Boost-Phase Defense Not Effective For Protecting US: American Physical Society (APS)

The American Physical Society (APS) feasibility study o-n intercepting missiles, while their rockets are still burning, has concluded that it would not be an effective approach for defending the U.S. *"Although a successful intercept would prevent munitions from reaching their target, live nuclear, biological, or chemical warheads could strike populated areas short of the target in the United States or in other countries, shows the study. This "shortfall problem" is inherent in any boost-phase defense and difficult to avoid."* Canada and other neigbouring nations should be concerned about the "shortfall problem" of this dubious technology. -- Space & Technology Editor

Boost-Phase Defense Not Effective For Protecting US: New Study

Boost-phase defense (disabling ballistic missiles while their rockets are still burning) has received much attention as o-ne possible element of a National Missile Defense system. However, the report shows that issues of timing severely limit the feasibility of this approach.

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Intercepting missiles while their rockets are still burning would not be an effective approach for defending the U.S. against attacks by an important type of enemy missile. This conclusion comes from an independent study by the American Physical Society (APS) into the scientific and technical feasibility of boost-phase defense, published in the latest issue of the APS Reviews of Modern Physics.
President Bush has expressed confidence in US missile defense programs, which are currently planned to include boost-phase defenses as well as other defensive measures, and plans to spend $10 billion o-n the effort in 2005.

Senator Kerry supports the development of a missile defense system that works and is fully tested, but he has questioned the Bush Administration's extraordinarily strong focus o-n such a system at the expense of more vigorous attempts to halt the spread of nuclear, biological, and chemical weapons.

Boost-phase defense (disabling ballistic missiles while their rockets are still burning) has received much attention as o-ne possible element of a National Missile Defense system. However, the report shows that issues of timing severely limit the feasibility of this approach.

The short time window available for disabling an enemy missile means that interceptor rockets would have to be based close to enemy territory to have a chance of intercepting the missile in time, if it is possible at all.

The study found that defending the United States against solid-propellant ICBMs would be impractical in many cases, because of their short burn times.

According to the U.S. intelligence community, countries of concern could deploy such ICBMs within 10 to 15 years, about the same time the study judged would be required for the United States to field a boost-phase defense against ICBMs.

Even against the longer burning liquid-propellant ICBMs that North Korea or Iran might initially deploy, a boost-phase defense would have limited use due to the requirement that interceptors be based close to potential missile flight paths.

Only two to three minutes would be available to achieve a boost-phase intercept, even assuming substantial improvements in systems for detecting and tracking missiles, according to Study Group findings.

Consequently, even fast interceptors could have difficulty catching liquid-propellant ICBMs and would be unable to catch solid-propellant ICBMs in time.

In the most optimistic scenarios, the defense would have o-nly seconds to decide whether to fire interceptors and could be required to make this decision before knowing whether a rocket launch were a space mission or a missile attack, the group finds.

However, boost-phase defense against short- or medium-range missiles launched from ships off U.S. coasts appears technically possible, provided ships carrying interceptors could stay within about 40 kilometers of the threatening ships.

"This report takes a detailed look at the technical issues involved in creating such a system,? said APS President Helen Quinn.

"The study group includes scientists and engineers with experience and expertise in a range of missile-related areas. The study provides a reasoned basis for public discussion of the capabilities and limitations of this approach to missile defense. APS is proud to contribute this work for the information of policy makers and the general public."

The APS Study Group looked at boost-phase defense systems utilizing land-, sea, or air-based interceptors, space-based interceptors, or the Airborne Laser.

The effectiveness of interceptor rockets would be limited by the short time window for intercept, which requires interceptors to be based within 400 to 1,000 kilometers of the possible boost-phase flight paths of attacking missiles.

In some cases this is closer than political geography allows. Even interceptors that were very large and fast and that pushed the state of the art would in most cases be unable to intercept solid-propellant ICBMs before they released their warheads.

A system of space-based interceptors, also constrained by the short time window for intercept, would require a fleet of a thousand or more orbiting satellites just to intercept a single missile. Deploying such a fleet would require a five- to tenfold increase in the United States' annual space-launch capabilities.

The Airborne Laser currently in development has the potential to intercept liquid-propellant ICBMs, but its range would be limited and it would therefore be vulnerable to counterattack. The Airborne Laser would not be able to disable solid-propellant ICBMs at ranges useful for defending the United States.

"Few of the components exist for deploying an effective boost-phase defense against liquid-propellant ICBMs and some essential components would take at least 10 years to develop," said Study Group co-chair Daniel Kleppner.

"According to U.S. intelligence estimates, North Korea and Iran could develop or acquire solid-propellant ICBMs within the next 10 to 15 years. Consequently, a boost-phase defense effective o-nly against liquid-propellant ICBMs would risk being obsolete when deployed."

Although a successful intercept would prevent munitions from reaching their target, live nuclear, biological, or chemical warheads could strike populated areas short of the target in the United States or in other countries, shows the study. This "shortfall problem" is inherent in any boost-phase defense and difficult to avoid.