Sparring on Test Ban Likely at NPT Review

Some nations may condition their support for the nonproliferation treaty on a commitment from the superpowers to negotiate a test ban

Geneva. The surprise declaration by Soviet leader Mikhail Gorbachev that the Soviet Union will unilaterally halt nuclear testing for 5 months will complicate matters for the Reagan Administration at an international meeting, scheduled to open here on 27 August, to review the 1968 Nuclear Non-Proliferation Treaty (NPT).

Several states that have signed the NPT are expected to announce that they will continue to support the treaty only if the superpowers make a commitment to negotiate a comprehensive test ban. This attempt to link the issues of nuclear testing and nuclear proliferation is based on the complaint that the nuclear weapons states have failed to live up to a commitment, embodied in the NPT, to secure a significant reduction in the arms race.

Support for such a move is gathering momentum among many states—primarily (though not exclusively) in the Third World—who do not currently possess nuclear weapons. Some are even suggesting that they would consider withdrawing from the treaty if no commitment is made to a test ban; others argue that inclusion in the NPT of such a commitment could help persuade various "threshold" states, such as Argentina and Brazil, to become signatories.

Gorbachev's decision to halt testing is likely to add a new dimension to the political maneuvering on these issues. The Reagan Administration immediately dubbed the move a propaganda ploy and made an offer of its own for Soviet observers to attend a nuclear test in the United States—a move that could help lay the scientific groundwork for monitoring a test ban. It also underscores the Administration's contention that a test ban could not at present be adequately verified. The Soviets have, however, called this a meaningless gesture (see box).

The United States has already made clear that it has no desire to reopen discussion on the wording of the NPT. "If changes to the treaty itself are pursued, the process of amendment could get out of control," Lewis A Dunn, assistant director of the U.S. Arms Control and Disarmament Agency (ACDA), warned at a private colloquium organized in Geneva last month by the Groupe de Bellerive.

Both the United States and the United Kingdom, as well as some states that do not possess nuclear weapons, argue that the treaty represents a fragile balance of interests that would be destroyed by any alterations. In contrast, many Third World countries, both signatories and nonsignatories, argue that the benefits of the treaty are unequally distributed in favor of the weapons states. They are trying to use the treaty's undoubted importance to developed countries, in setting a framework for their nuclear exports, as leverage in bargaining for amendments.

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The NPT, which has now been signed by 128 countries (although not by France or China) came into force in 1970. Its principal aim has been to prevent the emergence of new nuclear weapons states through the offer of technical assistance in the civilian applications of nuclear power to those prepared to eschew such weapons and to accept checks on their nuclear facilities.

Judged strictly within these limited terms of reference, the NPT has been a success. Hans Blix, director of the International Atomic Energy Agency (IAEA) in Vienna, described it at the colloquium as "the most widely adhered to arms control treaty of all time." No new states have declared themselves to possess nuclear weapons since the treaty was signed, even though ten countries are generally accepted to be close to the threshold of doing so.*

The previous review conference, held in 1980, highlighted complaints that not enough had been done to support the civilian nuclear efforts of countries that had agreed not to pursue nuclear weapons. This time around, according to Sri Lanka's Jayantha Dhanapala, the chairman of the conference's preparatory committee, attention will be focused on whether all signatories have observed Article VI of the treaty, in which they undertake "to pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date."

The wording is sufficiently loose to allow wide scope for interpretation. Dunn of ACDA argues that the current arms control talks in Geneva confirm that the United States, at least, is observing this clause, and that any failure to reach agreement is due to the continuous buildup of nuclear weapons by the Soviet Union; the U.S.S.R., not surprisingly, argues in reverse that it is the posture of the United States that is holding up agreement.

Wherever the blame rests, the fact that no major progress has been achieved by the United Nations Committee on Disarmament since the NPT came into force, or in recent bilateral negotiations between the United States and the Soviet Union, is being claimed by some of the treaty's signatories as a breach of contract. Agreement on a comprehensive test ban, it is argued, is currently the most achievable way of honoring the commmitment to pursue arms control.

"A comprehensive test ban is essential for the viability of NPT," says Mohamed I. Shaker, Egypt's ambassador to the United Nations, who is expected to be named president of the review conference. "It is both a vertical and a horizontal non-proliferation measure," a statement supported by many speakers to the colloquium, ranging from Swedish Prime Minister Olof Palme to Crown Prince Hassan bin Talal of Jordan.

David Owen, leader of Britain's Social Democrats and a former Foreign Secretary, argued that the loss of scientific data from tests would be "minuscule" when compared to "the major political gains." In contrast, both Dunn and Richard Perle, an assistant secretary in the U.S. Department of Defense, claimed that a test ban could turn out to be destabilizing, for example, by reducing

*The threshold states are said to be Argentina, Brazil, India, Israel, Iraq, Libya, Pakistan, South Africa, South Korea, and Taiwan, each of which is currently said to be acquiring the necessary equipment to produce nuclear weapons.

confidence in weapons that could not be updated.

Among Third World speakers, however, there was a general consensus that the symbolic value of a test ban would be as important as its technical significance. "If Article VI could be changed to include a commitment to a test ban, then a good case would be made in some of the threshold states for joining the treaty" said José Goldemberg, professor of physics at the University of São Paolo in Brazil.

"People use anti-colonialist arguments for not joining the NPT because of the resemblance to colonialism that the treaty contains. If that is removed and the treaty is made more symmetric, the case of civilian authorities in countries such as Brazil would be strengthened." Argentina and Tanzania were quoted as countries that have said they will sign if a comprehensive test ban is agreed, while both China and India have made it clear that they will not sign the NPT in the absence of such a ban.

Given that any proposal to amend the treaty will be opposed by several signatories, the most that Third World countries are hoping for is a strongly worded final declaration. Sri Lanka's Dhanapala suggests that this might even be achieved through numerical superiority, on the grounds that "it is possible that the threat of voting, or even voting itself, could change the position inside the NPT."

Even if this fails, however, the Geneva colloquium, which was organized by the Groupe de Bellerive's President, Prince Sadruddin Aga Khan, the former United Nations High Commissioner for Refugees, highlighted several more concrete, and perhaps more realistic, steps that could be taken toward a test ban. These are likely to be discussed in the corridors of the review conference, if not in the open sessions. Some of these suggestions include:

- The creation of an International Satellite Monitoring Agency to provide satellite-based photographic data to complement seismic observations and thus help verify any ban on testing.
- Increasing the responsibility of the IAEA as the chief verification agency for future arms control agreements. IAEA director Hans Blix described the recent acceptance argeement by several weapons states, including France, the Soviet Union, and the United States, to accept IAEA safeguards on their civilian nuclear power plants as "paving the way for the type of verification which might be required in more far-reaching agreements."

Reagan, Gorbachev Trade Offers

In a move clearly designed to influence the upcoming Nuclear Non-Proliferation review conference, the Soviet Union on 30 July promised to halt all nuclear testing for at least 5 months beginning on 6 August, the 40th anniversary of the bombing of Hiroshima. In a public announcement of the proposal, Soviet premier Mikhail Gorbachev stated that its purpose was to create "favorable conditions" for negotiations on a test ban treaty. But he noted specifically that "undoubtedly a mutual moratorium by the U.S.S.R. and the United States on any nuclear blast would be a good example also for other states possessing nuclear weapons."

The Reagan Administration, which supports a comprehensive test ban only as "a long-term foreign policy goal," rejected the Soviet offer. Instead the President suggested that the Soviets send key scientists to the U.S. test site in Nevada, so that they could directly measure the yield of a U.S. bomb blast. The visit would enable the Soviets to calibrate the scientific equipment to reassure them that the United States is adhering to the existing treaty limiting the yield of nuclear explosions to 150 kilotons. In return, U.S. officials hope to gain access to the Soviet test sites and make similar measurements.

Although the timing of the U.S. proposal made it look like a counteroffer, various officials stated that it had actually been under serious consideration since last October, as one of several options to enhance the verifiability of the treaty limiting nuclear test yields. "This offer, which is unconditional, is a unilateral step which clearly demonstrates the U.S. intention to go the extra mile," said White House spokesman Larry Speakes. "The Soviet experts are invited to bring any instrumentation devices that the Soviet Union deems necessary" to determine the yield of this test.

Some weapons scientists are concerned that the Soviets could learn details of U.S. bomb design by monitoring a test in Nevada.

The delay may have been caused by resistance at U.S. weapons labs. Specifically, some weapons officials are concerned that the Soviets will take advantage of the open-ended nature of the offer and bring along equipment that could detect the details of U.S. bomb design. At present, for example, the United States ascertains test yields primarily by analyzing radiochemical samples taken from the cavern created by a blast. "If the Soviets did the same, they would learn a lot about the components of the bomb," says a senior U.S. weapons scientist. Instead, the labs want the Soviets to use a device that measures the shock waves created during a detonation.

No detailed policy review preceded the Administration's rejection of the Soviet offer. The labs were asked what tests were planned over the next 5 months, but no effort was made to calculate the cost of returning to the present schedule once the moratorium had ended. Tests of four different warheads—destined for the Trident submarine, the MX missile, new artillery shells, and a new antisubmarine weapon—would have been delayed.

Robert MacFarlane, the President's national security adviser, asserted that the Soviets had prepared for the moratorium by stepping up their own test program. Officials at the Department of Energy are not so sure, however. "If you take [an] average of the number of tests to date you will find, in a legalistic sense, they have done more tests than the average," says one official. "But the problem is that it's this time of the year that they do most of their testing because the Soviet test sites are under snow during the winter. So they are always ramping up in May, June, July, and August. You're talking about the difference of a few tests. The question you have to ask is 'So what if they did four more tests this year than last? Is that a big deal or not?' "—**R. Jeffrey Smith**

• A possible agreement by both superpowers to suspend nuclear testing during a brief period preceding and following the review conference. Egypt's Ambassador Shaker claims that such a gesture would signify that the two superpowers "have decided to pay more attention to the pleas of the non-nuclear-weapons states for real progress in halting and reversing the nuclear arms race."

• Preliminary moves, which are not likely to enter the public spotlight until after the conference, to work toward a test ban through amendments to the Threshold Test Ban Treaty, which has been signed but not ratified by the United States. The support of 38 signatory countries is required to call an amendment conference. Promoters of this strategy feel it could offer an attractive political alternative for the Reagan Administration.

Any steps taken by the review conference toward a test ban will find some enthusiastic supporters—as well as critics—in the U.S. Congress. Senator Edward Kennedy (D–Mass.), coauthor of a resolution last year with Senator Charles Mathias (R–Md.) promoting a comprehensive test ban, told the colloquium that it was "critical that the NPT should be extended, not dismantled." In contrast, Senator Ted Stevens (R–Alaska) said that any signals from the Third World that they were not totally committed to preventing nuclear proliferation would be "counterproductive."

There were words of caution, too, from Representative Edward J. Markey (D–Mass.), an equally firm supporter of the test ban, who admitted in an interview that most members of Congress currently felt it was a "low priority" at the present time. However, suggests Markey, this month's review conference will give Third World countries "a real opportunity to put some pressure on the U.S. and the U.S.S.R. to take some serious steps toward disarmament or accept the consequences."—**DAVID DICKSON**

Sharing Research Data Urged

In 1975, an article was published purporting to show that eight murders are deterred every time a prisoner is executed. The data on which this conclusion was based were not generally shared with other researchers, but when others assembled data of their own they found that the conclusion was not valid. In the meantime, the original article was widely used in the debate over capital punishment.

The authors of a recent National Research Council study* use this example, among several others, to argue the case for increased sharing of raw data among researchers. Although their report is directed primarily toward social scientists, they contend that data sharing in other disciplines is also in need of improvement.

The report, which was published without fanfare several weeks ago, was the topic of a special session at the Joint Statistical Meetings, held in Las Vegas on 7 August. Prepared by a committee chaired by Stephen Fienberg, a statistician from Carnegie-Mellon University, the report casts doubt on the workings of what is popularly thought to be a central part of the scientific method: the sharing of data for purposes of verifying and extending research results.

Although data sharing is acknowledged by most scientists to be important, "many members of the scientific community are reluctant or unwilling to share their data even after publication of analyses of them," the report states.

Many factors tend to get in the way of data sharing. They include legal restraints, such as the obligation to protect the privacy of research subjects, commercial considerations, and technical problems in transferring data between different computer systems. In addition, substantial costs can sometimes be incurred in making data available to others.

However, the report also says there are attitudinal problems. "Researchers may be concerned about the qualifications of investigators requesting data and fear that poor reanalysis may require burdensome rebuttal or reflect adversely on original research." Moreover, the report continues, "Sharing of data involves loss of control over data, the purposes for which they are used, and the methods of analysis. That requests for the sharing of data are often met with delays and noncooperation is not surprising."

Ideally, the report says, researchers should share data by the time their major analyses are published, especially when the research has relevance to public policy. Investigators should also make data sharing an integral part of their research plan and they should keep data readily available well after the research is completed.

The report offers the following recommendations to encourage researchers to live up to the ideal:

• Organizations that fund scientific research should require applicants to guarantee data sharing or to justify explicitly in their proposals why sharing would be inappropriate.

• Editors of scientific journals should require authors to provide access to data during the peer review process, and they should give more emphasis to reports of secondary analyses and replication of original results. Editors should also require full credit and appropriate citations to original data collections.

• A computerized reference service for computer-readable social science data should be developed to promote the use of data that have already been collected.

Many benefits would result from more widespread data sharing, the report concludes. They include reinforcement of open scientific inquiry; verification, refutation, or refinement of original results; promotion of new research through existing data; encouragement of more appropriate use of empirical data in policy formulation and evaluation; improvements in data collection methods; protection against faulty or fraudulent data; and encouragement of the use of data across disciplinary lines.

According to Fienberg, "We have to change the mores of scientists themselves. We need to instill in the scientific community the ethical notion that data sharing is a scientific responsibility."—**COLIN NORMAN**

**Sharing Research Data* (National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418); $17.50. Committee members were Stephen E. Fienberg, Carnegie-Mellon University; Clifford G. Hildreth, University of Minnesota; Leslie Kish, University of Michigan; and Edward R. Tufte, Yale University.