

***Missile Defense: Implications of the
February 2008 Satellite Intercept***

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**The Shoot-Down of the Failing NRO Satellite:
Implications for ICBM Missile Defense**

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The February 2008 intercept of the failed U.S. satellite was a remarkable event. It was not designed as a test but instead as an effort to eliminate a toxic hazard, hydrazine, that was descending toward Earth. Unlike the secrecy surrounding the Chinese launch a year earlier, the United States announced what it planned to do well in advance of the actual event itself.

- To do so, we reprogrammed the guidance system of the SM-3 interceptor that was designed to target slower and lower missiles. This provides additional evidence that the SM-3 can not only do what it did to the satellite, but that it can certainly perform the missile intercept missions for which it was designed. The impact of the intercept destroyed the target at an altitude of about 130 miles above the Pacific. The intercept vaporized the half a ton of toxic rocket fuel and incinerated vaporized debris as it fell harmlessly to Earth.

In most quarters this remarkable achievement was welcomed as evidence of the success of our sea-based missile defense systems and a good omen for the future. The Navy missile, launched from the USS *Lake Erie*, collided head-on with the 2.3 metric-ton USA 193. It did so, as one official put it, “operating at the margins of a system well engineered for a different job.”

The achievement demonstrated by the shoot-down was a dramatic indication of the technological advances that have been made in recent years to achieve kinetic intercepts – to hit a bullet with a bullet. Nowhere have these achievements been greater than in the *Aegis* missile defense program.

- Think for a moment of what might have happened if we had decided simply to allow the satellite to descend to Earth as some of the critics have suggested given the admittedly low probability of death or destruction from the hydrazine tank. Was it a 3.5 chance or a 1 in 25 to 1 in 45 chance? Some might say that this is a case for doing nothing and simply hoping that the satellite’s toxic material would incinerate as it descended or that even if it reached the Earth it would not do any damage. However, the successful intercept obviously reduced to zero whatever risk there may have been. Think for a moment of the

criticism that would have been heaped on the United States had there been deaths or destruction from the satellite and we had done nothing to prevent it from reaching the Earth's surface. Critics could have justifiably asked what we had gotten for our large missile defense investment over the years if we could not deal with this satellite. There would also have been invidious comparisons with the successful Chinese direct ascent launch in January 2007. The U.S. failure would also have been seen as evidence of the limitations of missile defense technologies and vindication of those who are skeptical of its ability to operate effectively when we need it. The failure of the intercept itself, or our failure to attempt even to intercept the satellite, would have been welcomed by America's enemies. This would have been portrayed as evidence of the deficiencies of U.S. technology and might well have emboldened those who do not wish us well.

What is remarkable, however, is how critics who acknowledge the success of the intercept have chosen to interpret it as evidence of a large top-secret space program that will lead to a military race in space. At the same time they discounted the U.S. official motivation of simply wanting to destroy the dead satellite. Instead, the intercept was alleged to be a subterfuge to test U.S. space weapons. It was seen as a U.S. response to China's ASAT test a year earlier and as the tip of the iceberg that is the covert clandestine U.S. space weapons program. One can only wish that such a program existed. If it does, we can be grateful. Whether or not it exists, there is little that can be done to prevent other countries from militarizing or weaponizing space. The heart of the argument by those who oppose the militarization or weaponization of space is that the United States, by entering international treaties, can somehow set the standards that others will follow. This neglects the simple fact that we were not the first to militarize space. This happened when Nazi Germany launched its V-2 rockets against targets in southern England in 1944 or when the Soviet Union launched its first *Sputnik* in 1957.

The Chinese ASAT launch in January 2007 provided evidence that the weaponization of space can take place from the Earth or in space itself. China launched a direct ascent missile from its own territory that detonated in close proximity to a Chinese satellite. We must assume that China is also developing the means to target large numbers of satellites, our own included, in what can only be called the weaponization of space Chinese style. How to ban such a capability would be a severe challenge indeed for the designers of an arms control treaty for space, if only for the impossibility of verification and the difficulty inherent in efforts even to define what is a space weapon. So I would simply ask: When is space weaponized? Weapons can be launched from Earth into space. Weapons can be launched from space against targets in space or on Earth.

The 2008 version of the Pentagon's *Military Power of China* discusses Beijing's use of "legal warfare" designed to shape U.S. and other approaches to space. Legal warfare, as practiced by China, includes "the use of international and domestic laws to gain international support and manage possible political repercussions of China's military actions . . . China has incorporated its Legal Warfare concept into its attempts to shape international opinion." This means that China seeks to divert the United States from developing space capabilities while China, with support also from Russia, continues its programs to exploit U.S. vulnerabilities and to establish China as a leading space power in the decades ahead.

Although there is growing bipartisan agreement about the importance of continuing to fund *Aegis* and this is good, the same cannot be said about space as an arena for missile defense. Because the satellite shoot-down took place at the altitude of Low-Earth Orbit, it brought back the discussion of space militarization and weaponization, as I have already suggested. The U.S. destruction of the dead satellite, together with China's launch in early 2007 that could place at risk vital U.S. space-based assets, should have reminded us that for the United States space represents an indispensable first line of defense. These events also serve as a reminder that the United States is already facing challengers to its position in space. Many other countries have space programs and there is a burgeoning private space sector. We should also understand that space technologies are inherently dual use. The spread of technologies for launching satellites and other payloads into and through space is creating new opportunities in the commercial sector as well as military applications.

To conclude, the successful U.S. shoot-down highlights the importance of missile defense and the successes of the *Aegis* program. But it also points up the importance of space. The intercept, while spectacularly successful, highlights the need to bear in mind another consideration. While a single sea-based interceptor destroyed a satellite, the limited missile defenses now being deployed may face penetration aids and/or several warheads. Therefore, two to four interceptors may be required for confidence in the destruction of a single warhead. We will need to develop greater robustness in our missile defenses in the years ahead. We will also need to give more attention to boost-phase capabilities including the sea-based systems. However, a boost-phase defense that is space-based could always be on station on a worldwide basis, unhampered by sovereignty issues of overflight and operations on another nation's territory. An advanced sea-based system could provide boost- or ascent-phase capability, but this would depend on the launch site and the ship's position.

Only a space-based system could provide a truly global missile intercept capability, contributing thereby to a layered, multi-tier robust missile defense. However, far from a large clandestine space weapons program, I fear that we are unable even to agree on the modest funding for a space-based test bed for missile defense. Instead, we have limited ourselves to an even more modest \$5 million appropriation for an independent study of the option of space-based interceptors in the latest continuing resolution that contains DoD appropriation for FY09. In point of fact, we had solved crucially important technology problems associated with space-based interceptors nearly a generation ago in the *Brilliant Pebbles* system. Nevertheless, the good news is that we are moving forward with *Aegis* and its demonstrated success. The bad news is that we are still using increasingly obsolete political arguments to constrain technological opportunities offered by space for necessary missile defense. Nevertheless, the February shoot-down of the dead U.S. satellite demonstrated what can be done and how far we have come.