

US-SOVIET RESEARCH IN ARMS CONTROL

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On a Soviet military plane (above) en route from Kyshtym, Evgeny Velikhov (back to camera) and Frank von Hippel discuss Velikhov's article for this issue of *PHYSICS TODAY*. Representative John Spratt of South Carolina looks on from right. **Velikhov and Thomas Cochran** (left), senior staff physicist for the Natural Resources Defense Council, stand in front of the beam director at Sary Shagan.

Much of the excitement may seem to have gone out of arms control since the high drama of Reykjavik—the October 1986 summit meeting in which President Reagan and General Secretary Gorbachev came close to reaching a historic agreement. Yet even in these much more quiet times the US and Soviet governments continue to conduct promising negotiations across a broad range of arms control issues. And still more quietly, but not far behind the scenes, scientists from the US and USSR carry on more informal but increasingly well-organized discussions of more distant and more daring ways of strengthening limits on nuclear arms and of furthering a long-term process of disarmament.

The following two articles describe such research by US and Soviet scientists. The first, by Evgeny Velikhov, provides new information on the role Soviet scientists—often with input from US counterparts—played in the USSR's internal debate over ballistic-missile defenses. In some ways, according to Velikhov's account, that debate has echoed, and in other ways it anticipated, the US Star Wars and ABM controversies.

Velikhov is perhaps best known to the US general public as the senior scientist involved in emergency operations immediately after the Chernobyl disaster. But well before that US physicists were acquainted with him as the director, within the USSR Academy of Sciences, of the Soviet fusion program. Today, in addition to being a personal adviser to Gorbachev, he is head of the Kurchatov Institute, a vice president of the Soviet Academy and a

member of the newly reconstituted Supreme Soviet.

Frank von Hippel, the author of the second article, has conducted research for many years on various aspects of arms control. He also has been an advocate of more active involvement of independent scientists in public policy debate. In recent years, as a professor at Princeton University and a leader in the Federation of American Scientists, von Hippel has played a central part in the establishment with Soviet scientists of cooperative research programs in arms control and disarmament. These programs are the subject of his article.

Velikhov and von Hippel describe similar developments from somewhat contrasting perspectives, and the opinions expressed are strictly their own. Both of them see a promising precedent in a joint seismic monitoring program established several years ago, and this program figures prominently in both their articles. In addition, in a box on page 34 von Hippel describes a visit a US group made this summer at the invitation of Velikhov to Sary Shagan, which the Pentagon alleged to be the USSR's premier test center for directed-energy weapons. A box on page 45, coauthored by Steven Fetter of the University of Maryland and von Hippel, describes a test of cruise-missile warhead detection techniques conducted on the Black Sea by US and Soviet teams.

A closely related report on page 87 describes an unprecedented visit some of the US group paid to the "secret" Soviet plutonium production complex at Kyshtym.

—WILLIAM SWEET