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## **Physicists Say Weapon Failed In Missile Tests**

### **Obstacle for Obama, Who Backs System**

By **WILLIAM J. BROAD**  
and **DAVID E. SANGER**

President Obama's plans for reducing America's nuclear arsenal and defeating Iran's missiles rely heavily on a new generation of antimissile defenses, which last year he called "proven and effective."

His confidence in the heart of the system, a rocket-powered interceptor known as the SM-3, was particularly notable because as a senator and presidential candidate he had previously criticized antimissile arms. But now, a new analysis being published by two antimissile critics, at M.I.T. and Cornell, casts doubt on the reliability of the new weapon.

Mr. Obama's announcement of his new antimissile plan in September was based on the Pentagon's assessment that the SM-3, or Standard Missile 3, had intercepted 84 percent of incoming targets in tests. But a re-examination of results from 10 of those apparently successful tests by Theodore A. Postol and George N. Lewis, being published this month, finds only one or two successful intercepts — for a success rate of 10 to 20 percent.

Most of the approaching warheads, they say, would have been knocked off course but not destroyed. While that might work against a conventionally armed missile, it suggests that a nuclear warhead might still detonate. At issue is whether the SM-3 needs to strike and destroy the warhead of a missile — as the Pentagon says on its Web site.

"The system is highly fragile and brittle and will intercept warheads only by accident, if ever," said Dr. Postol, a former Pentagon science adviser who forcefully criticized the performance of the Patriot antimissile system in the 1991 Persian Gulf war.

In interviews and a statement, the Pentagon's Missile Defense

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# Physicists Say Interceptor Failed to Stop Warheads

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Agency strongly defended the SM-3s testing record, and said that the analysis by Dr. Postol, an M.I.T. physicist, and Dr. Lewis, a Cornell physicist, was fundamentally mistaken.

“The allegation is wrong,” Richard Lehner, an agency spokesman, said Wednesday. He said the SM-3 is “attaining test scores that many other Defense Department programs aspire to attain.”

Even so, the Pentagon later admitted that 4 of the 10 analyzed flight tests carried no mock warheads at all.

The White House declined to comment on the critique of the SM-3 and referred questions to the Pentagon.

The political implications of the critique are potentially large. Democrats, traditional critics of missile defense, have been largely silent about Mr. Obama’s enthusiasm for this new generation, which for the moment is aimed only at shorter- and mid-range missiles, rather than ones that fly between continents.

During the campaign, Mr. Obama repeatedly criticized what he called President George W. Bush’s haste to deploy unproven antimissile arms. He vowed that as president, he would assure that any defensive shield would meet rigorous standards of testing and effectiveness.

Since last fall, Mr. Obama’s antimissile goals have expanded to include not only countering Iranian missiles, but creating a rationale for deep cuts in the nation’s nuclear arsenal and ultimately for prompting foes to abandon their missile programs.

The deployment of the SM-3 is also seen as essential to convincing Israel that the United States has an effective technology to contain Iran, even if the Iranians obtain a nuclear weapon.

The dispute between the academics and the Pentagon centers

on whether it is enough for a speeding interceptor to hit the body of a spent rocket moving through outer space or whether it must hit the attached warhead. Dr. Postol says the SM-3 interceptor must shatter the warhead directly, and public statements of the Pentagon agency seem to suggest that it agrees.

“The interceptors,” the agency Web site says in its basic explanation of antimissile goals, “ram the warhead at a very high closing speed, destroying the target.”

Skeptics generally hold that the antimissile job is so daunting — what the Pentagon calls hitting a bullet with a bullet — that managers and contractors easily fall prey to exaggerating test results.

But technologists call it increasingly doable. Compared with the Bush administration’s land-based system, the SM-3 is fairly small, quickly deployable on ships and has a better reputation.

The interceptor holds what the Pentagon calls an exoatmospheric kill vehicle. In space, it peers through a telescope to guide itself toward the target, sensing telltale heat emanations and using a computer brain to fire thruster jets. The kill vehicle slams into the target and destroys it by force of impact.

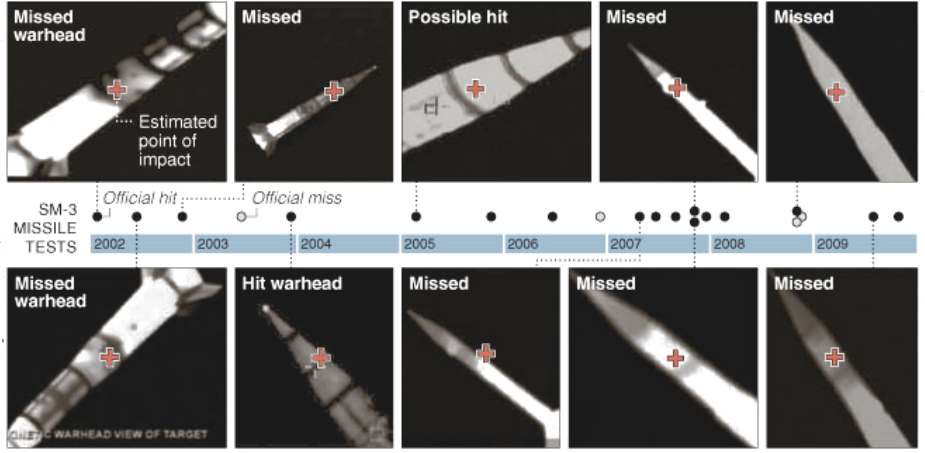
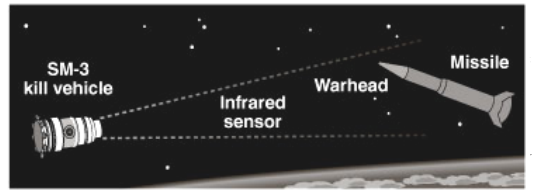
Dr. Postol’s critics see him as a pessimist blind to antimissile progress, and his defenders view him as a seer of technical oversight.

During the 1991 Gulf war, the Army put the success rate of the Patriot at over 80 percent in Saudi Arabia and 50 percent in Israel. But Dr. Postol found that brilliant displays of antimissile fire and thunder hid repeated failures of the interceptors to knock out speeding warheads.

The SM-3 analysis of Dr. Postol and Dr. Lewis, “A Flawed and Dangerous U.S. Missile Defense Plan,” appears in the May issue of Arms Control Today, a publication of the Arms Control Association, a private group in Wash-

## An Antimissile’s Test Record

Two physicists who examined data for 10 tests of the Standard Missile 3, an antimissile with a reported success rate of 84 percent, claim that it hit mock enemy warheads only a fraction of the time. The rest of the time it hit the missile body, which the scientists say would be insufficient to destroy a real warhead.



Sources: George N. Lewis and Theodore A. Postol; Arms Control Today THE NEW YORK TIMES: VIDEO IMAGES BY THE MISSILE DEFENSE AGENCY

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The study examined video images that the SM-3 kill vehicle took a split second before striking the target and that the Missile Defense Agency subsequently made public. The analysis looked at 10 tests between 2002 and 2009 — all of which the agency hailed as successful intercepts.

But the scientists found that the kill vehicle hit the warhead only once or twice. The rest of the time, the interceptor struck the rocket body — a much larger target.

In combat, the scientists added, “the warhead would have not been destroyed, but would have continued toward the target.”

In an interview, Dr. Postol said the antimissile blow might cause a warhead to fall short or give it an added nudge, with the exact site of the weapon’s impact uncertain.

“It matters if it’s Wall Street or Brooklyn,” he said, “but we won’t know in advance.”

The Pentagon’s rebuttal included a written one vetted by Lt. Gen. Patrick J. O’Reilly, director of the Missile Defense Agency, as well as the office of the secretary of defense. It called the analysis “flawed, inaccurate and misleading” and said the alleged SM-3 failures were all, in fact, successes that “did exactly what was expected” as the kill vehicles hit “within inches of the expected impact point.”

But it offered little discussion of whether striking the rocket body in flight tests was sufficient grounds to claim overall success — a seemingly important point given that much of the agency’s public testimony centers on the necessity of hitting warheads to ensure their destruction.

In a series of e-mail messages, Mr. Lehner of the Missile Defense Agency offered more information. On Wednesday, he said the rocket’s violent breakup

also demolished the warhead. Asked if the agency had evidence, he replied Thursday that readings from test sensors “prove conclusively” that mock warheads “were destroyed and were no longer a threat.”

Mr. Lehner added, however, that target missiles in 4 test flights carried no mock warheads, but rather “a nosecone with a weight up front for ballast.” The 4 flights with no warheads — which Dr. Postol and Dr. Lewis included in their analysis of 10 interceptions by the SM-3 — included 3 early ones and a flight last July, the most recent in their analysis.

Informed of the Pentagon’s response, Dr. Postol said he had no idea about the lack of warheads. He also questioned whether the destroyed warheads represented military designs or frail impostors. Real nuclear warheads streaking through the void of space are extremely rugged objects, designed to withstand the fiery heat of atmospheric re-entry as well as intense buffeting and shaking.

“A mock warhead may be extremely fragile compared to a real one,” Dr. Postol said.

Mr. Lehner disagreed. On Friday he called the fragility claim “absolutely not true.”

Representative John F. Tierney, a Massachusetts Democrat who is chairman of the House Oversight and Government Reform national security subcom-



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An SM-3 being launched over the Pacific Ocean in 2008. It was used to bring down a non-functioning satellite.

mittee, said in a statement that the SM-3 reanalysis raised serious questions.

“Congress will need to look into them further,” he said. “The American people deserve to know about the system’s actual capabilities and have a right to expect that their tax dollars are being spent effectively.”



DARCY PADILLA FOR THE NEW YORK TIMES

Theodore A. Postol at his home in Palo Alto, Calif. Dr. Postol said the SM-3 interceptor must shatter a warhead directly.