

# THE PRESIDENT'S NEW FOCUS FOR SDI:

Global Protection Against Limited Strikes  
(GPALS)



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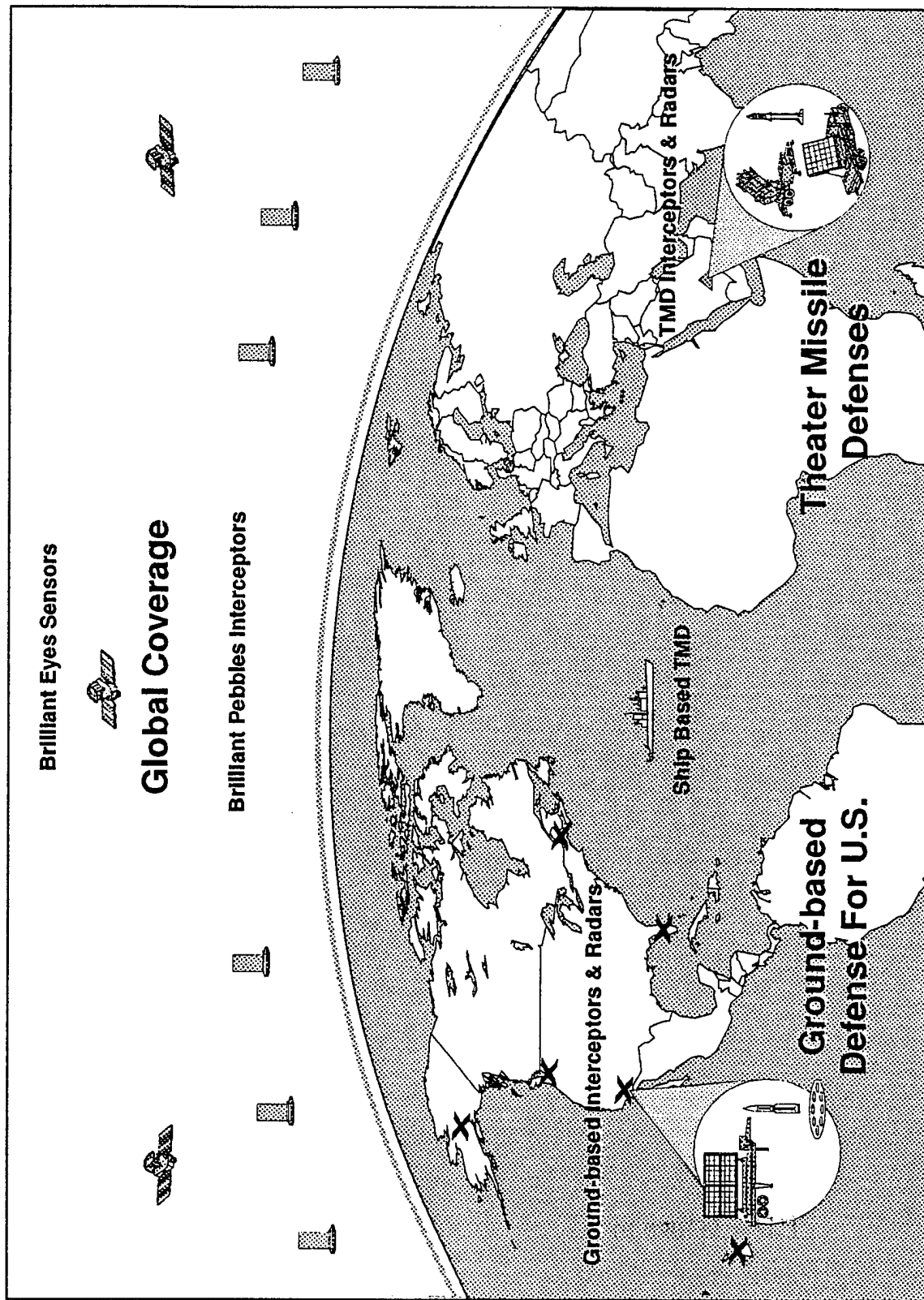
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# GPALS - AN ILLUSTRATIVE LOOK



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## WHAT IS GPALS AND HOW DOES IT DIFFER FROM THE "PHASE I" SDI PROGRAM?

- *GPALS is an antimissile system designed to protect against limited ballistic missile strikes, be they deliberate, accidental or unauthorized--whatever their source. A GPALS defensive system would consist of the following:*
  - Surface and space-based sensors to provide global, continuous surveillance and tracking of ballistic missiles of all ranges from time of launch. In combination, the sensors would provide information to U.S. forces, and potentially, to those of our allies as well.
  - Surface and space-based interceptors, capable of providing high-confidence protection to targets under attack. The surface-based interceptors, located in the United States, deployed with U.S. forces and, potentially, deployed by U.S. allies, would intercept any type of warhead launched by a ballistic missile. Space-based interceptors would provide continuous, global interdiction capability against missiles with ranges in excess of 600-800 kilometers.
- *Changes in the international security environment have resulted in a shift in the focus of SDI to provide high levels of protection against limited strikes consisting of up to a few hundred warheads--whatever their source. While the broader objectives associated with Phase I remain valid, the SDI program is structured to provide a GPALS system. A decision to go beyond GPALS would have to be made in the future, based on future strategic circumstances.*
- Important changes in the strategic and political environment leading to SDI's refocusing include the evolution that has occurred in the East-West relationship, the concern regarding political instabilities in the Soviet Union, and the growing proliferation of ballistic missiles and weapons of mass destruction throughout the world.
- This change in focus means that GPALS will be *less than half the size* of the SDI Phase I system.
- Additionally, increased priority within the SDI program has been placed on theater ballistic missile defenses to deal with regional threats against deployed U.S. forces, friends, and allies.

## WHEN WAS THE GPALS CONCEPT DEVELOPED?

- The Office of the Secretary of Defense began a review of the policy and strategy objectives of strategic defense following the completion of the National Security Review process in the Spring of 1989. This was followed by an independent review of the SDI program commissioned by the Secretary during the Fall of 1989. The findings of this review were reported to the Secretary of Defense in the Spring of 1990. They included, among others, a recommendation that closer attention be given to the threat posed by the proliferation of ballistic missiles. During the Spring and Summer of 1990, the Office of the Secretary of Defense conducted a strategy and technical feasibility analysis of GPALS, which led to briefings for the Secretary of Defense and the Joint Chiefs of Staff in the Winter of 1990.
- On January 3, 1991, a briefing on GPALS was presented to the President.
- On January 29, 1991, in the State-of-the-Union address, the President announced the refocusing of the SDI program.

## PRESIDENTIAL DIRECTION

***"... Looking Forward, I Have directed That The SDI Program Be Refocused On Providing Protection From Limited Ballistic Missile Strikes, Whatever Their Source. Let Us Pursue An SDI Program That Can Deal With Any Future Threat To The United States, To Our Forces Overseas And To Our Friends And Allies."***

***President George Bush  
State Of The Union Address  
29 JAN 91***

## WHY DO WE NEED GPALS?

- We require the protection provided by GPALS because of:
  - The increased threat posed by the proliferation of ballistic missiles;
  - A concern that political instabilities found worldwide could increase the potential for ballistic missile use, including accidental and unauthorized launches.

As a result, the United States, our forces, our friends, and Allies face a growing threat from limited ballistic missile strikes.

- By the year 2000, it is estimated that 24 nations will have a ballistic missile capability. Some examples: Brazil has begun development of a medium-range ballistic missile; India is progressing in the development of a medium-range missile; China has deployed intercontinental-range missiles and has exported missiles (CSS-2) with medium range to Saudi Arabia. *As this proliferation continues, the trend will be toward missiles with longer ranges and greater accuracy.*
- It is clear that some third world countries are striving to acquire or develop missiles capable of delivering payloads ranging from short through medium ranges, although a few countries could achieve intercontinental ranges through the conversion of space launch vehicles, thereby directly threatening the United States.

## THE BALLISTIC MISSILE PROLIFERATION THREAT

***"Although these technologies [ballistic missiles and weapons of mass destruction] pose a threat today that is primarily regional in character, the trend is clearly in the direction of systems of increasing range and sophistication...within the decade the continental United States could be in the range of the ballistic missiles of several Third World nations."***

***Secretary of Defense Dick Cheney  
Annual Report to the President and the Congress  
JAN 91***

- Today and for the future, *we cannot rely solely on deterrence*. The use of Iraqi Scuds in the Persian Gulf War illustrates the risks of a deterrence strategy based solely on the threat of retaliation. Our inability to deter the use of Iraqi Scuds, or destroy them all before they were launched, validates the need for missile defenses against both short-range theater ballistic missiles, and the follow-on systems that eventually could reach our shores.
- The Persian Gulf War demonstrated that countries possessing ballistic missiles may see incentives in using them, even though they could be faced with certain retaliation. We also learned that offensive counter-force operations exclusively were unable to locate and thus remove the ballistic missile threat, and that missile defenses were necessary as a last line-of-defense. It was also apparent that defenses can be very important even if they are not perfect and even if they cost more than missiles they defend against.
- Upgrading Patriot in the near-term and continuing with development of longer-range theater ballistic missile defenses will benefit our forces deployed abroad and could benefit our friends and allies. To stop there, however, would be to leave the United States vulnerable to today's threats such as the accidental or unauthorized launch of ballistic missiles--whatever the cause or source; and certainly vulnerable to future, more sophisticated Third World ballistic missile threats.

#### THE PRESIDENT ON DETERRENCE

*"Thank God That When The Scuds Came - The People Of Israel And Saudi Arabia, And The Brave Forces Of Our Coalition Had More To Protect Their Lives Than Some Abstract Theory Of Deterrence. ...Thank God For The Patriot Missile."*

*President George Bush  
Speaking At Raytheon Missile Systems Plant  
15 FEB 91*

#### WHEN WILL THE ELEMENTS OF GPALS BE READY FOR DEPLOYMENT?

- The President has not made a decision to deploy GPALS. Rather, he has directed that the Department of Defense place priority within the SDI program on research and development of capabilities to provide global protection against limited ballistic missile strikes.
- There are three interrelated GPALS elements:
  - Theater ballistic missile defenses (and associated space-based sensors) to protect U.S. forces deployed abroad, and our friends and allies;
  - Ground-based defenses (with space sensors) to protect the entire United States against long-range ballistic missiles; and
  - Interceptors based in space (Brilliant Pebbles) capable of intercepting enemy ballistic missiles with ranges greater than several hundred miles.

## GPALS GLOSSARY

Arrow and ACES: A theater ballistic missile defense interceptor concept being jointly developed with the Israeli government. With a defense range significantly greater than Patriot, ACES (the follow-on to Arrow), is designed to be an area defense system.

Brilliant Eyes (BE): Space-based satellite sensors for surveillance, tracking and discrimination during post-boost and midcourse phase. Primarily supports ground-based interceptors.

Brilliant Pebbles (BP): A distributed, autonomous, space-based interceptor and sensor system. Designed to destroy enemy missiles during the early phases of their flight by colliding with them. Can intercept any ballistic missile with range in excess of several hundred miles.

Command Center Element (CCE): Distributed system of facilities, equipment, communications, personnel and procedures that supports decision-making, battle planning and execution of the missile defense mission.

Endo--Exoatmospheric Interceptor (E<sup>2</sup>I): An interceptor deployed on the ground that uses the atmosphere for discrimination of warheads from decoys; can also intercept in late midcourse (i.e. can intercept both inside and outside atmosphere.) Designed for U.S. defense, destroys target through force of collision.

Extended Range Interceptor (ERINT): A theater missile defense interceptor that works with the Patriot launch system, providing greater firepower and destroying targets in the low atmosphere by colliding with them. Due to its small size sixteen ERINTs, rather than four Patriot missiles, can be loaded on each launcher unit.

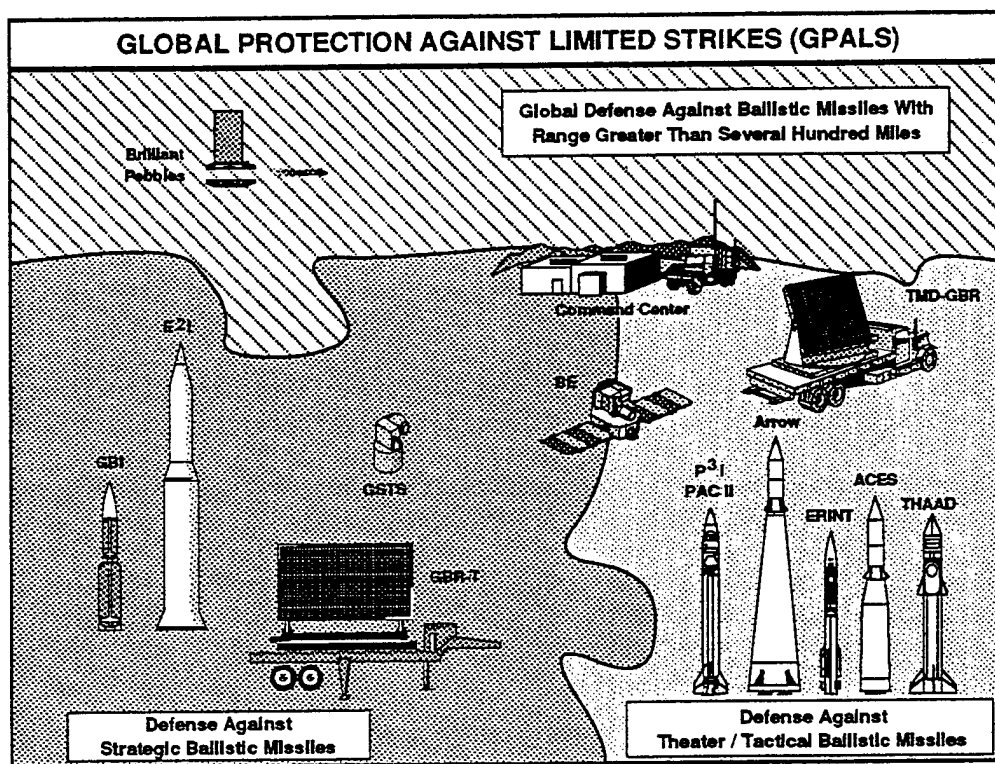
Ground-based Interceptor (GBI): Interceptor designed to engage reentry vehicles outside the atmosphere (exoatmosphere) during midcourse. Designed for U.S. defense, GBI destroys target by force of impact.

Ground-based Radar-Terminal (GBR-T): A ground-based sensor which provides search, tracking, and discrimination capabilities for the ground-based interceptors. TMD-GBR is the theater version of this radar capability.

Ground Surveillance And Tracking System (GSTS): A ground-launched suborbital rocket surveillance system which uses sensors to perform tracking and discrimination of midcourse objects. Functions for less than thirty minutes once launched.

Patriot Preplanned Product Improvement (P<sup>3</sup>I): An enhancement to the Patriot missile defense system to give it greater capability against theater ballistic missiles. Includes multi-mode ("fire and forget") seeker, higher velocity, and enhanced fire control radar.

Theater High-Altitude Area Defense (THAAD): A theater missile defense concept to destroy theater / tactical ballistic missiles at high altitude, through the force of impact. Would provide large area defense capability and overlay to point defenses such as Patriot and ERINT.



- The elements of GPALS would be deployed in an evolutionary manner:
  - Secretary of Defense Cheney has directed that the Department's Theater Missile Defense (TMD) plans and programs be accelerated and that SDIO develop options for deploying improved theater missile defenses by the mid-1990s. The current schedule calls for the Patriot upgrade in FY 1993; the ERINT (Extended-Range Interceptor) in FY 1994; and the ARROW and THAAD (Theater High Altitude Area Defense) by FY 1996.
  - Deployment of Brilliant Pebbles, Brilliant Eyes, and ground-based U.S. defense elements could begin by the end of this decade.
- A common misperception is that Brilliant Pebbles technology is somehow less mature than the technology supporting advanced ground-based defenses. In reality, both ground and space-based interceptors share common technology and are being developed in parallel, with maturation expected before the end of the decade:
  - Both types of interceptors will employ small, sophisticated sensors and will be commanded by small powerful on-board computers.
  - Both types of interceptors will track an incoming target and both will then maneuver to destroy the attacking warhead through the force of impact—no explosives, no nuclear weapons.
  - The significant difference between the two interceptors will be that one is based on the ground and the other will orbit the Earth.

#### WHY ARE SPACE-BASED INTERCEPTORS NECESSARY?

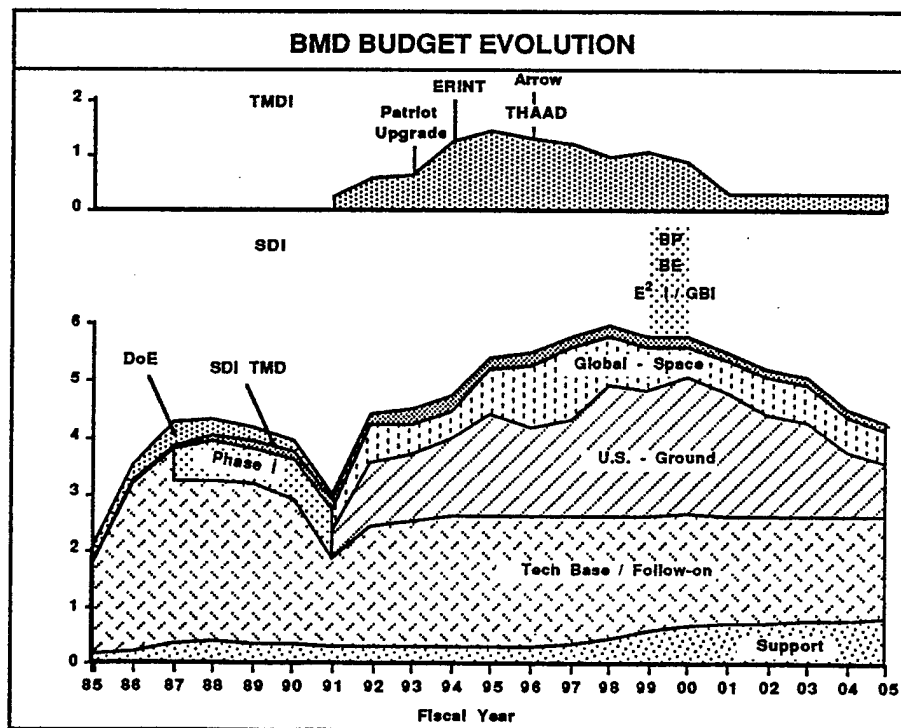
- The issue is not space versus ground. Even with emphasis on ground systems, you need space elements, *at a minimum space-based sensors*, to make the ground-based systems as effective as they can be. The issue is whether we will be in space with space-based interceptors.



- Space-based interceptors (Brilliant Pebbles) provide a number of important advantages for the defense of the United States, its forces, and potentially allies and friends. These interceptors are essential if we desire to provide global protection.
- Space-based interceptors:
  - Would consistently be in position, offering broad area coverage to protect many targets at once.
  - Could protect and offer defense against some threats to forces arriving in theater before theater commanders are able to establish their own organic theater defense capabilities.
  - Would provide protection for friends and allies, consistent with our coalition approach to future security threats.
  - Would have the capability to intercept attacking missiles moments after launch (in the boost-phase), thereby destroying the missile before its multiple warheads are released. This would provide an incentive for de-MIRVing (i.e., moving toward single-warhead missiles).

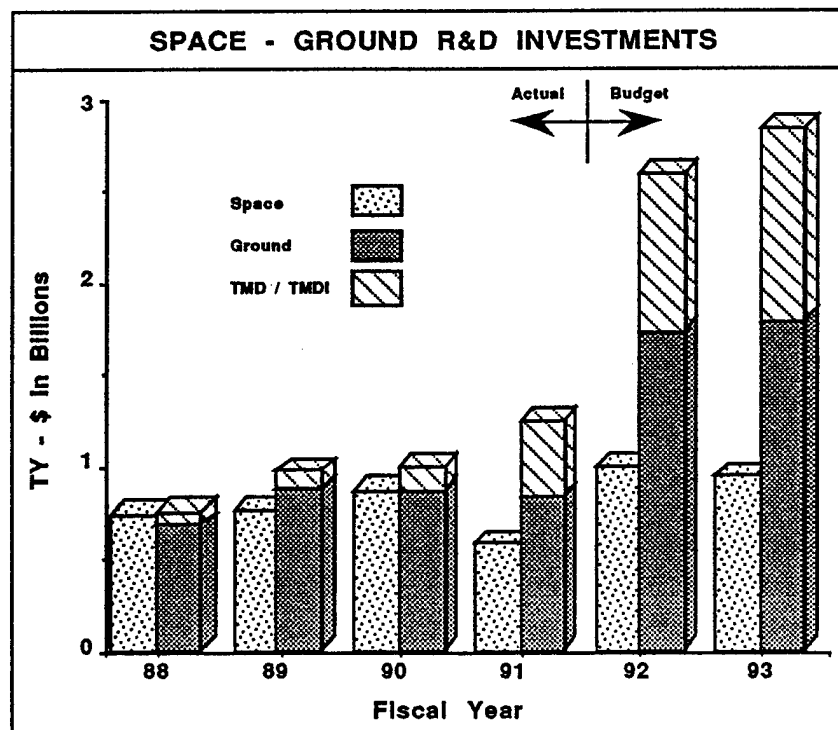
## HOW MUCH WILL IT COST?

- The estimated cost for the development, production and deployment of the three elements of GPALS is \$46 Billion (FY 1991 dollars) spread over 14 years. This breaks down to \$25B for ground-based defenses for the U.S. (including space-based sensor support), \$11B for space-based global defenses (Brilliant Pebbles), and \$10B for Theater Ballistic Missile Defenses.
- At its maximum level of effort during the mid-1990s, GPALS will require no more than \$7 billion per year. *Proportionally, this is about 20 percent of the amount spent on strategic programs today, and about two percent of today's overall defense budget.*



## IS THE SDIO PURSUING A BALANCED PROGRAM?

- The level of funding devoted to the ground-based defense of the United States is more than that of the space-based defense (Brilliant Pebbles). If you include the funds for theater ballistic missile defenses, Brilliant Pebbles funding accounts for half of that being spent on ground-based missile defense systems. In the future, the investment in Brilliant Pebbles will drop to only one-fourth of the total investment in the GPALS system. Moreover, the FY 1992 funding request for Brilliant Pebbles is 12.7 percent of the total request for SDI and the Theater Missile Defense Initiative (TMDI).
- Ground-based defenses for the United States are not being diminished in importance relative to Brilliant Pebbles. The grand total for the FY 1991 investment in development of the ground-based *system* to defend against strategic ballistic missiles is \$886 million--as compared to \$589 million being invested in developing the Brilliant Pebbles space-based interceptor *system*. ("System" costs include not only interceptors, but also associated technology work, targets, command and control elements, sensors and enabling technology.)
- Vital to SDI's total program is a robust technology-base development effort that supports not only GPALS and long-term system options, but also the Department of Defense in general.



## WHAT DOES GPALS MEAN FOR THE 1972 ABM TREATY AND ARMS CONTROL?

- The SDI program is being conducted in compliance with the 1972 ABM Treaty. In addition, as a matter of U.S. domestic law, SDIO is constraining experimental work according to Congressional directions that prohibit funding of long-lead items unique to any experiment that, when conducted, might exceed the limits of the so-called "narrow" interpretation of the ABM Treaty. *To progress at the planned rate, SDIO will have to begin, within the next two to three years, funding long-lead items for full-scale development testing scheduled for the mid-1990s.*
- The deployment of any meaningful defense against strategic ballistic missiles will require relaxation of ABM Treaty constraints. For example, even the U.S. ground-based defense segment envisioned under GPALS would be prohibited under the ABM Treaty (approximately six sites would be needed to provide coverage of the United States, including Alaska and Hawaii). Space-based sensors and interceptors are also key to accomplishing the GPALS mission.
- While to date we have seen no shift in the official Soviet position on the deployment of defenses beyond the limits of the ABM Treaty, we continue to see evidence of an internal Soviet debate over the role of ballistic missile defenses.
- Because GPALS addresses a growing threat of mutual concern -- accidental and unauthorized launches and Third World proliferation -- we believe that GPALS (rather than the Phase I concept) may better facilitate progress at the Geneva Defense and Space Talks between the United States and the Soviet Union in which the United States seeks to negotiate a new agreement on ballistic missile defenses.
- We expect that GPALS would complement stabilizing force reductions since such limited defenses would not fundamentally alter the Soviet ability to retaliate; hence, they would have no incentive to increase their offensive forces.
- Accordingly, GPALS could provide the basis for success in the follow-on strategic negotiations aimed at "implementing an appropriate relationship between strategic offenses and defenses," pursuant to agreements reached at the June 1990 Washington Summit.

### STATEMENT BY THE PRESIDENT

***"The Primary Limit To Our Ability To Develop The Technology Necessary For Ballistic Missile Defense Is Our Commitment To Do So. The Pace Of Our Research Has Been Limited Not By Technological Difficulties, But By Congress' Unwillingness To Fund SDI Adequately. I Have Listened To The Concerns Of Congressional Leaders And Taken Into Account The Changing Strategic Environment. As A Result, I Have Refocused SDI's Priorities To Provide Protection Against Limited Ballistic Missile Strikes. Now It Is Up To Congress To Respond By Supporting My Request For SDI Funding."***

***President George Bush  
The White House  
22 MAR 91***