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R&D arm, has been involved with beam weapons since the 1960s. Locked in a file in his Arlington office is a copy of a report written in 1959 on ABM defence which, he says, outlines the problem they still face today. In a nutshell, this is how to destroy with a high degree of certainty droves of intercontinental ballistic missiles (ICBMs) that need a scant 1,800 seconds to reach their target. . . .

What has changed in the past quarter-century is the power of beams. The laser had not even been invented in 1959. Bolts of directed energy from beam amplifiers such as lasers and electron accelerators can travel at up to 100,000 times the speed of an ICBM. . . .

But another important pressure for a major national research and development programme comes from a widespread belief that it will help re-establish a technological leadership the U.S. is thought to have lost to Japan and Europe, even to the U.S.S.R. in some areas such as the space station.

A top-level study of U.S. national laboratories has strongly urged that the three nuclear weapon laboratories, diverted into alternative energies during the 1970s, should refocus on their primary task. Increasingly, that task may emerge as the "defensive nuclear weapon.". . .

Dr. Edward Teller . . . believes that all the talk of Star Wars is designed to discredit beam ABM weapons. "Space is all nonsense." The President himself made no reference to space, he points out. Dr. Teller believes that the complex technology of beam ABM weapons with its panoply of associated technologies will have to be installed on the earth's surface, not on space platforms, leaving only the mirrors needed to steer the beams to their targets out in space.

Dr. Teller also believes firmly that the U.S. should not try to do it alone, and so isolate itself from its allies behind a beam umbrella. It should be a NATO project. For such a technologically demanding venture "we are limited more by manpower—by ideas—than we are limited by anything else."

The editorial excerpted below, titled "Disarmageddon," appeared in the Sept. 18 Indianapolis Star.

A defensive weapon system that could make nuclear war impossible is a bright prospect that has survived a summer whose closing weeks have been darkened by the Soviet destruction of the Korean superjet. . . .

At a scientific conference in Erice, Sicily, on nuclear war, conferees signed a communiqué calling for the formation of a commission of about 100 persons to study the feasibility of a directed energy beam weapon system and the effects of nuclear war on the biosphere.

In a message sent to the conference, President Reagan reasserted his commitment, first made in his March 23 address, to ending the era of Mutually Assured Destruction by developing new defensive strategies that would make nuclear missiles "impotent and obsolete.". . .

[Dr. Edward Teller] announced that he was working with Reagan to develop a new defensive system. . . . A delegation of Soviet scientists headed by E. P. Velikov, vice-president of the Soviet Academy of Scientists, at first proposed to ban all weapons in space as "dangerous" [but] American scientists replied that the Soviets already unilaterally had deployed such weapons and that beam weapons . . . would be deployed only on attack by enemy missiles.

Finally, Velikhov signed an agreement to set up a joint U.S.-Soviet commission that would study the possibility of creating a new kind of defense against nuclear destruction. The obvious criticism of such an arrangement is that the Soviets cannot be trusted and might well be expected to use information gained from U.S. scientists to design weapons aimed at destroying the U.S. defense. However, in data-sharing, the U.S. would *know* the extent of Soviet knowledge and could act accordingly.

Laser breakthroughs highlight conference

by Steven Bardwell

Major new breakthroughs in x-ray lasers, announced at a conference in San Francisco Sept. 12-14, move the timetable for deployment of a space-based defense system against nuclear attack forward to three years.

With rumors high in Washington that President Reagan will announce a major new effort in the U.S. anti-missile beam weapon development in early October, scientists from throughout the world gathered at the Fifth International Conference on High Energy Beams to hear announcements of the most recently declassified research in x-ray lasers, free electron lasers, microwave beams, and particle beams.

Conspicuously missing, however, was the invited delegation from the Soviet Union; top scientist L. Rudakov, only days before the opening, wired conference organizers a cryptic message cancelling out.

The optimism that pervaded the 300 scientists in San Francisco is a small reflection of the tremendous progress of these classified programs, only a small part of which could be reported at the meeting.

On the first two days of the conference, x-ray lasers and particle beams were the primary topics of discussion, and major progress was reported in both. One of the few unclassified x-ray laser experiments in the United States, at Physics International (a private laboratory in San Leandro, California), resulted in achievement of a milestone in the production of a Z-pinch x-ray laser. This device uses a very dense, very hot, electronically produced plasma column to create a lasing

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medium. By confining the plasma with a strong, self-produced magnetic field (called a Z-pinch), scientists at Physics International were able to create a population of krypton atoms capable of creating laser light in the x-ray region.

In the next 12 months, the researchers expect to extract coherent, monochromatic x-rays from this plasma. The techniques announced here for plasma control are directly applicable to creating the high-intensity, focused beam of x-rays necessary for a space-based x-ray laser satellite capable of destroying ballistic missiles in flight—the device which is the centerpiece of President Reagan's beam defense proposal.

A second component of the President's proposal—ground-based particle beams to destroy incoming nuclear warheads—is being studied at Lawrence Livermore's Experimental Test Accelerator (ETA). This device demonstrated that not only can high-intensity beams of charged particles propagate through the atmosphere, but, in a finding totally unexpected to scientists in the program, the beam is amplified when it does! Experiments with the ETA showed that at pressures between 1/10 and 1/3 that of the atmosphere (that is, the pressure at high altitudes at the edge of the atmosphere), the beam current is doubled by a complex, not-yet-understood, interaction with the atmosphere. This suprising fact not only destroys the fears of critics of particle beams that such beams cannot pass through the atmosphere, but points in the direction of new, higher power beam propagation techniques.

On the last day of the conference, the interactions of high intensity electron beams and magnetic fields were discussed. About 15 years ago, Soviet scientists discovered that these interactions could generate intense bursts of electromagnetic energy with efficiencies of conversion up to 80 percent.

In the short-wavelength regime of this interaction, a device called the Free Electron Laser (FEL) is possible—a laser which uses the electron beam-magnetic field interaction to produce monochromatic, coherent light of variable frequency.

Scientists from the Naval Research Laboratory reported achieving a tunable FEL with a short burst of 75 megawatts of power! This device would, when perfected, be an ideal second-stage defense technology, capable of relaying its light (produced at ground-based stations) off orbiting mirrors to destroy missiles thousands of miles distant.

In the longer, microwave region of this interaction, results from several laboratories showed that it is possible to routinely achieve microwave powers of one gigawatt per square centimeter—the power consumed by a city of one million people—passing through an area one-half inch square!

All of these advances represent, according to scientists at the meeting, only a small unclassified part of the actual research success.

"This experimental progress will," said one scientist attending the conference, "be the basis for President Reagan announcing a major increase in funding and accelerations of our beam weapon timetable when he speaks in October. We are ready to go the rest of the way!"

National Democratic Policy Committee

'The U.S. must have a crash program'

Warren Hamerman, national chairman of the National Democratic Policy Committee (NDPC), announced on Sept. 21 that "LaRouche Democrats" had won 23 elections within the preceding seven days. That included the victory in Democratic primaries of two selectmen candidates in Manchester, New Hampshire—George Pellerin and Rosaire Pepin. Eleven NDPC-endorsed candidates were elected Democratic Party county committeeman in New York County, and in Washington State five NDPC members have qualified in runoffs for city council in several cities; three more have qualified for the November general election for School Board, and one for Water Commissioner. In San Diego nonpartisan primaries, one NDPC-endorsed candidate, Norma Phillips, has qualified for the November city council runoff election. On Aug. 1, 1983, Warren Hamerman had issued a widely circulated call to draft Lyndon H. LaRouche to serve as the 1984 Democratic presidential candidate.

Mr. Hamerman's Sept. 21 statement:

Strengthened by this coast-to-coast success of LaRouche Democrats, from New Hampshire to San Diego, the National Democratic Policy Committee is announcing a full national mobilization to ensure a crash program for U.S. beam-weapons defense systems—a program of which NDPC advisory board chairman Lyndon H. LaRouche is an internationally recognized intellectual author.

The 23 LaRouche Democrats who won victories did so in the first American elections since the Russians committed cold-blooded murder against the passengers of KAL 7. The candidates' victories represent the first signs of a revolt within the Democratic Party against Chuck Manatt and W. Averell Harriman's buttering up to Yuri Andropov. All the LaRouche Democrats ran their campaigns on the basis of opposition to the pro-Andropov leadership of Manatt and Harriman, and to Paul Volcker and the International Monetary Fund's world depression. Let me emphasize for everyone that they ran their campaigns *for* Lyndon LaRouche's plan for the United States to commit itself to a crash development program of antiballistic beam weapons and to a reorganization of the world monetary system around a return to "American System"