SDI procurement: Where does the United States stand?

by Carol White

It would seem from all indications, that a shift in U.S. policy on the SDI has been implemented—so that the program will now be vectored toward deployment, without constraints. The mood in the Congress has been positively influenced by conclusive evidence—reported in *EIR* on many occasions—that the Soviets are moving rapidly to deploy their own ABM (anti-ballistic missile) system. If the West does not do likewise, we will be sitting ducks, to put it bluntly.

Near-term deployment of a first-generation SDI, based upon kinetic kill vehicles, which are both satellite- and ground-based, has been a talking point for moving to a so-called broad interpretation of the ABM Treaty, but the real issue is the freedom of the United States to test and develop a broad range of weapons and systems, both conventional and also—most importantly—those which operate according to new physical principles.

The kinetic energy weapons (KEW) systems now under development will have a margin of superiority over Soviet KEWs, but KEWs are rapidly approaching the point of diminishing return, as happens with any fully exploited technology. Furthermore, although the existing Soviet ABM systems deploy KEWs, they are actively developing x-ray laser and electron beam weapons, which are considered in advance of the United States.

While the way may now be open politically for a more rapid pace of development of the SDI, the fact remains that the budget for the program falls far short of being ambitious—not to speak of meeting the requirements of a true crash program. Just as serious a hindrance, the United States is in danger of losing the necessary industrial depth to sustain a Strategic Defense Initiative.

Semiconductor crisis

A task force of the Defense Department's top scientific advisory group has released the results of a study it has conducted on the state of the U.S. semiconductor industry, and concludes that there will be no advanced computer chips manufactured in the United States within five years if emergency action is not taken now. Unfortunately, industry observers note that the recommendations fall far short of the mark, even when viewed within the narrow confines of the study.

The report was released to the press at a briefing given by the task force chairman, Norm Augustine of the Martin-Marietta Corporation. Mr. Augustine described the conditions facing the industry, the crucial role it plays in national defense, and then cautioned his audience that the report points to some serious fundamental problems facing the entire economy, but does not attempt to offer solutions to any area but the computer chip industry.

For illustration purposes, the study looks at changes in the share of the market held by the United States in the area of Dynamic Random Access Memory (DRAM) chips, over the last decade, during which the U.S. fell from 100% to 5% (and dropping fast) of the world production of these chips. Not surprisingly, the Japanese producers are the primary replacements for the failing U.S. industry.

The DRAM chip is useful as a marker for a variety of reasons: It is the basic memory device which powers a vast array of computer systems involved in such tasks as controlling communications devices and providing fire control solutions for artillery pieces, to keeping modern fighter aircraft under control. There is no aspect of modern defense weapons systems which does not depend on these chips, and the rate of evolution in the memory power of these chips paces the development of these weapons systems. This rate of evolution is very fast, with an increase in computing power, by an order of magnitude (a generation), every 2.5 years.

Therefore, for reference purposes, a five-year period represents two generations, and if in that period, the United States loses the ability to produce state of the art chips, U.S. weapons systems will be dependent on foreign sources for access to the most advanced DRAMs. The implications for national security are obvious.

The U.S. DRAM producers are in that situation right now. At the current rate of collapse of the industry, we will not have the capacity to produce leading edge technology within five years. This situation is made more serious by the fact that the weapons currently in the field are using U.S.-made chips, and were designed approximately ten years ago,

when the United States dominated the market. Weapons now being designed, to be fielded in five to ten years, will not be able to use U.S. suppliers for their crucial components!

Mr. Augustine went to great length to point out that this situation is not the fault of "unfair practices" by foreign, principally Japanese, competitors. He pointed out that the Japanese industry enjoys a fundamental advantage in access to cheap capital, because Japan's national economic and tax policy is vectored to produce the highest rate of savings in the world. In each of the downturns which have hit the industry, the Japanese have been able to hang on to their industry, and fight for an increased market share, while U.S. companies (dependent on short-term—five years and less—investments) respond by going belly-up. Without access to a large-volume market, R&D becomes prohibitive, and the death of the industry occurs with great rapidity. Mr. Augustine admitted that this entire process will be accelerated by the new tax code, which offers no protection to industries that depend on high rates of capital formation. He also pointed out that wage differentials between national economies are not a real factor, since production is now almost entirely automated.

Every high-tech area threatened

These facts point to the essence of the matter—the U.S. industry is being destroyed by the national economic policies imposed over the last decade. Although the DRAM manufacturers are the most extreme example of the consequences of these insane economic policies, Mr. Augustine pointed out that every area of high-technology industry is threatened; magnetic storage device technology, optical technology, and so on. Like most studies conducted by the Defense Department, this task force was restricted to developing proposals for one industry only, even though the problems of that industry are caused by the state of the overall economic collapse. The result is predictable.

The task force calls for the creation of a consortium of chip producers, financed by the industry, and supported by about $250 million of DoD dedicated contracts, which will be tasked to develop state of the art technology and make it available to the entire industry for product application. The hope is that this will allow the United States to retain access to development and production of this vital technology. While outlining this policy, Mr. Augustine was compelled to note that this would not help any other area of the threatened high-technology sector, and was a "fix" for the chip industry only.

Japanese specialists, upon examining the proposal, could only shake their heads in amazement, commenting, "Why do they even propose such a thing, when they know that the real task is to revitalize the entire economy?" It was clear from Mr. Augustine's remarks that the Japanese are not the only ones asking this question, but there will be no effort to answer it so long as the administration is locked into Don Regan's "recovery."

A serious commitment to building the SDI could quickly reverse this situation. The kind of requirements set before industry by Lt. Gen. James A. Abrahamson, who heads the Strategic Defense Initiative Organization, coupled with appropriate tax incentives and a revival of credits to industry, for high-technology investment, can provide the necessary stimulus to the program.

In January of this year, speaking before a group of aerospace contractors, at the third annual conference of the U.S. Space Foundation, Abrahamson urged them to gear up to begin mass production of the hundreds of satellites that will be needed for the SDI. To do this, he said, companies must begin using modular satellite designs and mass-production techniques to make affordable the hundreds of satellites that SDI will require. "We will begin to build satellites not as something built one at a time, tailored to very limited weight limits and modified if you build two, but [designed] in terms of [manufacturing] hundreds."

Abrahamson also pointed to the need for companies to develop low-cost mass production techniques for small components such as sensors and computers. Abrahamson said today's early-warning satellites use hundreds of sensor elements each, while SDI's warning satellites will require millions. Mass production of sensors and improved reliability are essential to reducing their cost.

Production of space transportation has to be similarly ugraded, he said; therefore the SDIO has requested money to develop a heavy-lift launch vehicle. It would be needed to boost hundreds of SDI spacecraft into orbit, cheaply. One goal of the heavy-lift launcher is to reduce launch costs tenfold, to a price of about $200-300 per pound, he said. Such a low-cost launch system will not be able to support "standing armies of people to ensure reliable operations," as today's launch vehicles demand.

"We need a vehicle," he said, "that is a complete revolution in the way we get into space." The heavy launch vehicle would have a rated capacity of 150,000 lbs.—100,000 below the Saturn V—but a good step over existing capacity nevertheless. McDonnell Douglas has been given the contract to develop, produce, and operate the medium launch vehicle which will be used to launch Navstar satellites. Previously these would have been launched by shuttle. Prior to the shuttle accident the first production Navstar satellite was to be launched this month. This has been postponed until October 1988.

The goal is to have 18 operational Navstar satellites and three on-orbit spares. This is considered to be one of the highest payload priorities. It was to have been placed in orbit by 1989, by the space shuttle. Now the plan is to have one launch in 1988, six in 1989, seven in 1990, and six in 1991. The minimum Air Force requirement was for four launches per year starting in 1989. Ten prototype Navstar satellites were launched previously by Atlas boosters. It would seem that the planned newer satellites will include a nuclear detonation sensor system and will be hardened by the use of graphite epoxy solid rocket motor cases.