

Dispute over Soviet Testing Heats Up

A dispute within the Reagan Administration over Soviet compliance with a nuclear testing treaty has recently become more acute. Several new reports prepared by Department of Defense (DOD) and Central Intelligence Agency (CIA) advisory panels have recommended that the government promptly revise its method of estimating the yields of Soviet nuclear tests, which are limited by the treaty to 150 kilotons. If the revisions were made, it would appear that the Soviet Union is substantially in compliance with the treaty.

But the Defense Department, which maintains that the Soviets have been violating the treaty, is dragging its feet on the recommendations, according to several government officials. In a classified letter to CIA director William Casey last month, for example, Secretary of Defense Caspar Weinberger proposed that a detailed study of the matter be initiated by the Defense Science Board, citing as justification the existence of "conflicting evidence" about the need for revising the yield calculations. "There is no such conflict," says a well-informed government expert in this area. "The advisory panels are in agreement that revisions must be made."

The stimulus for the new recommendations is a series of reports by government contractors indicating that so-called surface waves, or seismological signals that propagate through the earth's upper crust, can be used to estimate Soviet yields with considerable reliability. One classified report, issued by Sierra Geophysics of Seattle, Washington, states that "prompt tectonic release," a classical contaminant of surface wave signals, can now be weeded out in most instances. The report indicates that many Soviet tests appear to have substantially lower yields when this method of analysis is applied. Another study, prepared by S-Cubed of La Jolla, California, indicates that unusual geological features along the path of surface wave propagation can now be reliably factored in yield estimation.

These and related reports by such firms as Teledyne Geotech of Alexandria, Virginia, are considered sensitive because they bolster charges by various scientists that the government's present method of Soviet yield estimation is incorrect (*Science*, 10 May, p. 695). The S-Cubed study has been formally disapproved for public distribution, for example, even though it is not classified and a substantial portion of it was presented at the December meeting of the American Geophysical Union in San Francisco.

The topic is politically delicate because top Reagan Administration officials have cited the evidence of Soviet cheating as a principal justification for seeking revisions in the treaty, which was signed by President Ford but never ratified by the Senate. On 15 May, in a major rebuke, the House Foreign Affairs Committee approved a resolution urging the President to submit the treaty for ratification as is, along with a list of additions that might be negotiated later. The resolution also supports immediate resumption of negotiations on a comprehensive test ban, which the Administration opposes.

Significantly, the conclusions of the contractor studies have been heartily endorsed by the DOD Technical Review Panel on Nuclear Test Ban Verification and the Air Force Technical Applications Center (AFTAC) Seismic Review

Panel. The former, in a classified report issued on 5 April, stated that "although serious problems have been identified in the procedures currently employed to determine yield from [surface wave] observations, the panel is unanimous in its belief that methods for obtaining reliable yield estimates from surface wave data are now available." It went on to note "the most recent analysis of surface wave data" indicates that a critical factor in official yield estimation—the difference in seismic propagation characteristics between the U.S. and Soviet test sites—is at present too low, which means in turn that estimates of Soviet yields are too high. Thomas Jordan, a professor of geophysics at MIT who chairs the panel, declined any comment. But he noted that "the consensus was strong regarding the statements in that report. We were basically not informed of any serious challenge to the technical results."*

A similar conclusion was reached in February by the AFTAC panel, which is more directly responsible for Soviet yield estimations. Its report, which has been very closely held within the government, recommends that the existing method of analysis for surface waves be substantially changed. "The clear implication—although we don't actually state it—is that substantially greater emphasis should be placed on surface waves," says a panel member.

Ralph Alewine, the director of the geophysical sciences division at the Defense Advanced Research Projects Agency (DARPA), also declines any detailed comment. But he acknowledges that the "new methodology that's come out of our research program and been reviewed by our outside experts is clearly the most appropriate technique for using surface waves to get appropriate yields. The indications are that when we use this method and correct for 'tectonic release' and [unusual geologic features], then the yields we get are somewhat lower than we obtain from current methods."

Last year, DARPA and the CIA officially backed revisions in the method of yield estimation, but the Joint Atomic Energy Intelligence Committee acted to postpone any changes at the request of its members from the three military services. In recent weeks, "the issue has popped up from this level and landed on the desks of the principals in several agencies, including DOD and CIA," one official states.

But thus far, the Administration's only response to the new recommendations has been to urge additional study and review, and to begin emphasizing so-called "nonseismic" evidence of Soviet cheating on the nuclear test treaty, which allegedly includes human intelligence, communications intercepts, and unspecified "physical evidence." Several government scientists who are privy to the details say that it is even more questionable than the seismic evidence, but some officials at DOD disagree, and no comprehensive government analysis has ever been conducted. Weinberger ordered such an analysis to be performed by the Defense Intelligence Agency shortly after the AFTAC report was completed.—**R. JEFFREY SMITH**

*Included in the panel's membership are Shelton Alexander of Penn State, James Hannon of Lawrence Livermore, David Harkrider of Caltech, Eugene Herrin of Southern Methodist University, Otto Nuttli of St. Louis University, Sean Solomon of Massachusetts Institute of Technology, and Lynn Sykes of Columbia University.