

## The SDI: How the Russians and friends threw it off track

by Carol White

On February 17, 1982, Lyndon H. LaRouche proposed to a Washington seminar that the United States develop a beam-weapon anti-missile defense capability. The argument developed then, and substantiated in detail since, was that despite the fact that the Soviets have been working on beam-weapon defense for more than a decade, the application of American methods—in particular the approach of a crash program—to the problem could put us comfortably in the lead of Soviet efforts, particularly if certain theoretical blocks in the methodological approach to the problem could be overcome.

In this regard, he emphasized the importance of applying Bernhard Riemann's analysis of shock waves to the possibilities for destroying missiles at reduced power densities. The idea was to induce nonlinear reactions between the beam and missiles, which would destroy the missiles without necessarily overpowering them.

Despite the disingenuous caviling of critics of the ilk of the Union of Concerned Scientists, and their congressional representatives in the Office of Technology Assessment, the program has proven more successful in its demonstrated potential than even its most sanguine supporters could have hoped—considering the miserable budgetary constraints to which it has been subject. Yet, just at the point that the program is ready for takeoff, it is in effect being strangled. By failing to fund the program adequately, and by restraining the program within the guidelines of a restrictive interpretation of the ABM treaty, the United States has ensured that it

does not and will not in the immediate future, have a deployable ABM capability.

While the Reagan-Gorbachov summit presumably ended in a deadlock, with President Reagan refusing to bargain away the SDI program, the reality of the post-summit period appears opposite. With passage of the Gramm-Rudman amendment, the KGB supporters in the U.S. Congress have moved quickly to gut the SDI budget still further for fiscal year 1986—to the amount of \$1 billion. This scenario of using budget-cutting as the weapon to destroy U.S. defense capabilities, had in fact been spelled out by Georgii Arbatov, head of the Soviets' U.S.-Canada Institute.

The enemy is working fast, through the congressional circles which they control. Not only has the SDI budget been cut, along with the general gutting of the defense budget, but funding for all future tests of anti-satellite (ASAT) weapons has been removed. This gives the Soviets complete freedom not only to use space satellites for the command-and-control of troops and submarines, but to mount a space ABM defense without fear of reprisal. This congressional action occurred on Dec. 13, just one day after the successful placement of ASAT targets in space. By stopping future tests, Congress has, ironically, wasted the \$20 million already invested in target placement.

The immediate response of the Pentagon was to the point: "This action places the future of the U.S. ASAT program in Soviet hands," a Pentagon spokesman told the assembled news corps. Pointing out that the Soviets have been testing

ASATs for over a decade, he said: "The congressional action in effect gives the Soviets life or death veto power over a vital U.S. defense program."

On Nov. 26, Lt.-Gen. James Abrahamson, director of the SDI office, gave newsmen a roundup on the accomplishments of the program this past year. This briefing was supplemented with remarks by the program's scientific advisor, Gerald Yonas.

Abrahamson emphasized that the Livermore Laboratory free-electron laser amplifier has made great progress over the year. Results were so good that the SDI Office, under the exigency of making forced choices, has decided to emphasize the ground-based free-electron laser. Abrahamson defended this premature narrowing of the focus of the program as the only competent response to an inadequate budget.

He described the situation faced by SDI planners: "We didn't get the money we needed either in FY85 or in FY86. And we had a choice. One choice is to try to take this broad range of technology and just slow it all down evenly. I don't think that's very good management. . . . In terms of laser technologies, and remember laser technologies are only one of several technologies, in terms of laser technologies, it's bursting. There are many different kinds of lasers which are coming ahead—excimer lasers, different chemical lasers, and the free-electron laser—and there's all kinds of ideas. We couldn't follow all those ideas. So what we did is, we picked as a primary one the ground-based free-electron laser. We're still doing some work in each of the other areas, but as I indicated, that's in a back-up mode and the primary one is the ground-based free-electron laser."

Their intention is to use these ground-based lasers for boost-phase defense. To quote Abrahamson: "For example, a ground-based laser, and you see one located there up in Alaska in this case [slides were shown in the briefing]—it might or might not be located in Alaska—going up and bouncing off a mirror in space and going forward to what we call a fighting mirror and then going down to destroy a missile in the boost phase." He emphasized that despite the insidious attempt now being made to redefine the SDI as merely a terminal defense program, these lasers are planned for use in boost-phase target kill. He also stressed that work on defense against short-range missiles, which is of decisive importance in the European theater, is ongoing.

### **No U.S. lasers in space**

The key to the present SDI R&D program, as we shall develop in the second part of this report, is the fact that there is now no provision being made to place lasers in space. Not only does this bind the United States to the confines of the ABM treaty, which the Soviets are freely violating, but it means that those laser systems, such as chemical lasers, which might be readily *deployed* in the near future, in a first-generation SDI system, are being scrapped in favor of more long-term *research* goals.

In line with this, the Space Surveillance and Tracking System, which was scheduled to go into prototype development in January 1987, and which would have given the United States a space-based detection and tracking capability, has been frozen. Another program which is being held back, not mentioned specifically in the briefing, is space-based neutral beam detection, which can aid in discriminating between actual missiles and decoys, by inducing different radiation signatures when neutrons impact a decoy or missile.

Cuts in the ASAT program may well effect another side of the SDI effort—the use of electromagnetic rail guns to accelerate exceedingly small anti-warhead projectiles. Abrahamson pointed to the Air Force's progress in reducing the size of a lethal projectile from the 2,500-pound Homing Overlay Experiment missile tested in June of 1984 to less than 50 pounds in the ASAT program. Abrahamson reported the intent of reducing the missile to less than 10 pounds. Eight rail-gun installations are presently operating in the United States.

### **KGB sympathizers refuted**

Abrahamson described the work being done by a U.S. "red team," which is simulating possible Soviet countermeasures to the SDI. It has been elsewhere reported to us that this team has decisively put to rest the Union of Concerned Scientists' bugabear that the Soviets would be able to deploy a fast-burn booster which would be impervious to attack because of its speed. It has been shown that such a booster, if it could be built, would merely make the detection of bus-phase decoys that much simpler, since the decoys would be released in the atmosphere, rather than above it.

One of the great successes of this year, not mentioned in this briefing, has been the x-ray laser. The continual press barrage against the x-ray laser by reporters of the ilk of Flora Lewis, is in itself convincing proof that Livermore is doing something right. In fact, they have achieved lasing intensities orders of magnitude brighter than any anticipated. Indeed, these intensities have been so great that the laboratory has been unable to accurately measure them as yet. This is the basis for the KGB-cacaphony to demand that the tests be stopped!

Dr. Edward Teller addressed the Laser '85 conference in Los Alamos on Dec. 5. He briefed the assembled scientists on the recent successes of the x-ray laser program, but he also warned that, in his opinion, the Soviets might well still be in advance of the United States. As he said, the Soviets have been working on beam weapons for the past 15 years, and the inspiration for American work on the x-ray laser came directly from the work which the Soviets had done first.

The presently adequate funding level for the U.S. x-ray laser program is being justified by the evidence that the Soviets will be deploying their own version of the x-ray laser, perhaps in the not too distant future. Those involved in the x-ray laser program are convinced that there are no elements of

the U.S. program which demand capabilities which the Soviets are not known to possess.

On the same point, Abrahamson was asked whether or not the United States is in advance of the Soviets in ABM beam defense. His answer is worth quoting in detail.

"Are we ahead of the Soviets? I don't think so. I think it goes something like this. The Soviets are going to build their system their way, if they're developing such a system based on their own techniques, and their own methods, and they have an operating system today that they have been operating for a decade and a half."

He went on to develop his idea that they not only have a terminal defense concealed in warehouses, the "long pole" which he mentions, but other capabilities as well. He said: "And it's not the same kind of a system that we have, but the potential for that and in particular the fact that they have placed the long pole in the tent for that kind of a system and maybe for our kind of system as well, the command and control system, they've placed that out there and it's in place and it will soon be operational, means that I think they are ahead of us quite substantially."

Yonas pointed to the following areas where considerable progress has been made in the United States: automatic atmospheric compensation, free-electron lasers, laser lethality, and mid-course discrimination technologies. Tests over the year in Hawaii have demonstrated ability to focus low-power lasers accurately through the atmosphere, by automatically compensating for distortions caused by turbulence in the atmosphere.

### A record of successful tests

On Dec. 5, an underground test of the x-ray laser was performed. While results are not yet public on this test, despite adverse publicity to the contrary, previous such tests have demonstrated orders of magnitude increases in brightness of the laser over predicted values.

Chemical laser tests at White Sands have demonstrated that lasers are far more effective in killing boost-phase missiles than predicted by computer models. Yonas reported that tests showed that these missiles virtually self-destructed when hit with lasers. The power necessary for the laser kill was far lower than had been expected. He attributed this to the fact that the missile shells are "very highly stressed, very thin eggshell under aerothermal loads."

It is precisely results such as these which emphasize the need for continued tests, rather than reliance upon computer simulations, which depend upon built in, fixed assumptions. Only in this way can we learn about all of the potential, non-linear shock effects which can be expected to occur, according to the kind of theoretical considerations treated by Riemann, and successfully applied to fusion plasmas and aerodynamics.

Despite the fact that Abrahamson himself pointed to the necessity of experiments, in order to guarantee the vitality of the program, political restraints have been placed upon it, so

as not to offend the Soviets. In the next six months, he reported, a simulator will be built at the Martin Marietta Corporation for the purpose of "testing" pointing and tracking capabilities.

When asked about the restrictive interpretation of the ABM treaty, he replied: "At this point in time we are conducting a program within the President's policy, that was our planning and that was to do it in a strict way." The questioner had asked how much of the ABM system could be adequately tested by simulation. Abrahamson said that they were still limiting themselves to the phase of understanding elements of the system, rather than testing the deployment of the system.

His reply continued: "It's very different to take a large laser and to fire the laser and have it bounce off a mirror and go thousands of miles away and destroy a booster. That is a difficult problem. . . . It's really a matter of understanding more than . . . [Abrahamson here does not conclude his own thought, but says] at least at this point. Now at some point in time we may find that it is very very important, but we are conducting a program in accordance with the President's policy."

### Russians knock SDI program off the track

As we have said, in the wake of the November Geneva summit, the American Strategic Defense Initiative (SDI) program has suffered a phase change, in the direction of a shut-down. Although the program made some notable advances over the past year, its mere existence appears in jeopardy, if we define its purpose to be to provide this country with a first-generation, workable, layered anti-missile laser defense system in the next several years.

---

## Documentation

---

Since sometime in last year's presidential election campaign, SDI programs have been *restricted* to conform to the most restrictive possible reading of the 1972 Anti-Ballistic Missile (ABM) Treaty, wildly extending its domain of application to systems and technologies that its text explicitly excludes from its purview.

As a result, SDI program laser-power levels have been restricted to non-lethal values; and optical systems have been designed to be explicitly of insufficient quality for actual ABM components. In Appendix B of the Spring 1985 *Report to the Congress on the Strategic Defense Initiative Program*, the SDI office reports, "*Specific performance parameters for the experiments will be established to satisfy treaty compliant guidelines.*" In regards to one set of experiments, what this means is: "The power, optics, and laser frequency are not compatible with atmospheric propagation at ranges useful for ABM applications. *Tests are not planned against missiles or their elements in flight* [emphasis added]."

This outrageous policy is the meaning of the so-called

“restrictive” interpretation of the ABM Treaty. But by no means does this “interpretation” represent a literal reading of the treaty itself; rather, it was pushed through the administration early in the presidential campaign by White House Chief of Staff Donald Regan, Treasury Secretary James Baker, and U.S. Secretary of State George Schulz, to “restrict” the SDI program, and so satisfy the arms-control lobby in the Republican and Democratic parties. Because the restriction of the program under this policy is devastating and across the board, *EIR* reproduces portions of Appendix B below.

Former National Security Advisor Robert McFarlane’s “broad interpretation” of the treaty was the only one extant at the time of its signing. Nine years of Trilateral Commission appeasement policies have read into the text, the so-called “restrictive” application. At the present moment, however, the appeasement forces have succeeded in forcing the primary advocate of a strict, legal interpretation of the treaty, McFarlane, out of office, after accusing him of violating “the supreme law of the United States” and conspiring to do so “in secrecy without consultation with the Congress,” as former Treaty negotiator Gerard Smith did in the *New York Times* in November.

Smith and his associates have no legal ground to stand on. Every legal document from a lease on an apartment, to a treaty between nations, begins by defining the terms to be used in the matter that the document is to cover. The ABM Treaty is no exception to this. Article II of the treaty defines these terms, namely, what is covered by the treaty, just what is meant by an ABM system (and therefore what is not, namely, everything else). It reads:

1. *For the purpose of this Treaty*, an ABM system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of: (a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested which are launchers constructed and deployed for launching ABM interceptor missiles; and (c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode [emphasis added].

The SDI program, especially those parts that are being seriously limited by the “restrictive interpretation,” involve lasers, electron beams, optical systems, railguns, and many other technologies that have nothing to do with “ABM interceptor missiles,” or “ABM launchers.” In other words, *laser* ABM systems are covered by the treaty about as much as pop-guns are. As *EIR* has reported before, this aspect of the treaty was additionally spelled out in Agreed Statement D on systems “based on other physical principles.” The restrictive interpretation, however, makes analogies between the old technologies and the new, to arbitrarily extend the application of the treaty. This is exactly what is spelled out in the spring 1985 Pentagon report. The critical, compro-

missing paragraph (from Appendix B, “The SDI and the ABM Treaty”) reads:

In this assessment, many of the SDI devices do not use traditional technology, but are ‘based on other physical principles’ (such as lasers). In these cases *they were reviewed by considering their capability to substitute for traditional ABM components*, whether they will be ‘tested in an ABM mode’ *by analogy* to the requirement for interceptors, launchers, and radars, and *the intended use* of the device in the experiment [emphasis added].

From a legal standpoint, this is as if a landlord rented you an apartment, and then afterwards, and in disregard for the lease, began to charge you rent on the supermarket he owns across the street, in addition.

McFarlane insisted on a strict legal interpretation. He read the lease as saying nothing about supermarkets, or lasers. This is hardly a “broad” interpretation, as it has been called.

Appendix B of the SDIO report outlines in horrifying detail, how the “restrictive interpretation” has put the program in a straight jacket. Section B.1.6 “Compliance Assessment,” documents: the limitation of the power of laser components to levels not lethal to ICBMs, at ranges under test; the limitation of optical systems to qualities insufficient to focus a beam with required intensity to be lethal; the limitation of atmospheric propagation experiments to wavelengths inappropriate for atmospheric propagation; the conducting of as many experiments as possible within buildings, since anything conducted under a roof cannot be examined, “verified” by Soviet satellite, and therefore is permitted by the restrictive interpretation of the treaty; and many other cases. We quote the section briefly:

The bulk of the near-term effort consists of technology research efforts that support the 15 major experiments to be conducted by the SDI Program. . . .

The four DEW experiments . . . All of these tests are under-roof experiments using devices incapable of achieving ABM performance levels. . . .

The newly constituted Acquisition, Tracking and Pointing demonstration program. . . . These devices will also not be capable of achieving ABM performance levels.

Laser and optical subsystems from other programs will be integrated into an experimental device for ground-based testing against ground-based static targets. . . . This will demonstrate, in a ground test, the efficient integration of important subsystems, which (separated or in whole) are not ABM components or prototypes and are not capable of being based in space. The power, optics, and laser frequency are not compatible with atmospheric propagation at ranges useful for ABM applications. *Tests are not planned against missiles or their elements in flight.*