U.S. Defense Faction Leaks:

Soviet Fusion Work Yields 'Superweapon'

Circles within the Pentagon and U.S. military intelligence have moved to outflank Carter on energy and defense policy with the disclosure that the Soviet Union is on the verge of deploying a "directed-energy beam" weapons system. As reported in detail in the May 2 *Aviation Week*, a defense industry trade journal, such a weapon could completely disable any American ballistic missile-launched nuclear weapons.

The importance of the disclosure is not military; as with all seemingly military developments, the real impact is political and scientific. *Aviation Week* emphasizes that the energy beam system's development in the Soviet Union occurred as a by-product of their crash research program for the development of commercial fusion power — the research which the Carter Administration and its Rockefeller controllers are committed to end in this country.

The *Aviation Week* article identifies a deep, political split within military and intelligence circles in the United States, between a group around General George Keegan (the just-retired head of U.S. Air Force Intelligence) and the "establishment" of the military intelligence centered in the Nuclear Intelligence Board of the CIA — unnamed as the center of Utopian-Rockefeller military assessment.

Aviation Week quotes an unidentified intelligence official: "The one thing that General Keegan finds so pernicious about this whole thing is that CIA and other top U.S. officials scoff at the idea that the backward Russians can develop a technology that we have been unable to develop in the U.S."

The Political Question

The unwillingness and inability of the U.S. to develop the sophisticated technologies involved in the beam weapon is a political question precisely because these technologies are inseparably connected with energy and industrial development. The *Aviation Week* article correctly identifies this in the specific case of the relation between Soviet fusion scientist L.I. Rudakov's groundbreaking work on electron beam fusion and weapons development (a development on which this news service was the first to report).

To the extent that the pro-development military circles responsible for the *Aviation Week* story recognize and publicize the interconnections between the U.S. military disadvantage, Carter's no-energy-no-technology policy, *and* Schlesinger's "bluff 'em-bomb 'em" foreign policy will the *political* potential for defeating Carter be realized.

Jimmy Carter Says...

The Soviet Union is "many years away" from developing a weapon that could neutralize United States missiles, Jimmy Carter said in response to the revelations by Major General Keegan in this week's *Aviation Week and Space Technology*. The President, who earned his military credentials as a professional stoker on a nuclear submarine, told a convention of the American Society of Newspaper Editors, "We have no evidence that the Soviets have achieved any major breakthrough."

The Scientific Question

The question the *Aviation Week* article raises only implicitly is a scientific one: How could the Soviets, with a substantially less advanced industrial base, have realized technologies which are upwards of ten years ahead of the U.S.?

The clearest answer lies in the interaction between scientific research, development, energy policy, and weapons technology. A prime example is the case of what the *Aviation Week* article identifies as "flux welding," described as "a process which makes the bonded material weld as strong as, or stronger than, steel walls."

The nonexistence in the U.S. of this welding technology, in fact, was the basis for the assessment of some U.S. "experts" that the beam weapons system is *impossible*.

The problem is the following: To produce energy in sufficient amounts, quickly enough, to power a beam of particles traveling at near the speed of light, a pulse of electricity that contains the energy of 1,000 tons of TNT must be generated within a millionth of a second. The only existing means of releasing this amount of energy in such a short time is a nuclear explosion; but how can such an explosion be contained?

The Soviets have devised a large steel chamber in the shape of a dumbbell, with spheres on either end of about 60 feet diameter with 13-foot thick walls! To weld such a structure together is judged "impossible" by experts in the U.S., but the Soviets have developed a welding technology that can do it, called "explosive flux welding" in the U.S. and "cumulative explosion welding" by the Soviets.

Successful Policy

The history of this welding technology exemplifies the ingredients of a successful military, energy and industrial development policy. In the 1940s the Soviets were faced with the problem of devising a welding technology that could maintain the rail system in Siberia's intense cold.

One of the Soviet Union's foremost physicists, Mikhail Lavrent'ev, and his students began studies in heat transfer, shock wave propagation, and nonlinear hydrodynamics. As a result of their theoretical work in highly nonlinear effects, and some fortuitous experimental work, the Soviets found that a mixture of flux (cleaning agents used in welding) and explosives allowed for a rapid welding of large surfaces of metal and resulted in welds of extraordinary strength.

Contrary to common sense, the explosion of the flux does not push the metal surfaces apart — it bonds them together with greater strength than the metal itself!

Lavrent'ev continues to lead a large group in Novosibirsk which is studying the problems of materials and welding. It is this expertise which has allowed the Soviets to progress at an extraordinary rate in the fabrication of very large vacuum vessels in fusion research and to build the "impossible" reaction chamber for a military application.

Energy research and industrial development are key in every one of the technologies necessary for building the beam weapon that Keegan warns about.

In an editorial, *Aviation Week* blamed the "suppression of evidence of a massive Soviet research, development, and industrial push aimed at the goal of an anti-ICBM directed-energy weapon" on "smugness and intellectual arrogance." This is silliness. The blame belongs squarely on the shoulders of those who propose a halt to fusion and fission research, a halt to industrial growth, and destruction of creative science.

—Dr. Steven Bardwell

Aviation Week Magazine:

Soviets Push For Beam Weapon

The following are major portions of the article by Clarence Robinson, Jr. which appeared in the May 2 issue of Aviation Week, *revealing the imminent Soviet deployment of a charged-particle "beam weapon system" which was developed as a spin off of Soviet research into fusion power applications. The sub-head of the article reads: "USSR developing charged-particle device aimed at missile defense, exploring high-energy lasers as satellite killer."*

Washington — Soviet Union is developing a charged-particle beam device designed to destroy U.S. intercontinental and submarine-launched ballistic missile nuclear warheads. Development tests are being conducted at a facility in Soviet Central Asia.

The Soviets also are exploring another facet of beam weapons technology and preparing to test a spaceborne hydrogen fluoride high-energy laser designed for a satellite killer role. U S. officials have coined the term directed-energy weapons in referring to both beam weapons and high-energy lasers.

A charged-particle beam weapon focuses and projects atomic particles at the speed of light which could be directed from ground-based sites into space to intercept and neutralize reentry vehicles, according to U.S. officials. Both the USSR and the U.S. also are investigating the concept of placing charged-particle beam devices on spacecraft to intercept missile warheads in space. This method would avoid problems with propagating the beam through the earth's atmosphere.

Because of a controversy within the U.S. intelligence community, the details of Soviet directed-energy weapons have not been made available to the President or to the National Security Council.

Recent events have persuaded a number of U.S. analysts that directed-energy weapons are nearing prototype testing in the Soviet Union. They include:

* Detection of large amounts of gaseous hydrogen with traces of tritium in the upper atmosphere. The USAF-TRW Block 647 defense support system early warning satellite with scanning radiation detectors and infrared sensors has been used to determine that on seven occasions since November, 1975, tests that may be related to development of a charged-particle beam device have been carried out in a facility at Semipalatinsk.

* Ground testing of a small hydrogen fluoride high-energy laser and detection of preparations to launch the device on board a spacecraft. Some U.S. officials believe the test of the antisatellite laser may be related to recent Soviet activities on a manned Salyut space station.

* Test of a new, far more powerful fusion-pulsed magnetohydrodynamic generator to provide power for a charged-particle beam system at Azgir in Kazakhstan near the Caspian Sea. The experiment took place late last year in an underground chamber in an area of natural salt dome formations in the desert near Azgir and was monitored by the TRW early warning satellite stationed over the Indian Ocean.

* New test site at Azgir under the direct control of the Soviet national air defense force (PVO Strany), commanded by Marshal of the Soviet Army General P.F. Batitskiy. Since the PVO Strany would be responsible for deploying a beam weapon to counter U.S. ICBM warheads, Marshal Batitskiy's role indicates a near-term weapons application for these experiments, U.S. officials believe.

*Point-by-point verification by a team of U.S. physicists and engineers working under USAF sponsorship