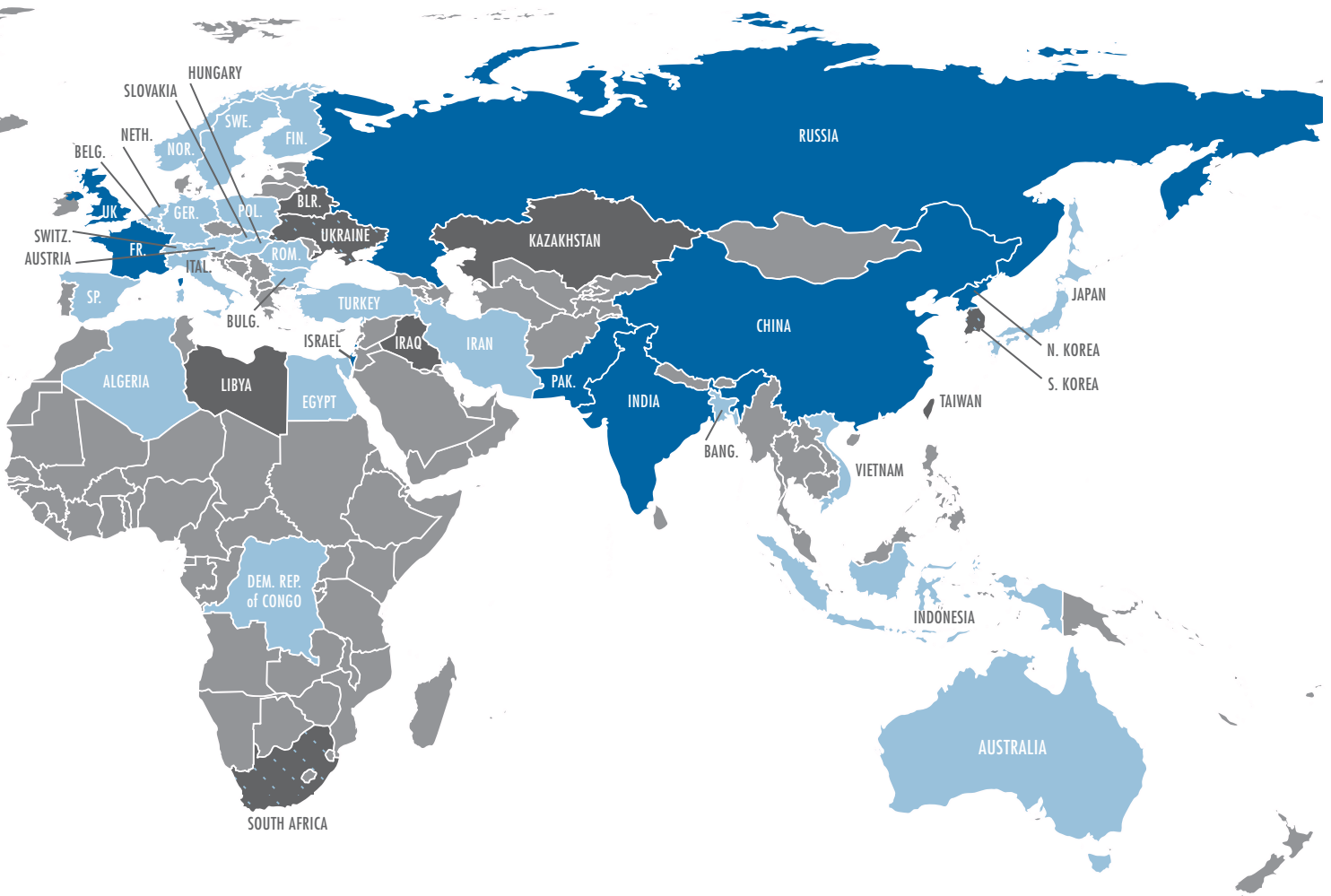
CDI's Second General's Conference held in Moscow. Rear Adm. USN (ret.) Eugene Carroll (far right)

1989

The Monitor catalogues 375 U.S. military bases in 35 countries

1989

"Nuclear Bomb Factories" documented on CDI's America's Defense Monitor television show



Disarmed or abandoned nuclear weapons programs: Argentina, Belarus, Brazil, Iraq, Kazakhstan, Libya, South Africa, South Korea, Taiwan, Ukraine

This category includes states or regions which either possessed nuclear weapons or had nuclear weapons programs, and fully abandoned them, either voluntarily or involuntarily.

Current Nuclear Weapons States: China, France, India, Israel, North Korea, Pakistan, Russia, United Kingdom, United States

This category includes the five official nuclear weapons states recognized in the Nuclear Nonproliferation Treaty (NPT), two states with acknowledged nuclear arsenals that have not signed the NPT, one state that is almost universally believed to possess an unacknowledged nuclear arsenal and has not signed the NPT, and one state that is known to have tested at least one nuclear device and claims to have withdrawn from the NPT.



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