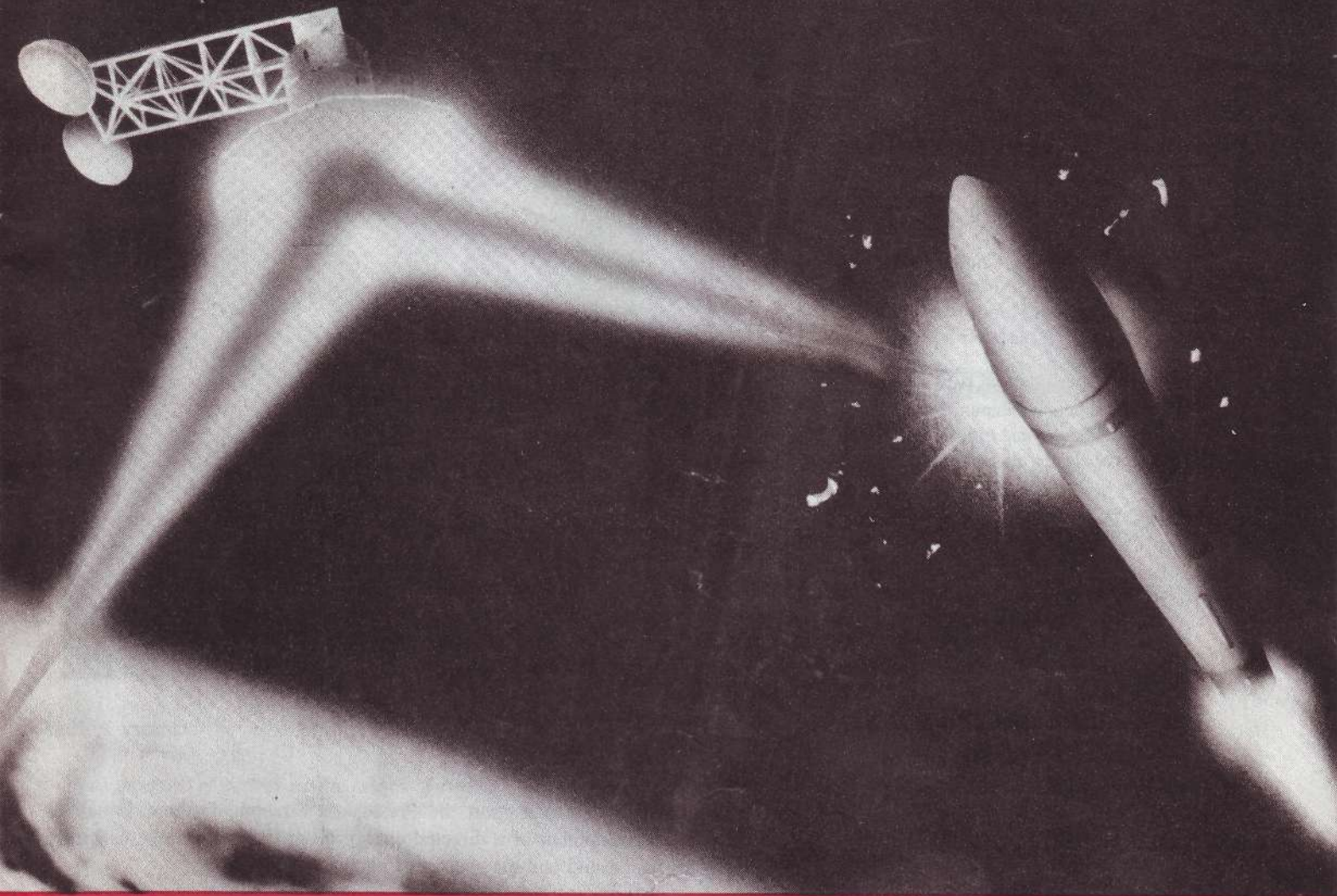


Kill Missiles, Not People



**Support the
President's
Strategic Defense
Initiative**

National Democratic Policy Committee

\$1 Suggested
Contribution



**National
Democratic
Policy
Committee**

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The National Democratic Policy Committee is a political action committee designed to support candidates and officeholders and to develop policies in the national interest.

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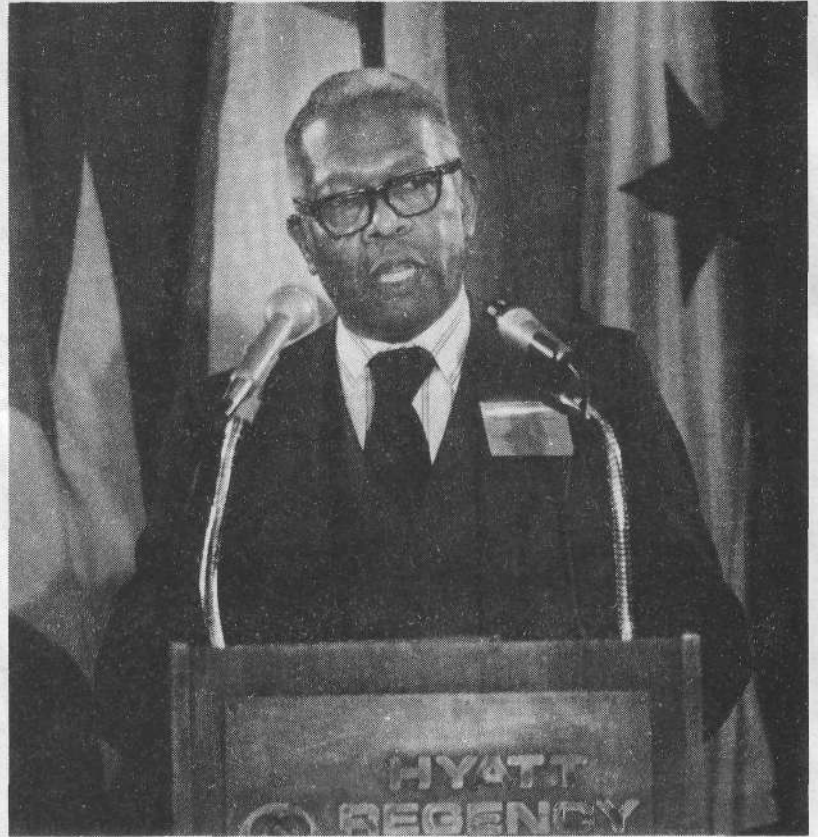
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National Democratic Policy Committee

On the Cover: Illustration by Christopher Sloan of a laser beam weapon hitting a missile in its boost phase. In this hybrid system, the laser is based on a mountaintop with a mirror in space.



January 2, 1985

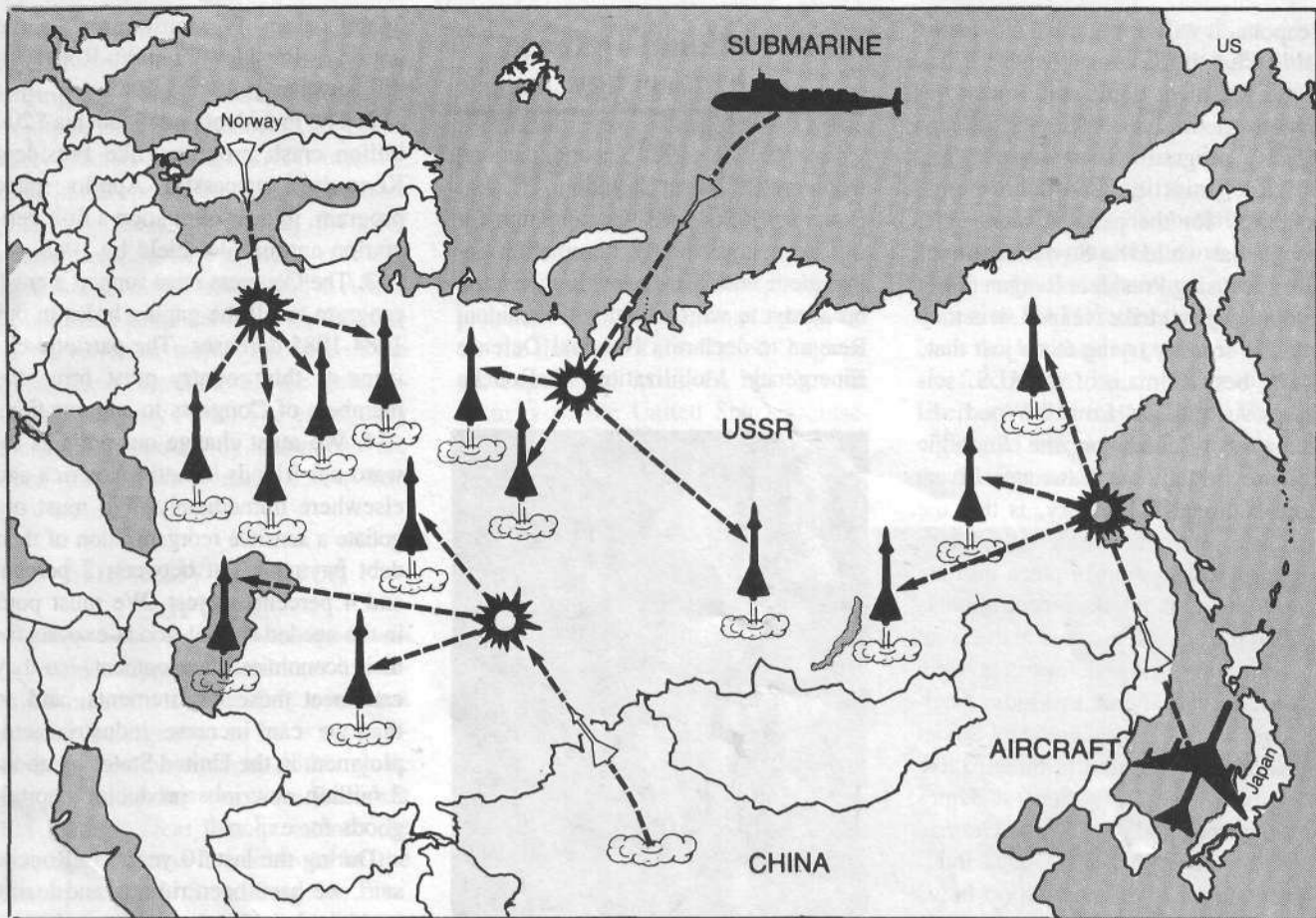
Fellow Americans:

I urge all Americans to support the President's Strategic Defense Initiative, because the development of a directed energy beam defense system will truly defend this nation and end the specter of nuclear holocaust.

Join with the National Democratic Policy Committee in calling on President Reagan to implement his Strategic Defense Initiative now. This plan to use 21st century technology to defend America from Soviet nuclear missiles is the key to an economic revival. Like the space program, the Strategic Defense Initiative will create millions of educational and job opportunities for our citizens. This economic revival will also make it possible for this nation to again begin exporting technology, using American methods to end poverty and starvation throughout the world.

Join with us. Write and talk to your congressmen and senators to get full funding for a crash program. Demand that they support our beam defense legislation. Organize your friends, local elected officials, and community and church groups to pass our resolution for beam defense.

Sincerely,
Hulan Jack
*Advisory Board,
National Democratic Policy Committee;
Former Manhattan Borough President*



X-RAY LASER DEFENSE

Upon detection of nuclear missile launch, defensive X-ray lasers are "popped up" into space on hypersonic rockets from land bases in Western Europe and Asia, from submarines, and from aircraft. Each X-ray laser module is capable of destroying upwards of 100 ICBMs.

Kill Missiles, Not People

In his second televised debate with Walter Mondale, Oct. 21, President Reagan redefined his election campaign. He vigorously defended his Strategic Defense Initiative—the development of anti-ballistic-missile defense weapons, using new scientific principles such as laser beams. As a result, he was reelected in a landslide victory.

President Reagan's sweeping election victory meant that he had a national mandate from the American people to rapidly develop these "beam weapons" (or what his liberal critics sarcastically call "Star Wars") to defend the country. But this mandate—and our defense—are now in danger of being sabotaged

by an influential group of pro-Soviet appeasers. Top on the list of these saboteurs are Henry Kissinger, Walter Mondale, McGeorge Bundy, and a number of Soviet agents-of-influence in the scientific community. Kissinger and Bundy have said that they intend to use the congressional hacks under their control to deny the President the funds necessary to make the Strategic Defense Initiative a reality. They want to strip the SDI down to a "research only" program, instead of putting into place in the next months the devices that can destroy enemy missiles in the first few minutes of their launch.

In his March 23, 1983 speech that first proposed to make nuclear missiles

'impotent and obsolete,' in his second Presidential debate in 1984, and on numerous other occasions, President Reagan has offered to share beam weapon technology with the Soviets, as the United States develops it. Despite this, Reagan has been attacked by the Soviets as a "warmonger," and likened to Adolf Hitler. The Soviet attacks have been seconded here by traitors like former presidential candidate Walter Mondale, whose Presidential campaign was endorsed by the Soviets, and others.

These critics, including the entire Eastern Establishment media, side with the Soviets, when the Soviets declare that if the United States develops beam

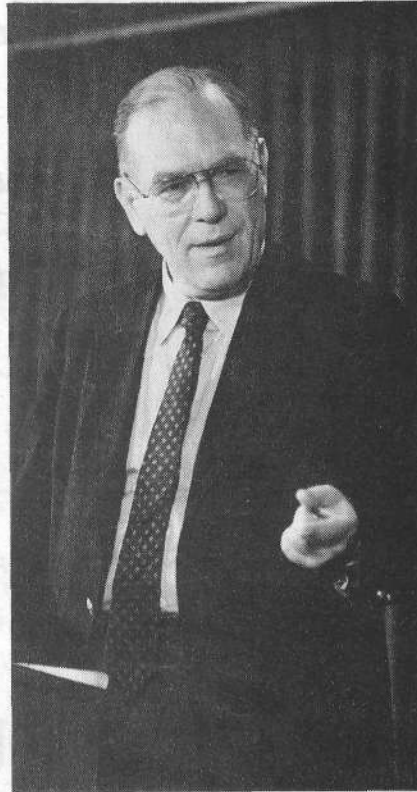
weapons, it will be regarded as a *casus belli*. What the Soviets and these critics of the President don't say, is that the Soviets themselves have had an aggressive program to develop an anti-ballistic missile (ABM) defense capability for the past 20 years. The fact is that while the Soviets are cynically accusing President Reagan of developing a first strike weapon, it is they who are secretly trying to do just that.

The best estimate of top U.S. scientists such as Dr. Lowell Wood, director of research on the Strategic Defense Initiative at Lawrence Livermore National Laboratory, is that the Soviets can have at least a rudimentary beam defense system in place in three years. Western intelligence estimates are that the Soviets are now at the point of deploying a new defensive system against aircraft and many kinds of ballistic missiles, with a significant Soviet breakthrough expected in three to five years. SDI head Lt. General James Abrahamson told the West German newspaper *Die Welt* in a Dec. 1 interview that he had a Soviet report in his possession, written in 1982, that surveyed the full scope of a layered laser-beam defense system, including X-ray lasers. Abrahamson concluded that the Soviet Union is ahead of the United States in at least some of these areas by now.

Within the next two to three years, the United States also has the capability to put in place a rudimentary defense system that can knock out nuclear missiles before they explode. Within ten years, the nation could have a fully effective ABM system whose various layers of defensive weapons can destroy missiles in the first few minutes of their launch—and at every other point in their 20-minute-or-so journey, including the last few seconds of their terminal phase. For the first time in 30 years these defensive weapons systems, many based on new laser beam and particle beam technologies, give us the capability of making nuclear missiles “impotent and obsolete”—exactly as President Reagan stated on March 23, 1983 when he first announced the policy that became the Strategic Defense Initiative.

A National Defense Emergency

On Jan. 21, 1984, economist and Democratic leader Lyndon H. LaRouche, Jr., opened his campaign for the Democratic Party nomination for President with a nationwide television broadcast in which he urged President Reagan to declare a National Defense Emergency Mobilization. LaRouche



Stuart K. Lewis

In a nationwide television address Jan. 21, 1984, Lyndon H. LaRouche, Jr. called on the President to use his powers to declare a National Defense Emergency Mobilization.

warned then that the Soviets had been rapidly developing a missile defense capability, at the same time that they had increased their sizable lead over the United States in every category of missile development—whether launchers, warheads, missile throw-weight, megatonnage, or the strategic missile reserve. To answer this he called upon the President to take four steps:

1. The President must use his powers under our Constitution and statutes, to declare a National Defense Emergency

Mobilization. We must mobilize the nation as President Franklin Roosevelt did between 1939 and 1943.

2. The President must launch a \$200 billion crash program, like President Kennedy's successful Apollo space program, to give our nation a first-generation antimissile shield by 1988.

3. The Congress must support a crash program to fill the gaping holes in our 1984-1985 defenses. The patriotic citizens of this country must force the members of Congress to support this.

4. We must change our policies toward our friends in Latin America and elsewhere immediately. We must negotiate a sensible reorganization of their debt payments, at between 2 percent and 4 percent interest. We must pour in the needed capital-goods-exports for their economies' development—so they can meet these requirements, and so that we can increase industrial employment in the United States by about 3 million new jobs producing capital-goods for export.

During the last 10 years, LaRouche said, we have been ruining and losing our friends in Europe, Asia, and Latin America, at the same time that many politicians have been lying to you that we were giving away gigantic charitable contributions to other countries, most of which never arrived. If we do not change this policy, Moscow will take over the world piece by piece, and we will have no one to blame but ourselves.

Increasing Soviet Terror Campaign

Throughout 1984, the Soviets mounted an increasing terror campaign against the West. On the propaganda side they have violated all names of diplomacy, shamelessly and repeatedly attacking the U.S. President as “worse than Hitler.” They have conducted non-stop military exercises openly rehearsing a surprise attack on NATO, while publishing justification for such an attack with the Goebbels-style lie that neo-Nazis have taken control of the government of the Federal Republic of Germany. They have begun to turn the “peace” movement, which they fund

and control, into a terrorist extension of their "spetsnaz" special forces units. During the recent holiday period, for example, terrorist offshoots of the Green Party fascists targeted NATO installations in Europe for bombing and arson.

During the same period, the economic position of our allies in Latin America has deteriorated, and in Africa 150 million people are now on the edge of starvation or worse, because of the remorseless pressure of the International Monetary Fund. The emergency measures proposed by LaRouche are even more urgently needed now than they were a year ago.

Mutually Assured Survival

President Reagan should use his national mandate to declare a national defense emergency, as he is empowered by the Constitution. Although he has not taken this step, the President has made it clear that he intends the Strategic Defense Initiative to be the centerpiece of U.S. military doctrine.

This new strategic doctrine, the SDI, offers an alternative to the horrible possibility of nuclear war—a possibility other than the defeatism of the appeasers who would disarm us. As Defense Secretary Caspar Weinberger put it in a Dec. 19, 1984 speech to the Foreign Press Club in Washington: "Our goal is to destroy weapons that kill people. . . . This objective is far more idealistic, moral, and practical than the position taken by those who still adhere to the mutually assured destruction theory, namely, that defenses must be totally abandoned."

This means that for the first time in 20 years we are at a point that the nation will be able to abandon the bankrupt policy of nuclear deterrence—which makes our population a nuclear hostage—and its forlorn hope that nuclear war under such conditions of mutual population holocaust were unthinkable. Arms control treaties negotiated under this doctrine of mutually assured destruction, or MAD, have concentrated on banning attempts to build antimissile defenses in order to guarantee the vulnerability of cities and

populations on both sides as hostages against a strike.

With the SDI, the American military command is now in a position to plan for the rational defense not only of the United States, but of the Western Alliance as a whole. President Reagan and Secretary Weinberger have insisted, contrary to Soviet-inspired propaganda, that the SDI is not a program for the defense of the United States at the expense of its allies, but that the security of the United States is inseparable from that of Europe. The Strategic Defense Initiative, in fact, will

in the Western camp, such as McGeorge Bundy and Henry Kissinger, who think that they can make a deal with the Soviets. These fools, who think that they can manipulate the Soviets, have learned nothing from the lesson of Prime Minister Chamberlain and his attempt to appease Hitler at Munich. The Bundys and Kissingers are willing to destroy NATO rather than back down from the Malthusian policies that they are forcing on the world through the International Monetary Fund. They are willing to risk a world dominated by the Soviets rather than pursue the kind



Philip Ulanowsky

During the recent holiday period, the Soviet-inspired Green Party fascists targeted NATO installations in Europe for bombing and arson. Above, nuclear freeze demonstrators in New York City.

make it possible actually to defend Europe against intermediate-range ballistic missiles.

Soviet War-Winning Policy

It is in order to sabotage this strengthening of the Western alliance, that the Soviets have pulled out all the stops to try to force President Reagan to back down on the SDI. The Soviets will do anything to maintain their own potential for a war-winning advantage, while isolating the United States from its allies.

Backing up the Soviets are traitors

of global economic revival implied by a crash program to develop beam weapons, for such an economic boom would end their power.

The truth is that the Soviets have never accepted the false idea that nuclear war is unthinkable just because it is terrible. As their own military theorists have made explicit for the past 20 years, they have always been willing to accept huge population losses in war—if they could be assured of a reasonable chance of victory. Given this known strategy, the more that the United States backs down before Soviet terror tactics, the more they will escalate their threats.

Let's look at some facts. For the past 20 years the Soviets have been developing beam weapons and other ABM devices to protect their nation from nuclear attack. The Soviet leadership may deny that they are developing these defensive weapons, and Soviet scientists may call them an "illusion." But the truth is that the Soviets have spent more on defensive weapons than on offensive weapons since they signed the ABM treaty in 1972. This year, the total Soviet defense budget will increase by 12 percent.

Furthermore, the Soviets have an extensive civil defense system, with mass evacuation plans and vast cities—factories, housing, and so on—underground. The Soviet military doctrine, despite treaties signed and public pronouncements in the West (including the promotion of the "nuclear winter" scenario), has been that the Soviet Motherland will fight *and survive* a nuclear war.

Thus, the Soviet rhetoric about a nuclear freeze and about beam defense destabilizing the existing strategic parity is strictly for export. It is a clear case of the Soviets trying to convince the United States to "do as I say, not as I do," using a group of Americans—some knowingly traitors, others simply misinformed—to argue that U.S. strategic policy should be made in Moscow.

What Congress Must Do

Congress must reflect the will of the American people, who have voted their confidence in President Reagan and his Strategic Defense Initiative. Congress must appropriate the money necessary to implement the SDI program and more. Congress, which is responsible for the raising and funding of the means of U.S. national security, must affirm this new doctrine and fund a crash program for the SDI now—accelerating from what is now termed a research and development phase to a deployment phase.

In January 1984, President Reagan requested a budget of \$1.78 billion for the SDI, but this was cut back to \$1.4 billion (This figure does not include

some hundred million dollars more, which the national laboratories receive from the Department of Defense budget). The 1985 budget calls for a mere \$3.8 billion to go to the Department of Defense for beam weapon research. As spelled out in the NDPC's proposed legislation, this must be immediately increased to authorize the President to spend up to \$200 billion over the next five years.

The crash program needed to defend the United States from attack and impose the strategic defense doctrine upon the Soviets can be thought of in three-to-five-year mobilization stages. Each stage is akin to the wartime Manhattan project, with a needed budget authority of from \$100 to \$200 billion dollars.

The objective of the first stage, an immediate mobilization of existing programs, would accelerate the upward curve of technological breakthroughs already going on in our national laboratories. It would allow us to begin putting a crude defense system in place in about three years, which would have the capability of destroying some portion of incoming missiles anywhere from the boost phase to the terminal warhead stage of their deployment. This would serve as an actual deterrent, by introducing incalculability into the odds for Soviet warplanners who contemplate a first strike, as well of course, as offering protection to some percentage of our population under attack.

The purpose of each succeeding three-to-five-year mobilization plan for the SDI is to perfect the defensive weapons technologies, devices, and systems that have been developed in order to overcome offensive missile force advances and allow for reliable destruction of a greater and greater percentage of missiles and warheads or even a massive Soviet preemptive strike. This process can converge upon a fully developed, integrated global system of layered defenses at around the end of the century.

The Economic Payoff

As was demonstrated in the 1960s, when NASA's Apollo project put back 14 dollars into the economy for every

dollar spent, in terms of new jobs and new industries, such investment in new technologies pays off. In fact, the rate of growth of an economy depends on the rate of introduction of new advanced technologies into the economy, for this is the only way to increase overall productivity and provide an increased living standard for the population.

This introduction of a science driver into the economy is one of the spinoffs of the President's Strategic Defense Initiative that the Soviets find most intolerable. They rightly fear that they would lose the economic race, if we and they engaged in a headlong drive to develop beam weapons. While the U.S. industrial economy would take an enormous leap forward with the infusion of this extra productivity, the Soviet economy, with its critical capital goods bottleneck, poor productivity, and lagging agriculture sector, could not do the same.

Today, we desperately need the infusion of productivity in the civilian economy that would accompany a crash program to develop beam technologies for the SDI. Unemployment in 1984 rivals that of the Great Depression, especially among Blacks and Hispanics. America's basic industries lie in bankruptcy and decay; bread lines and hunger have returned to the cities; factories, farms, and steel plants are closed; machine tool manufacture is becoming a lost art.

We need a World War II-style mobilization of the sort proposed in the NDPC legislation to rejuvenate basic industry. Even more important we need to rejuvenate that same spirit of patriotism and national confidence that we knew during World War II. It was for precisely this that the American people voted in the last election.

The nation's future depends upon us. We must ensure that the Strategic Defense Initiative is quickly realized in a comprehensive strategic defense system. We must let the President know that we are fully behind him, and we must demand that Congress immediately give the President full authorization to implement the SDI as a crash program.

The NDPC's Proposed Legislation



NDPC members from across the country rally on the steps of the nation's Capitol in September 1983 to support the beam weapon defense program. In the left foreground are NPDC petitions supporting beam defence signed by 50,000 Americans.

A Bill to Implement A Crash Program for the Strategic Defense Initiative

WHEREAS, President Ronald Reagan has announced a total commitment to a new U.S. strategic policy doctrine of mutually assured survival;

WHEREAS, this policy calls for the development and export to all willing nations, friend and foe alike, of the developing capabilities for the destruction of nuclear missiles in flight, to make possible war-avoidance by the protection of populations rather than by the open threat of their total destruction;

WHEREAS, the urgent necessity of this shift in operational doctrine is established by the failure of "deterrence" strategy and its associated arms control process to stop either the drive to "launch on warning" of offensive systems, or the relentless deployment of new nuclear offensive systems by the Soviet Union, in defiance and violation of the SALT Treaties and their verification process;

WHEREAS, the Soviet Union is known to be secretly developing antimissile defenses using laser and other advanced technologies as well as more conventional means, and yet have launched a worldwide terror campaign, threatening military confrontation and seeking to intimidate the United States and force President Reagan to cancel plans for the development of an antiballistic missile defense system based on the most advanced scientific principles—or as it is known—his Strategic Defense Initiative (SDI);

WHEREAS, In opinion surveys over more than a decade culminating in the recent Presidential election debates, the great majority of the American citizens support this new strategy as the best hope for protection against nuclear war;

AND WHEREAS, a crash program for beam defense will more than pay for itself by technological spinoffs in the domestic economy, as was amply demonstrated by the Manhattan Project and NASA's Apollo program, and will act as a stimulus to the currently depressed economy;

THEREFORE, BE IT RESOLVED:

THAT the Congress, which is responsible for the raising and funding of the means of U.S. national security, must affirm this new doctrine, must declare itself in full support of the President's Strategic Defense Initiative, and must authorize the funding to upgrade the SDI from its present stage as a program for research and development, into a crash development program for antimissile defense in collaboration with this nation's allies.

THAT this program receives a budget fully funded up to the limit of Presidential authority to carry out urgent national security policy in a period of crisis and confrontation;

THAT American and allied progress toward building and testing these most crucial of all military defenses must be limited only by the pace at which technological breakthroughs can be made if industry and the scientific community are mobilized;

AND THAT the Congress must provide for the mobilization of research capabilities, the production of prototype systems, the development of required new technologies by industry and national agencies, and the production of infrastructural capabilities including power, machine tools, and communications capabilities on Earth and in space.

THEREFORE, THE FOLLOWING IS ENACTED BY THE CONGRESS OF THE UNITED STATES:

1. The Strategic Defense Initiative is authorized to become a national defense emergency mobilization of science, industry, and military capabilities on the scale of intensity of the Manhattan Project or Apollo Project, with the objective of the earliest possible capability to deploy defenses against all phases of nuclear missile attack, including Intercontinental Ballistic Missiles (ICBMs), Submarine-Launched Ballistic Missiles (SLBMs), Intermediate-Range Ballistic Missiles (IRBMs), and bomber and cruise and tactical missile attacks.
2. The U.S. mobilization to develop capabilities for antimissile defense, the Strategic Defense Initiative or its follow-on programs, are authorized for funding at a level of up to \$50 billion for military programs over the fiscal years 1985-1990, at the discretion of the President and the Secretary of Defense. This will be done by a supplementary addition to the budget for 1985, for the funding necessary for the coming year.
3. The Congress recognizes the objective of this five-year period of mobilization to be the building and demonstration of effective antimissile defense devices utilizing new physical principles of relativistic beam propagation in combination with mature interceptor technologies, and the deployment of those defenses as soon as feasible and necessary to reduce any threat of preemptive strike against this nation or its allies for political or strategic intimidation and coercion.
4. The Congress authorizes the issuance of an additional \$50 billion in low-interest credit by the authorized agencies of the Treasury over the period fiscal year 1985-1990 for the specific purpose of developing the industrial and scientific mobilization base for the Strategic Defense Initiative. These "mobilization credits" will selectively encourage industrial firms, laboratories, universities, and individuals to develop and support the technological advances needed for antimissile defense and the needed level of fabrication of components and support systems, power systems, communications systems, and so on.
5. The Congress shall hold available an additional \$100 billion as a reserve fund that can be called upon should the potential for deployment of the system exceed the pace currently anticipated. Furthermore, this fund should be held available for low-interest emergency loans to vital sectors of industry now threatened with contraction or closure.
6. The Congress shall seek the widest possible participation in the mobilization for antimissile defense from firms, laboratories, and public agencies, and shall encourage new employment by them to prepare and implement their participation in the new technological capabilities.
7. The Congress may sponsor consultations with government representatives of allied and nonaligned nations, as well as public presentations to the citizens of those nations, in order to encourage the embrace by all nations in the world of the new strategic concept of assured defense represented for the United States by the Strategic Defense Initiative.
8. Since the Strategic Defense Initiative is the centerpiece of national defense planning, all further negotiations on reduction of offensive arms with the Soviet Union will be premised upon the absolute commitment of the United States to develop and deploy the SDI upon a crash program basis, so that any agreements for arms reductions will be understood to be based on the demonstrated ability of these new ABM defensive weapons to nullify the destructiveness of missiles and other weapons. This will require renegotiation of the Antiballistic Missile Treaty.

What Are Beam Weapons?

What accounts for the vast difference between the antiballistic-missile (ABM) defenses tested 20 years ago, which attempted to defend a specific military site against nuclear missile attack, and President Reagan's Strategic Defense Initiative, a plan to shield whole nations and areas of the world?

It is the accelerating breakthroughs in the technologies, which were foreseen even in the early 1960s when the laser was first invented—the technologies of coherent, controlled beams of electromagnetic radiation. These are also called relativistic beams because they travel at extraordinary velocities, at or near the speed of light, 186,000 miles per second.

This technological revolution began during World War II, with the development of coherent radiation beams at extremely low frequency and fairly low

power—radar. These beams have now been developed and tested at high power levels, all the way up to the extreme high-frequency, short-wavelength end of the spectrum—X-ray lasers. Even higher frequency gamma-ray lasers are the next goal.

In general, bombardment for 1 second or less by high power, coherent (laser) radiation at various frequencies is more than any missile, aircraft, or carrier vehicle can stand. Combinations of high laser power, high laser frequency, and particle beams can destroy even very hardened reentry warheads. The inherent superiority of these technologies as defenses against nuclear missiles and warheads, is established by their speed, extreme precision, and ability to repeat fire. Beams travel 100,000 times faster than missiles at their top speed; they deliver their en-

ergy right on target, even thousands of kilometers away; and they can fire up to hundreds of high-power pulses per second on multiple targets.

Because of these revolutionary characteristics, beam weapons can be combined with rocket launchers—a technology perfected by 30 years of intercontinental ballistic missile (ICBM) development and NASA programs—to deliver a precise, devastating pulse of energy against a missile within minutes of its launch, no matter from where on the Earth or the Moon it is launched or what its trajectory is. This is clearly not a weapon of mass destruction, but a means to intercept and destroy such weapons.

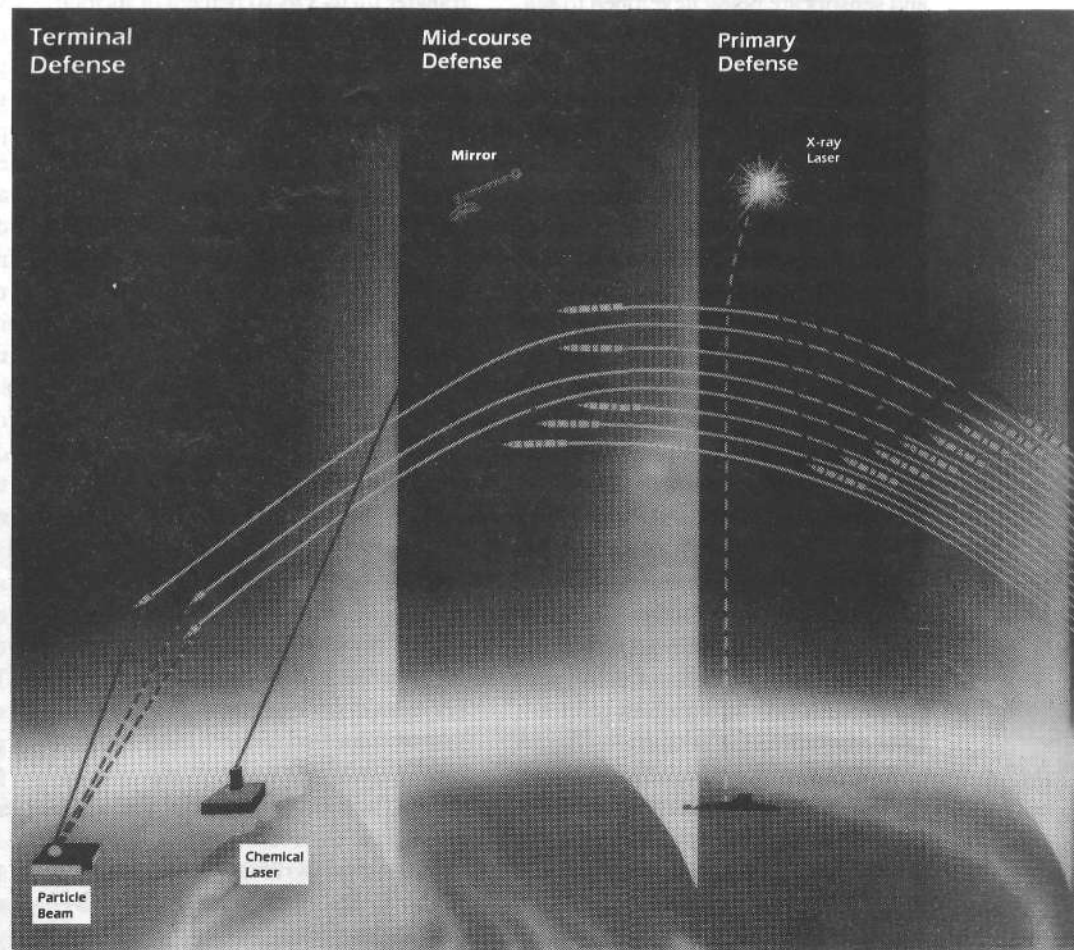
Also because of these revolutionary characteristics, beam weapons have forced breakthroughs in the technologies necessary to guide them and make

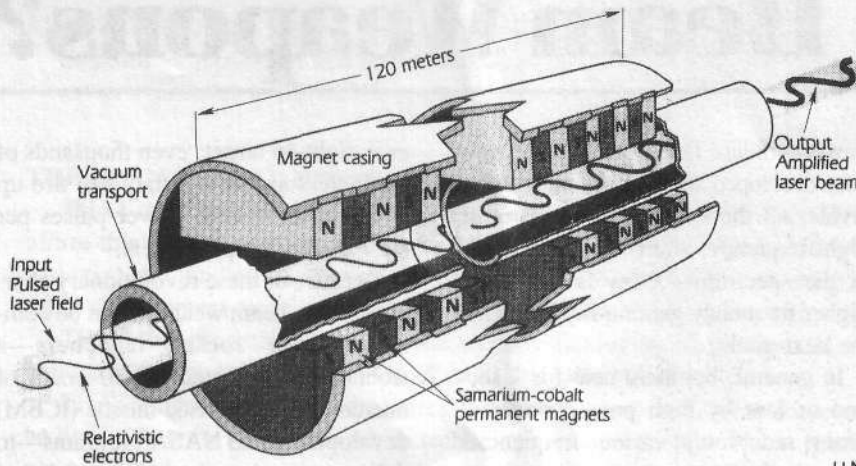
A MULTILAYERED BEAM WEAPON SYSTEM FOR TOTAL DEFENSE

Shown here are an X-ray laser, a ground-based chemical laser, and a ground-based particle beam in a multilayered defense system to knock out nuclear missiles in all stages—the boost phase of 3 to 5 minutes, the 20-minute midcourse flight through space, and the 2-minute reentry into the atmosphere and descent onto a target.

A layered system of beam defenses will eventually involve: (1) "forward" beam devices such as X-ray lasers, launched by hypervelocity rockets directly in the path of rising missiles; (2) space-based beam devices based anywhere from low-Earth orbit to geostationary orbit 22,000 miles out, or beyond; (3) ground-based lasers with "fighting mirrors" in space to relay them to their missile targets; (4) ground-based particle beams and other forms of terminal site defense; and (5) interceptor rockets and high-velocity accelerated projectiles.

Scientists estimate that no more than 100 beam devices need be deployed in space so that enough are in range to attack missiles in boost phase, no matter when they are launched. In addition, other beam devices may be "popped up" into space on warning of a missile attack.





FREE ELECTRON LASER

A beam of high energy (relativistic) electrons enters the free electron laser together with a pulsed laser field. Magnets arrayed in alternating gradients (north and south) on the device cause the electrons to "wiggle," releasing energy to the beam. At a certain distance along the device, the kinetic energy of the electrons is transferred to the input laser beam, thus amplifying it.

a system of beam defenses work reliably. Large, extremely perfect mirrors must be produced to reflect and refocus the high-power laser beams from positions in orbit; new types of satellites and sensors are being developed to see, identify, and track these missiles as targets for the beam weapons; and revolutionary new computers are needed to integrate the aiming and firing of layers of beam defenses into a reliable system to defend the nation and its allies.

It is the high power beam weapons themselves, however, that are making the most rapid breakthroughs. Within two to three years, if we unleash the Strategic Defense Initiative, beam weapons combined with other defenses like interceptor rockets will be able to stymie a nuclear preemptive strike.

The Revolutionary Free Electron Laser

One of the most extraordinary examples of the technological breakthroughs leading to beam defenses, is the free electron laser, which promises to be the universal power tool by the turn of the century, enabling one man of tomorrow to have the productive power of today's factory. The free electron laser (see figure) is one of a growing number of high-power lasers fired not by heat or burning of fuel, but by

electricity, in the form of a high-power electron beam.

An electron beam like the 5-million-volt accelerator at Lawrence Livermore National Laboratory in California can transfer up to 5 to 10 percent of its total power to a laser beam fired through the same channel, resulting in a tremendously amplified output laser beam of very high power. What's more, by "tuning" the voltage of the electron beam, it can be made to amplify input lasers of different frequencies, making a tunable, variable-power laser amplifier. This is a truly revolutionary tool across the entire range of human work, from industrial fabrication, treating, and surface analysis, to communications and power transmission, to medical and biological diagnostics.

In a multilayer beam defense system for the United States or Europe, as shown on page 9, the high-power free electron laser is now one of the top choices of SDI scientists and planners for the layer of laser defenses located on the ground. The beams of these lasers would be refocused by "fighting mirrors" located in orbit and beamed onto missiles in boost phase or mid-flight. The most authoritative recent report on these beam defense technologies, written by Los Alamos National Laboratory in May 1984, termed the free electron laser "a mature

technology base"—that is, one that has been shown feasible in laboratory tests and is ready for engineering development.

Yet only two or three years ago the free electron laser was considered among the most "exotic" and difficult long-term technologies for beam defense. Free electron lasers had been operated in France and in the United States, but only at a few thousandths of a watt of power. Last year they reached the operating range of a few watts in tests.

The national labs expect to take the next steps within months. Instead of the 5-million-volt electron beam accelerator, a newly completed 50-million-volt version will be brought on line to drive the free electron laser. This higher power electron beam will be able to amplify an input laser beam of higher frequency—not microwaves, but infrared or even visible red light—to high power.

These electron beam laser experiments are directly advancing the development of fusion power for commercial use. But what do they imply for beam defense? A compact, ground-based beam defense weapon is possible (10 meters or so long), powered by electric power pulses, generating a pulsed laser beam of several different available frequencies for long-range missile "kills" using "fighting mirrors" in space. The electron beam itself, without an input laser, could be used as a short-range defense against incoming warheads (that is, it could defend its own site as well). And the device could conceivably be reversed to use input laser power to generate electricity.

A few handfuls of such beam defense sites could provide one layer or a highly effective part of one ground-based layer of antimissile defense for the nation. The peak power each would require would equal a full-sized nuclear power plant, but only for a split-second pulse; these pulses would be stored in fly-wheel devices.

How far away is the development of such a beam defense? Privately, SDI scientific officials concede that two years is within the realm of possibility,

if the SDI becomes a crash mobilization effort to build beam defenses. So rapidly are these lasers developing, that they are straining the frontiers of mirror technologies forcing new breakthroughs in optical fabrication to stably refocus such high-power pulses of radiation propagated up from the ground.

At the same time a more advanced

type of free electron laser technology may soon make the device light and compact enough for space basing. France's free electron laser program aims at generating the laser beam, not from outside the chamber, but from the "wiggling" electron beam itself, slowly extracting more and more energy from the electron beam as it recirculates many

times around an accelerator chamber. In this way, a continuous and more efficient laser beam may be generated, converting up to 50 percent of the electron beam energy into laser energy—an unheard of efficiency level for any laser today. This could make the system sufficiently small for space deployment.

How Soon Can We Have Them?

X-ray Lasers

"The United States might be able to deploy an X-ray laser antimissile system to defend against Soviet Sea Launched Ballistic Missiles in five years. . . at a cost of \$12 billion. . . with existing off-the-shelf technology in every respect," except for the X-ray laser itself. This was the conclusion of a study by The Martin Marietta Company and Lawrence Livermore National Laboratory two years ago, as reported Dec. 14, 1984 by *Defense Daily*.

Although most of the information regarding the development of X-ray lasers for defense is classified, there have been important breakthroughs in the nonclassified domain that are also relevant to the development of a beam-defense capability.

Open scientific papers from Lawrence Livermore and the Princeton Plasma Physics Laboratory have recently demonstrated that the development of X-ray lasers for diagnostic purposes is progressing rapidly. They report major scientific applications of X-ray lasers underway, such as using them to make three-dimensional, atomic-scale pictures of living cells (X-ray microholograms) and to probe for the first time dense thermonuclear plasmas, as well as to test materials.

Conventional Lasers

In terms of both ground-and space-based laser beam weapons, the short wavelength excimer lasers are prime candidates. These lasers operate at the shortest wavelength with which ordi-

nary optical technology—mirrors and lenses—are currently compatible. Excimer lasers use halides as lasing media. Intense electron beams or X-rays can be used to generate these excimers.

Los Alamos National Laboratory reported the operation of a full-scale krypton fluoride excimer laser module, and stated that construction of a full-size prototype system—consisting of 20 or more modules—could begin in 1985 if funding were forthcoming.

Microwave and Super-EMP

The almost continuous advances in microwave generation over the past decade achieved with microwave generators, both in terms of efficiency and power output, has led to a situation where even revolutionary developments in this field do not attract significant attention. Microwaves, electromagnetic waves in the range of 1 to 100 centimeters wavelength, can be used to destroy missiles either directly by disrupting their electronics, or indirectly by using them in combination with other beam weapons.

Conventional ABMs

Target detection and tracking are far more difficult tasks for conventional ABM systems than for lasers and particle beams. For ABM missiles to intercept offensive missiles is like shooting a bullet with a bullet; in contrast, with relativistic beams the targets are virtually standing still, since the beams travel near the speed of light. The capability of intercepting ICBMs

with ABM missiles was demonstrated in the test of two systems this year, one in space and one in the atmosphere.

All of these systems demonstrate that conventional types of ABM missile defense could be deployed today. They also demonstrate that the type of command and control and target detection, pointing, and tracking needed for beam weapon defense either already exists or is being rapidly developed.

Target Detection, Tracking, Beam Propagation

Major progress has been made in the science of atmospheric propagation of laser light. This is important for using lasers within the atmosphere as well as for those ground-based systems that must travel through the upper atmosphere to reach relay and focusing mirrors orbiting in space. Many atmospheric effects, such as absorption, turbulence, and refraction, tend to defocus, distort, degrade, and deflect laser-light pulses. There are three major methods of overcoming these effects: pulse shaping, adaptive optics, and phase conjugation.

Although many of the requisite capabilities needed for beam weapons already exist, even better systems are rapidly being developed. The most powerful of these are those based on the beam weapons themselves, that is, the same lethal beam that can destroy a missile, when defocused so that it covers a huge area, can also be used to detect, locate, and track targets. Infrared lasers are particularly useful because they can be utilized like radar.

The Soviets Are Lying

The Soviets are lying about beam defense. Here are the facts about the Soviets' own development of beam defense:

- For the past 20 years, the Soviets have had an aggressive research and development program to solve the technical problems involved in using beam weapons to protect their nation from nuclear attack. Some of this research has been discussed in the open literature. For example, in 1974, a Moscow publishing house issued a pamphlet called "Lasers and Their Prospects" by N. Sobolev that outlined in detail a ground-based beam defense against nuclear missiles.

- Since they signed the antiballistic

missile treaty in 1972, the Soviets have spent more annually on defensive weapons than offensive weapons; this year, the total Soviet defense budget will increase by 12 percent.

- Western intelligence estimates are that the Soviets are now at the point of deploying a new defensive system against aircraft and many kinds of ballistic missiles, with a significant Soviet breakthrough expected in three to five years.

- SDI head Abrahamson told the West German newspaper *Die Welt* in an interview published Dec. 1 that he had a Soviet report in his possession, written in 1982, that surveyed the full scope of a layered laser-beam defense system, including X-ray lasers. Abra-

hamson concluded that the Soviet Union is ahead of the United States in at least some of these areas by now.

What the Soviets Said BEFORE the SDI

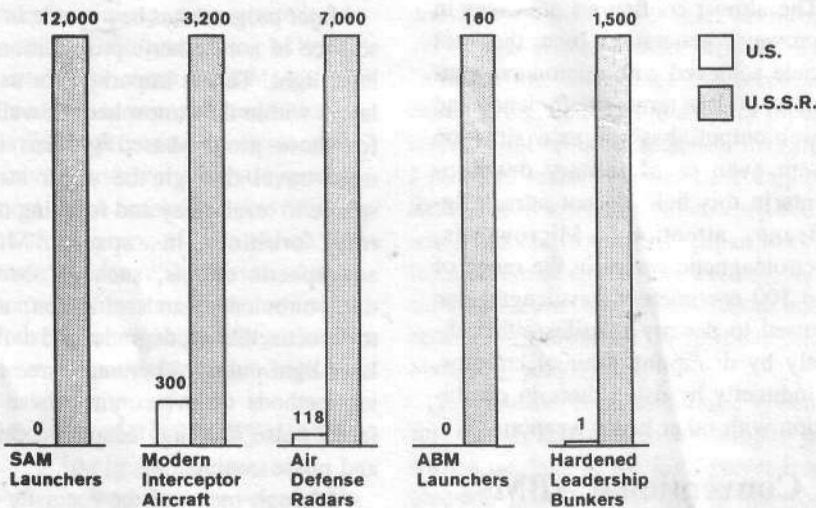
Perhaps most damning is the public record of Soviet military strategy before President Reagan made his March 23, 1983 speech proposing beam defense. Here is a discussion of antimissile defense by Soviet Major General M. Talenskii, theoretician for the Soviet General Staff, published in a 1976 review of Soviet military strategy:

"Antimissile systems are purely defensive and not designed for attack. It is quite illogical to demand abstention from creating such weapons in the face of vast stockpiles of highly powerful means of attack on the other side. Only the side which intends to use its means of attack for aggressive purposes can wish to slow down the creation and improvement of antimissile defense systems. For the peace-loving states, antimissile systems are only a means of building up their security. . . . It would be illogical to be suspicious of such a state when it creates an antimissile defense system on the ground that it wants to make it easier for itself to resort to aggression with impunity."

What the Soviets Said AFTER the SDI

Contrast this to the immediate and vitriolic Soviet denunciations of the President's March 23, 1983 speech proposing to make nuclear weapons "impotent and obsolete." Soviet leader Andropov accused "warmonger" President Reagan of planning to acquire a "nuclear first strike capability." The director of the Soviet USA-Canada Institute told the *Washington Post* April 8 that the President had proposed "some useless and exotic weapons" that would be a "heavy blow to stability even though these weapons do not exist."

Comparison of Forces Dedicated to Strategic Defense



Research & Development	Soviet Union	U.S.
Deployable ABMs	Currently Available	None
"Tactical" ABMs	SA-10, SA-12	None
Directed Energy	3-5 Times U.S. Efforts	-

These figures don't lie! The Soviets want to ban President Reagan's SDI, while they continue their own crash program for beam defense.

Source: Department of Defense

Two days later, a statement from 244 Soviet scientists was released that said, "proceeding from the understanding of the basic nature of nuclear weapons, we declare in all responsibility that there is no effective defensive means in nuclear war, and their creation is not practicably possible."

Soviet War Policy

Over the past months the Soviets have escalated their attacks on the President and his beam defense policy, going so far as to liken the United States to Hitler's Germany. In late 1984, Soviet Marshal Nikolai Ogarkov issued the following marching orders to the so-called peace movement. Ogarkov also recently presented to the Soviet leadership a five-stage plan for "preemptive" nuclear war against the Western alliance, starting with ICBM bombardment of American cities and ending with the full-scale occupation of Western Europe:

"The new pretenders to world hegemony, the imperialists of the U.S.A., learned nothing from the experience of their German fascist ideological predecessors and competitors; they picked up their delirious plans. . . .

"The insane bellicosity in the U.S.A. intensified especially in the '80s with the arrival of the administration of R. Reagan in the White House, the henchman of the most reactionary and aggressive circles of American imperialism. . . .

"Does that mean that the fate of war and peace is fully in the hands of the American "hawks," and that it remains for mankind to humbly lower their heads and await the decision over their fate from madmen? Does that mean that there are no forces in the world capable of tying the hands of these maniacs, who hang the sword of death over the world? No, it does not mean that. War can and must be prevented. . . .

"Surely, the antiwar movement by itself does not yet fully solve the problems of war and peace. However, it is capable of considerably curbing the freedom of activity of the presumptuous bourgeois rulers and their masters."

In December, Soviet leader Konstantin Chernenko issued an ultimatum to President Reagan. As *Pravda* put it in a Dec. 9 editorial, "Implementation of a U.S. space-based weapons program would render null and void everything achieved so far in the realm of arms limitation and sharply increase the danger of a nuclear war." This was followed by a commentary in *Izvestia* Dec. 14 that threatened to put in place

Soviet countermeasures, such as missile bases on the Moon or orbiting missiles that could be zapped at their targets within minutes.

The U.S. Opposition: Made in Moscow

The Eastern Establishment moved into high gear against the President's Strategic Defense Initiative after the

Who Says 'It Won't Work'

The first bursts of opposition to the SDI from scientific layers were that it simply would never work—it was "unfeasible." A small group of scientists centered at the Massachusetts Institute of Technology, all of whom were long-time participants in the Pugwash disarmament efforts, produced two studies, one under the auspices of the Union of Concerned Scientists and the other under the auspices of the Office of Technology Assessment. Prominent among this group are Hans Bethe, Ashton Carter, Richard Garwin, Freeman Dyson, and Henry Kendall, a group the *New York Times* openly calls the "Shadow Cabinet." Both so-called authoritative studies attempted to "prove" that beam defense could never be effective, that the Soviets would immediately devise countermeasures to foil it, that it would require thousands of killer satellites in orbit, that the Soviets would just build better missiles, and so on.

The scientists working on beam defense issued devastating rebuttals to these much-publicized anti-beam-weapon reports, showing that the critics did not know what they were talking about, that they were uninformed about recent scientific and technical breakthroughs, and that their calculations were off in some cases by a factor of 25. For example, the Union of Concerned Scientists report calculated that beam defense would require 2,400 orbiting satellites for laser beam defense; the actual figure is 45 to 90 satellites, depending on the altitude of the orbit.

Robert Jastrow, the founder of the Goddard Institute for Space Studies, discussed in detail the technical errors of the critics in the December 1984 issue of *Commentary* magazine. After discrediting the "big lies" of the beam critics, Jastrow notes that media, including the science magazines, are still publishing these lies, even after the anti-beam-defense authors have admitted their "errors." Jastrow asks why supposedly reputable scientists have lent their names to these fallacious reports, and suggests that "their rational judgments can be clouded by their ideological preconceptions."

It is startling to learn how deep these "ideological preconceptions" are. These Pugwash scientists have been opposed to beam defense ever since the 1960s, when antimissile-missile systems were first discussed. In fact, many of these anti-beam-defense scientists who as the "Jason" group advise the Department of Defense on matters of science, back in August 1974 successfully advised the DOD to drop research into X-ray and gamma-ray laser beams for defensive weapons. The Jason group, including Garwin, Bethe, Dyson, Kendall, among others, did this knowing at the time that the Soviet Union was moving full speed ahead to develop these technologies for military purposes. Then, as today, the question to ask is, "Whose side are they on anyway?"

November election, in what McGeorge Bundy termed "an extraordinary effort" to kill beam defense.

Echoing arguments made in Moscow, the American elite issued a formal declaration of war against the program Nov. 26 with the release of a major article, "The President's Choice: Star Wars or Arms Control," in the journal of the Council on Foreign Relations, *Foreign Affairs*. The article is authored by the Eastern Establishment's "gang of four," Bundy, Robert McNamara, Gerard Smith, and George Kennan. "Sharing the gravest reservations about this undertaking, and believing that unless it is radically constrained during the next four years it will bring vast new costs and dangers to our country and to mankind, we think it is urgent to offer an assessment of the nature and hazards of this initiative, to call for the closest vigilance by Congress and the public, and even to invite the victorious President to reconsider," the gang of four wrote.

How the Eastern elite intend to kill the program was stated bluntly to a reporter by Henry Kissinger, two days after the gang of four released its article at a Washington press conference: "The SDI has no future. The President will push it, but it has no future. The funds will be whittled away, bit by bit."

Kissinger was seconded by one of the gang's arms control specialists: "Henry is right. The SDI will be 'whittled away.' . . . The job will be done in Congress. And it will be certain conservatives who will do it. Sam Nunn (D.-Ga.) will take a leading role; he's dead set against this program."

To lobby Congress, the Eastern Establishment has set into motion its coalition of nuclear freeze and antitechnology groups, including the Physicians for Social Responsibility, Common Cause, the Federation of American Scientists, the Union of Concerned Scientists, and the League of Women Voters. Ignoring the reality of the Soviet war mobilization and their crash program for beam defense, these groups have echoed every argument the Soviets have come up with from "It won't work," to "It's destabilizing," with a current focus on "It's too costly."

Why a Crash Program For the SDI Won't Cost a Penny

Today, to build the best possible defense, we need a crash program to develop and deploy beam weapons that can knock out nuclear missiles. Anyone who recalls the World War II industrial mobilization that defeated the Nazis will understand why a crash program to develop the necessary directed energy beam technologies for defense won't actually cost a penny—but instead will set off an economic boom.

Developing these frontier technologies with the same all-out effort that we gave the World War II mobilization will transform the U.S. economy, just as this previous effort did. By converting the frontiers of theoretical science into entirely new industries and technologies in World War II, we launched the most productive industrial and agricultural era the world had ever seen. Not only did the United States enjoy unparalleled prosperity, but we were able to export this prosperity on a previously unthinkable scale.

The Manhattan Project's harnessing of nuclear power for military use brought us into the nuclear age, with its tremendous benefits of cheap and clean energy. From nuclear-reactor-powered submarines, required for long-distance travel without surfacing, came the civilian nuclear industry that still produces power more cheaply than fossil fuel, despite the efforts of the environmentalists to shut down the industry and shut down progress.

The other spectacular science driver that gave us the only period of real industrial growth and productivity after World War II was NASA's Apollo Project to put a man on the Moon. At its height during the 1960s, NASA was

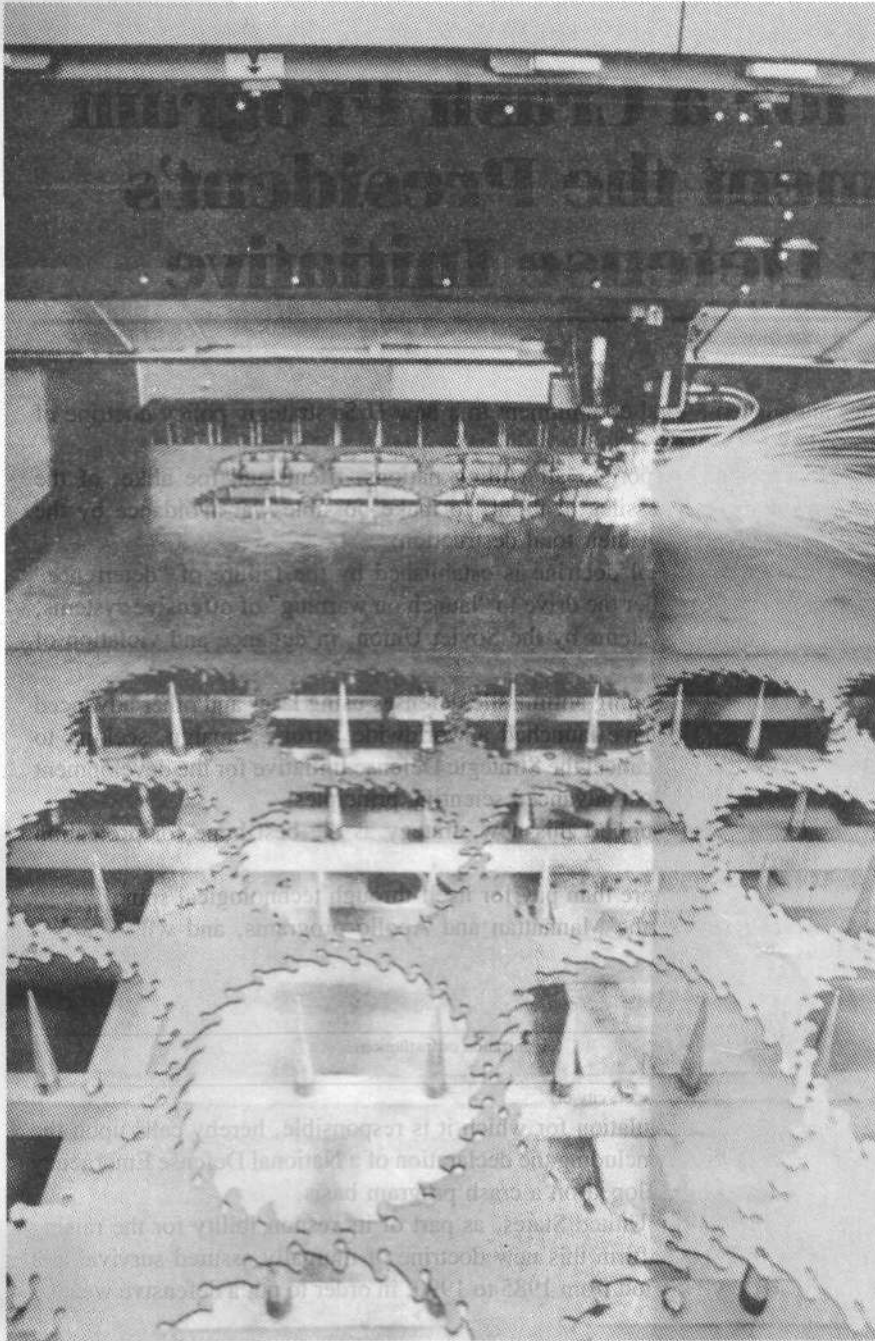
introducing *6,000 new technologies per month* to agriculture and industry. The productivity increases resulting from industry's assimilation of spinoff technology more than offset the cost of the original research and development. Chase Econometrics estimated conservatively that for every dollar spent on the Apollo Project, \$14 was generated in the private sector.

Based on these historical precedents, we can say with assurance that a crash program for beam defense, the Strategic Defense Initiative, literally won't cost the nation a cent. The way this works is simple. We take the new technologies required for a successful beam defense program—lasers, X-ray lasers, gamma ray lasers; the sensing and tracking technology; the data processing development; the precision optics; the magnetics, the materials, the pulsed power; and the space engineering—and we apply them to the civilian economy. The increases in average level of income per person will rise by a much greater amount, as benefits of technological spinoffs, than what we spend on the military items that produce those beneficial spinoffs.

The point is that spending for the development of advanced military technologies is like investment in a giant research and development laboratory, which over the coming 15 years will increase our national per capita output in terms of tangible goods produced by two or three times.

An Industrial Revolution

Just in terms of high-energy lasers alone, we will create an industrial rev-



Courtesy of Coherent, Inc.

As a cutting instrument, the laser concentrates a much larger power on a much smaller surface area than any possible motorized blade or die, delivering its energy rapidly. Cutting time is decreased by a factor of 5, and the increased power density makes it possible to cut materials that could not be cut before.

olution, with unheard of jumps in productivity and growth. How will this happen? Beam technologies will make available to industry the use of energies from the full electromagnetic spectrum, expanding by a factor of 100 million the regions of the spectrum available. Now our industries are limited, for the most part, to one tiny por-

tion of the spectrum, the infrared, or heat energy. The development of the very short wavelength X-ray and gamma-ray laser will make available finely tuned energy sources, bringing us into the plasma age.

In the plasma state, the electrical and magnetic properties of matter are relevant, rather than the chemical and

electronic properties, and there is a 1,000-fold increase in the density with which energy can be contained. For example, with conventional technologies, about 10 electron volts per particle is the average energy in an energetic chemical process. But with plasma beam technologies, it's about 100,000 electron volts per particle. As a result, at these energy densities the processing time is shortened by a factor of 1,000. This capability of using more intense energy for a shorter period of time results in a savings of energy by a factor of about 100, and thus a great increase in productivity.

As an economic study conducted by the *Executive Intelligence Review* magazine and the Fusion Energy Foundation documented in detail, the economic impact of a crash program for beam defense will up productivity 500 to 1,000 percent, creating new jobs, new factories, entire new industries, and an era of prosperity that we haven't seen since the postwar years. We will be able to efficiently perform all sorts of tasks in fundamentally new ways, from laser welding of materials, to transforming garbage into its constituent elements, to food preservation and disinfection using electron beams, to being able to observe the process of individual atoms in living cells, to harnessing fusion power as an energy source.

While many of our officials in Washington don't now understand that this is how economics works—that the rate of introduction of new technologies is what drives economic growth—the Russians surely do. There is no doubt, in fact, that the immediate and strident Soviet opposition to the U.S. beam defense program, when it was first suggested in March 1983 by President Reagan, was motivated not chiefly by their fear of our developing beam defense, but by their fear that such a mobilization would spark an in-depth U.S. economic recovery that they would be unable to match.

That is why the Soviets have worked so hard to ban U.S. development of beam defense—and why we have to fight for a crash program.