

Report Asks Upgrade of Military R&D Labs

Defense Science Board panel cites problems in funding, work force, management in DOD in-house research program

DESPITE a steep climb in military R&D spending during the 1980s, the Pentagon's science and technology research program is troubled, hampered by a second-rate technical work force and overly rigid management, a Defense Science Board (DSB) panel reported last week. The committee of nongovernment R&D experts, chaired by MIT Provost John Deutch, painted a bleak picture of the Defense Department's technology base effort: laboratories are unable to keep their best researchers, bureaucratic regulation cripples creative exploration, and a focus on short-term results continues to drive out investment in long-term, speculative research.

Budget categories 6.1 and 6.2, which fund basic research and exploratory technology development, have received progressively less of the defense R&D budget, according to Robert Duncan, director of Defense Research and Engineering. At a hearing of the Senate Armed Services Committee on 18 March, Duncan presented charts showing that the share of total military R&D spending that went into basic science and technology shrank from 24% in 1965 to 9% in 1988. The decline accelerated during the Reagan Administration, as slow increases in basic research spending were overshadowed by rapid growth in applied R&D work on specific weapons and on the Strategic Defense Initiative.

According to the Defense Science Board panel, poor management compounded the problems of the technology base. "There is a growing perception that the Department of Defense [DOD] is getting progressively less for its R&D dollar," the report stated.

Like several other reports published in recent years, the defense experts recommended higher pay for scientists and engineers in order to attract them to the DOD laboratories—the heart of the defense R&D program. The 38,000 scientists and engineers in DOD's in-house labs perform over one-third of the Pentagon's basic and exploratory research, and manage or monitor most of the rest of the \$35-billion defense R&D effort.

A few labs, such as the Army's Materials Technology Laboratory in Watertown,

Massachusetts, have particularly bad reputations, according to congressional officials. But even the better DOD facilities lose their best people to privately run labs, said an aide to Senator Jeff Bingaman (D-NM), chairman of the Senate Armed Services Committee's subcommittee on defense industry and technology. "You have to be a real hero to stay in the DOD labs," he said.

Laboratories should offer more merit-based pay increases and higher starting sala-

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ries, said the panel, and lay off workers on the basis of performance when budgets shrink. According to Bingaman's aide, the result would be a smaller, but better paid and more productive staff of scientists.

Prevented by government salary caps from hiring top-notch talent, the DOD labs drift along without strong technical leadership, said the committee. To solve the problem, it suggested that the labs hire a few highly paid supermanagers. Up to 100 leading technical and scientific specialists would be hired for renewable 3-year terms under this plan. Exempted from federal pay ceilings and from conflict of interest laws, they would earn competitive salaries while serving in the government, and later return to their private sector jobs.

Swathes of red tape, according to the DSB experts, need to be eliminated if the laboratories are to be rescued from mediocrity. When federal regulations prevent lab directors from adopting more flexible personnel and contracting policies, the Pentagon should follow the Department of Energy's example and turn some of its labs over to private management, said the panel. The Los Alamos and Lawrence Livermore National Laboratories of DOE, for example, are owned by the federal government but operated by the University of California.

Siegfried Hecker, director of Los Alamos National Laboratories, told the Senate Armed Services Committee that personnel

exchanges between DOE labs like his own and DOD labs could "provide a more research-oriented setting for many DOD laboratory personnel." The DOE labs could do more work on DOD's technical problems, said Hecker, if the Pentagon gave them more stable, long-term support. "We are typically viewed as another contractor who is closely monitored and controlled," complained Hecker. "This approach works against flexibility, which is the very characteristic required for success."

Even when the labs produce useful technology, the armed services too often fail to take advantage of it, noted the DSB committee. To help the armed services apply new technologies more quickly, the report advocated focusing on experiments that would take new technology, use it to build a potentially useful piece of military hardware, and demonstrate its usefulness in the field. The Navy has already started a similar program, and has requested \$58 million to fund such experiments in fiscal year 1989.

Efforts to shake up DOD's research establishment have gathered support in Congress. Senator Bingaman called the 18 March hearings to examine what he called "disturbing trends in all legs of our defense technology base." At the hearing, the Office of Technology Assessment released the first results of an ongoing examination of the problems that beset the defense R&D system. Its report contained little analysis, but voluminous information on DOD's research establishment.

Despite congressional support, the DOD research establishment may be reluctant to carry out many of the DSB's recommendations. "The study was just not well done," said John Dimmock, technical director of the Air Force Office of Scientific Research, who worked previously at the Office of Naval Research and Lincoln Laboratories, operated by MIT. "There is an outsiders' perception that there's a lack of quality at the labs. But given an opportunity to put their cases forward, the lab people could have defended themselves quite adequately. The DSB committee made no visits, asked no one from the labs any questions—they went in essentially with a preconceived notion and wrote the report."

In its report, the DSB panel admitted that "quantitative . . . measures of the performance of the Technology Base system simply do not exist. Instead, the Study Group relied upon the judgment of its members." Most of the 22 panel members were from industry; only a handful work for the military laboratories. ■ **DANIEL CHARLES**

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