

relief at being able to continue launching a variety of photographic and electronic-monitoring reconnaissance satellites.

The solid-fuel strap-ons, meanwhile, are undergoing an extensive testing program to confirm that the cause of last year's mishap — the peeling of insulation inside the rockets, different from the leaky seals (still being redesigned) cited in the shuttle's case — is under control before the 34D goes back into service.

— J. Eberhart

## DOD is asked to aid semiconductor firms

Historically, the United States has been the world technological leader in advanced semiconductors. In recent years, however, U.S. semiconductor manufacturers have been losing that lead. Their slowed growth and loss of sales, principally to the Japanese, have hurt not only their financial health, but also the vitality of their research enterprise — a trend that poses a large and growing threat to national security, according to a new Department of Defense (DOD) study.

Says Charles A. Fowler, chairman of the Defense Science Board, which prepared the report, the waning U.S. leadership in semiconductor technology is so serious "that at some time in the future [it] may be looked upon in retrospect as a turning point in the history of our nation."

To help U.S. semiconductor manufacturers regain leadership in chip manufacturing and maintain leadership in chip design, the Defense Science Board recommends that DOD pump hundreds of millions of dollars more into semiconductor research, development and especially manufacturing.

The United States' ability to field technologically superior weapons has become increasingly "dependent upon superior electronics," says the report. DOD has relied upon this technological superiority in its weapons to counter the numerical advantage — in weapons and troops — of its adversaries. At this point, however, the most advanced defense systems — those about to be deployed — may contain "up to several tens of percent" of computer chips that were made, packaged or tested in foreign countries, the Defense Science Board finds.

As a result, the report concludes that "if steps are not now taken to assure the availability of domestic sources or stockpiles, or both, the United States could be denied timely access to these militarily critical devices in wartime or [be] forced to rely upon technologically and operationally inferior alternatives." Moreover, the report notes, when the source of superior chips is overseas, the United States has little ultimate control in preventing their acquisition by the Soviets. That acquisition could directly threaten

## Deadly aftermath for Vietnam veterans

Vietnam combat veterans had a much higher death rate in the first five years out of the service than veterans who had served elsewhere in the same period, according to a study by scientists at the Centers for Disease Control (CDC) in Atlanta. Violent deaths, including automobile accidents, suicides, homicides and drug overdoses, accounted for most of the difference.

This pattern is similar to that found in World War II and Korean War combat veterans, say the investigators in the Feb. 13 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. Unlike veterans of the two prior wars, however, Vietnam combat survivors had a persistent elevation of drug-related deaths that continued through the end of the study in December 1983.

The researchers conclude that "the postservice excess of traumatic deaths among Vietnam veterans is probably due to unusual stresses endured while stationed in a hostile fire zone." But the data do not clarify whether specific factors, such as exposure to the herbicide Agent Orange, contracting infectious diseases in Vietnam, lack of support on returning home or suffering post-traumatic stress disorder, led to the increase in violent deaths.

The study compared postservice mortality rates of 9,324 Vietnam veterans with those of 8,989 veterans who served at the same time in Korea, West Germany and the United States. The Vietnam veterans had enlisted in infantry, armor, artillery or combat engineering units.

The researchers found a 45 percent higher death rate among Vietnam veterans in the five years after discharge. In addition, the Vietnam group had 72 percent more suicides, 93 percent more automobile fatalities and 69 percent more poisoning deaths, mostly from drug overdoses. By 1983, deaths among

Vietnam veterans remained 17 percent higher than deaths among the other veterans.

For the entire study period, Vietnam veterans had a markedly lower number of deaths due to heart or blood vessel diseases. The reason for this surprising finding, say the researchers, is unclear. Another recent study found a similarly elevated death rate from external causes among Australian Vietnam veterans in comparison with non-Vietnam veterans, but mortality from cardiovascular diseases was also much greater among the Vietnam group.

While the CDC study points to important mortality trends for Vietnam combat veterans, the reasons for the trends remain unclear, says psychologist Terence Keane of the Boston Veterans Administration Medical Center. "[The CDC researchers] would like to conclude that excess stress experienced during combat leads to excess mortality after the war, but they can't really do that," he asserts. "Did a peculiar virus in Vietnam or exposure to Agent Orange lead to behavior problems later on? Your guess is as good as mine."

Another possible factor in the elevated death rates, notes Keane, is post-traumatic stress disorder, a severe stress response that afflicts a substantial number of Vietnam veterans with heavy combat duty or participation in abusive violence (SN: 4/28/84, p.261). Only a prospective study could uncover links between this disorder and eventual death rates.

The Veterans Administration is conducting a nationwide study of Vietnam veterans' postwar adjustment, says Keane, including a close look at post-traumatic stress disorder and substance abuse. The project, which involves interviews and psychological testing of about 3,000 veterans, will be completed in October. — B. Bower

U.S. technological superiority in weaponry.

The board recommends that DOD establish a cooperative industry-DOD Semiconductor Manufacturing Technology Institute (Semitech). It would not only develop, demonstrate and advance the technology needed for efficient, high-production output of state-of-the-art devices, but also provide facilities to actually produce selected devices that DOD most needs. The board estimates that Semitech could be launched with about \$250 million from the industry and with DOD support of about \$200 million per year for five years.

The board also suggests that DOD spend \$50 million annually to set up eight centers of excellence in semiconductor

science and engineering at universities; increase its other investments in semiconductors by \$300 million a year, within four years; and set up a government-industry-university forum to assess how each sector might cooperate in meeting DOD's developing needs.

Both the Cupertino, Calif.-based Semiconductor Industries Association and the Semiconductor Research Corp., a 35-company research consortium headquartered in Research Triangle Park, N.C., have come out in favor of the report's general findings and recommendations. DOD's only reaction has been to say it "is currently reviewing the [report's] conclusions and its recommendations and investigating technical as well as funding alternatives." — J. Raloff