Administration at Odds over Soviet Cheating

Some allegations, listed as "probable" or "likely" in Administration reports, are disputed by government experts

In a report released on 1 February, the Reagan Administration concluded that the Soviet Union had in all likelihood repeatedly violated the Threshold Test Ban Treaty (TTBT), which prohibits the testing of nuclear weapons with a yield of more than 150 kilotons. This judgment was apparently based on a government analysis of seismic signals from the Soviet Union indicating that 8 or 9 tests since 1976 had excessive yields. "These Soviet actions continue despite U.S. requests for corrective measures," the report added.

In making this allegation public, however, senior Administration officials did not mention that seismic experts within the Central Intelligence Agency (CIA) and the Department of Energy (DOE) believe that the present method of determining the yield of Soviet nuclear tests is wrong. If it were corrected, these experts believe, the Soviets would appear to be substantially in compliance with the treaty.

Some independent arms control experts believe that the omission of this detail made the allegation of cheating on the TTBT appear more certain than it actually is. They say that most of the other allegations of cheating described in the Administration's report as "likely," "probable," or "potential" are far more problematic than the Administration has let on. "Most of these are actually based on highly disputed evidence or interpretations," says Spurgeon Keeny, Jr., a former deputy director of the Arms Control and Disarmament Agency who now directs the Washington-based Arms Control Association.

But several officials involved in the report's preparation, who declined to be quoted by name, assert that the uncertainties have been adequately explained, given the limitations of national security and diplomatic protocol. The report language represents a compromise, they say, between those officials predisposed to a negative interpretation of Soviet behavior and those who insist on a fairly rigorous standard of proof in making allegations of Soviet cheating. The publication of the allegations was ultimately favored by both camps because it added bulk to the overall report, while specifically refuting claims in Congress and elsewhere that the violations are clear-cut.

The allegation that "Soviet nuclear testing activities for a number of tests constitute a likely violation" of the unratified TTBT, for example, represents a compromise between officials of the Defense Department and those of several other government agencies. At its heart is a highly controversial assessment of seismological data gathered at classified sites in Australia, China, England, Greece, the Philippines, Spain, and elsewhere around the globe. The sites are operated by the Air Force Technical Applications Center, which helps correlate the data at its geophysics office in Cocoa Beach, Florida, for review by the Joint Atomic Energy Intelligence Committee, which reports in turn to the National Foreign Intelligence Board.

Spurgeon Keeny, Jr.

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Estimates of Soviet test yields are produced largely by comparing the resultant seismic signals with those generated by U.S. tests in Nevada. A complicating factor is introduced by differences in U.S. and Soviet rock structure, which cause signals from Russia to be broadcast more clearly than those from the United States. As a result, the estimates of Soviet yields are discounted by a fixed percentage (the exact number is classified, but it is believed to be around 30 percent).

A controversy over the yield estimates has arisen because, more than a year ago, CIA representatives on the Joint Atomic Energy Intelligence Committee said that the discount factor was too low and should be revised. Along with some experts at DOE, they cited as justification a wealth of new information about the manner in which seismic signals propagate. Specifically, they believe that the so-called "surface" waves, which travel through the earth's upper crust, should be given additional weight in yield estimations. At present, yield estimations are derived primarily from so-called "body waves," which propagate through the earth's mantle and core. Many experts, both inside and outside the government, believe that undue reliance on body waves has resulted in continual overestimates of Soviet yields.

Although there is still no consensus about what the new discount factor should be, several well-informed sources say that a reestimate would almost certainly indicate that the Soviet Union is in compliance with the treaty, a view now held by much of the academic seismological community, as well as the Swedish and British defense ministries (*Science*, 18 February 1983, p. 819; 13 May 1983, p. 695; 17 June 1983, p. 1252).

Thus far, resistance by the Pentagon has blocked any formal action in the intelligence committee, and the recommendation has apparently not been reviewed by either the National Foreign Intelligence Board or the National Security Council. A number of influential Pentagon officials, including Assistant Secretary of Defense Richard Perle, oppose the change out of fear that any reestimation would quickly become public knowledge, and that as a result, the Soviets would capitalize on it by building and testing more powerful nuclear devices than they have already. Even now, Perle believes, "we are precluded from developing new weapons of comparable yield because of our compliance under the treaty." This assertion is highly controversial, however, and others within the government believe that any differences in U.S. and Soviet test yields to date have been militarily insignificant.

No resolution of the controversy is expected until later this year, when a handful of highly classified seismological studies are completed. Meanwhile, Lynn Sykes, a seismologist at Columbia University who has long agitated for a revi-

sion in the yield estimates, has called for an independent analysis of yield estimation techniques by the National Academy of Sciences or the congressional Office of Technology Assessment.

Several of the other "probable" or "likely" Soviet violations listed in the Administration's latest report involve treaty interpretations that also aroused substantial controversy within the government. The report says, for example, that the Soviets have probably violated a provision of SALT I designed to complicate the development of a surreptitious

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ballistic missile defense. Specifically, the provision bars tests of air defense weapons or components "in an ABM [antiballistic missile] mode." Some Reagan Administration officials, including Perle, believe that the Soviets have violated this provision by operating several small air defense radars during ballistic missile flights at established test ranges on the periphery of the Soviet border. The Soviets, however, maintain that the radars are merely used to check for the presence of aircraft, as a measure of self-defense.

Some Administration officials, who again decline to be identified, agree that the provision fails to bar such operations explicitly. They call the issue "a gray area," and say that the Soviets are exploiting a loophole in the treaty's language. The problem was nearly resolved at a meeting in 1983 of the U.S.–Soviet Standing Consultative Commission, established by the treaty as a forum for resolving compliance disputes. But the new agreement—which places limits on radar operation and requires formal notification—was postponed after the Soviets shot down Korean Airlines flight 007. A final resolution is expected sometime this year at a meeting of the SCC.

A similar dispute lies behind the Administration's allegation that the Soviets have potentially violated a provision of SALT I that bars development, testing, or deployment of ABM systems or components that are mobile, including mobile radars, which are far less vulnerable than fixed radars. No one disputes that the Soviets have constructed a radar, dubbed Pawn Shop by United States, that is small enough to be placed in a large van and moved about. "It was obviously designed with mobility in mind," one official says. But none has apparently actually been moved, or even sighted atop a set of wheels. Consequently, many officials believe that the Soviets have again exploited a loophole created by an undefined treaty provision, amounting to a violation of the treaty's spirit, not its letter.

Finally, the Administration's report states that the Soviets have probably violated a provision of the unratified SALT II treaty that specifically bars deployment of the SS16, a long-range ballistic missile that fared poorly in a series of tests during the mid-1970's. The intelligence community has known since 1979 that a number of SS16's are stored at a Soviet military launch site in Plesetsk, but that also they are not "operational" or ready to be launched. A few officials, including Perle, say that this is irrelevant, because the SS16's could ultimately be made ready for use. But others point out that the treaty never required that the missiles be dismantled, and assert that missiles in storage cannot be considered "deployed" under any reasonable treaty interpretation.

Keeny believes that the inclusion of these charges in a public report, tenuous as they are, interferes with the government's justifiable expression of concern about developments such as the construction of a new Soviet radar at Abalakova (*Science*, 22 March, p. 1442). "We have diminished the significance of our legitimate arguments by hitting some of these issues very hard, when the evidence is sometimes thin and some of the treaties have not even been ratified," he says.

But an Administration official, who is critical of the Pentagon's position on several of these compliance issues, says that the allegations were publicized with qualifiers in an attempt to dampen, not increase, public concern. "It's important that we control how these issues are discussed," the official says. "If we had ignored them in the report, the conservatives in Congress would have accused us of a cover-up." In the official's view, the inability of various factions within the Administration to reach a consensus on the issues left it with no choice but to produce the report that it did.

—R. JEFFREY SMITH

This is the fourth in a series of articles on U.S.–Soviet treaty compliance. The next will examine allegations of U.S. treaty violations.

Academic Consortia Receive First Star Wars Grants

In the first of several major grants to the academic community, managers of the Defense Department's "Star Wars" program have awarded $20 million to a group of five universities for research on space power systems and $9 million to a group of ten universities and five corporations for research on optical signal processing. A third, $15 million grant has also been awarded to a group of eight universities and seven corporations for research on composite materials.

The goal of the first group will be to develop chemical or solar power systems for directed and kinetic energy weapons. The participants are Auburn University, Polytechnic Institute of New York, SUNY, Texas Tech, and the University of Texas.

The goal of the second group is to develop hybrid optical and electronic signal processors, needed for the high-speed computers to be incorporated in advanced ballistic missile defense systems. Such processors would use photons, as well as electrons, to convey data, and would theoretically be highly resistant to radiation created by nuclear explosions. According to James Ionson, a director of the research program, the research will initially be entirely unclassified. The principal participants include Batelle Columbus, Caltech, Carnegie-Mellon, Georgia Tech, MIT, Stanford, Lincoln Laboratories, the Naval Ocean Systems Center, and the universities of Dayton and Alabama.

The goal of the third group is to develop strong, lightweight, composite materials for use in large space structures, such as orbiting weapons platforms and sensors. A premium will be placed on materials capable of damping vibrations generated by particle beam and laser weapons, as well as on materials capable of shielding such weapons from a Soviet attack. The principal participants include Brown University, the Colorado School of Mines, Drexel University, Johns Hopkins, MIT, the National Bureau of Standards, the Naval Research Laboratory, Penn State, Rensselaer Polytechnic, and Texas A&M. Some of this work will be classified, Ionson says, but no work on academic