"Earmarking" at DOE, DOD Rolls On

Building projects, new superconductor and microelectronic centers, and other pork-barrel handouts continue to be loaded into R&D budgets as growth in funding for research slows

DESPITE Congress' protracted struggle to enact the 1988 budget and to limit the federal deficit, legislators could not refrain from stuffing government R&D programs with dozens of pet construction and "research" projects.

"Earmarking" is how federal budget officers describe the projects that are tacked on to federal spending packages by Congress. Many university and research institutions, however, call them "pork-barrel" awards because legislators specify which university receives the funds. In many instances, these R&D projects have not undergone any formal merit review, and have little to do with research.

Leading research universities see the congressional plums as a growing threat to institutions seeking federal support for peer-reviewed projects through regular channels. Organizations such as the Association of American Universities (AAU) and the National Association of State Universities and Land-Grant Colleges, say the practice undermines the entire peer review process.

Increasingly, good research programs are being delayed or are left unfunded while less worthy efforts proceed because they have the backing of powerful members of the House and Senate. Managers of basic research programs at the Department of Energy (DOE) are finding it difficult to cope with the add-ons in these tight budgetary times. "All of this micro management is just hell," comments one DOE official. "They [Congress] are undermining well thought out, planned programs."

These earmarks are often used to fund new buildings—not research projects, says Joel Snow, director of science and technology affairs at DOE. Snow notes that the projects when included in total numbers for basic research at DOE make it look as overall funding for research is climbing. But congressional earmarks for construction and directions to undertake specific R&D, he says, are hurting core research programs.

Even so, legislators such Representative Tom Bevill (D–AL), chairman of the House appropriations subcommittee on energy and water development, defends the congressional earmarks. Bevill says he supports the peer review system, but notes that some regions of the country, such as the southeastern states do not fare well in peer review. He says this is partly because the region is not adequately represented on peer review panels. Indeed, Senators Bennett Johnston (D–LA) and Pete Domenici (R–NM), have argued that the peer review system is sometimes biased toward established, top-rung research institutions.

But the congressional earmarks are used for more than correcting alleged inequities in peer review. AAU president Robert Rosenzweig notes that the practice is linked with economic development (*Science*, 18 December, p. 1639). Bevill concedes that congressional funding of R&D often is motivated by a desire to build infrastructure to support growing populations and to help diversify home state economies.

Two sectors of the federal government where earmarking is practiced blatantly are DOE and the Department of Defense (DOD). In 1988, Congress added $125.8 million in construction earmarks to the Office of Energy Research budget. Although legislators shifted $104 million into R&D accounts to pay for the bulk of the additions to the Office of Energy Research's construction program, DOE officials note that in most instances they would have used the funds differently.

Another form of earmarking is the "congressional directive"—instructions to agencies to increase or deemphasize research in given areas. The orders are sometimes used to steer resources to particular institutions. Unless Congress provides extra support, DOE must try to fund these activities by trimming other research programs. The Office of Basic Energy Sciences' operating budget rose by $50 million to $416 million, for example. But $20 million must be cut from planned R&D efforts to comply with congressional directives.

A partial listing of earmarks affecting the Office of Energy Research in 1988 appear below:

DOE construction projects:

■ $12.7 million to construct a building for the Institute of Human Genomic Studies at Mount Sinai Medical Center in New York City.

■ $15 million for the Pediatric Research Center at Children's Hospital of Pittsburgh.

■ $8 million for the construction of the Cancer Research Center at the Medical University of South Carolina. The university is currently headed by former Secretary of Energy James B. Edwards.

■ $10 million for an addition to the basic science building at the Oregon Health Science University at Portland.

■ $7.5 million to continue construction of the Institute of Nuclear Medicine, which is part of the University of Medicine and Denistry of New Jersey. The project was initiated in 1987.

■ $12 million for the Center for Advanced Microstructures and Devices at Louisiana State University. The mission of the center is the study of processing and analysis technology for electronic device development.

■ $10 million for the Barry M. Goldwater Center for Science & Engineering at Arizona State University, a project begun in 1987.

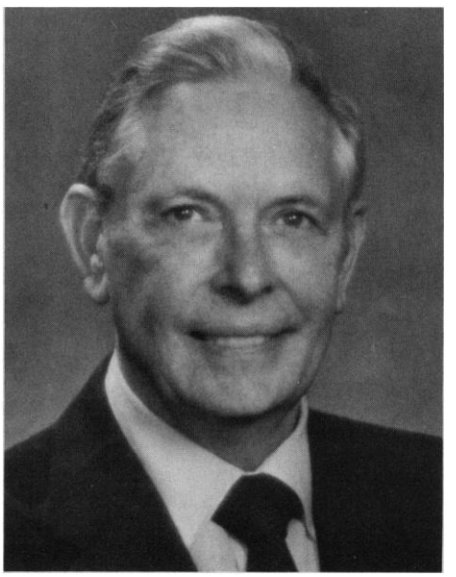
■ $4.5 million for completion of a combustion research facility at Sandia National Laboratory.

■ $10.6 million for the Center for Applied Optics at the University of Alabama.

■ $6.5 million for the Center for Automation Technology at Drexel University in Philadelphia.

■ $8.5 million for the Institute of Advanced Physics at the University of Boston.

■ $4 million for solar energy equipment, advanced lighting, and related energy man-



Tom Bevill. *Appropriations subcommittee chairman defends the earmarks.*

agement equipment for a multipurpose center at Boston College.

■ $8.5 million for proton-beam cancer treatment at Loma Linda Medical Center in California.

■ $4 million for the Center for Physical & Environmental Science at the East Center University in Oklahoma.

■ $4 million for the National Center for Chemical Research, a project begun in 1984 at Columbia University in New York.

DOE congressional directives:

■ $4.9 million to start work on a Boron Neutron Capture Therapy Cancer Treatment Center at Idaho National Engineering Laboratory. This new undertaking will utilize the laboratory's Power Burst Facility, which was slated for retirement. Funds that were to go for decontamination and decommissioning of the facility will be diverted to partially support this new activity.

■ $3.5 million to support expanded projects and programs in materials processing. Although no institution is designated, the funds are thought to be targeted for the Ames Laboratory in Iowa.

■ $1.2 million to continue the industrial biotechnology research program at the Oregon Graduate Center and $500,000 to initiate a research effort in membrane-based technologies at the center.

■ $11.7 million to continue the ongoing program at the Florida State University supercomputer center.

■ $3 million to support the development of particle accelerators at the Texas Accelerator Center.

■ $2 million to continue a cooperative effort between Lawrence Berkeley National Laboratory and the Ana G. Mendez Educational Foundation and Jackson State University.

DOD earmarking:

In DOD, officials estimate that congressional earmarks account for $108 million of the department's $4.97-billion science and technology program. Some of the construction projects and congressional directives are listed below.

■ $15 million for x-ray lithography research. Funds may be split between Brookhaven National Laboratory in New York and Sandia National Laboratories in New Mexico.

■ $16.5 million for bioenvironmental hazards research at a historically black university with an existing strength in pharmacology and a major research university interdisciplinary research activities. While the 1988 continuing resolution does not specify a particular institution, the wording and legislative history suggests that Xavier University and Tulane University of Louisiana may be the intended recipients.

■ $7 million as a grant for development for an engineering, sciences, and technology center to promote defense industry involvement in manpower training and education at the University of Scranton in Pennsylvania. Of this total, $5 million will be allocated to complete the Oregon Graduate Center's advanced semiconductor program, which was begun in 1986.

■ $10 million for the Center for Compound Semiconductor Technology at Sandia National Laboratories.

■ $25 million for a Center of Advanced Compound Semiconductor Technology. This will support R&D on advanced compound and other semiconductor research. The legislation does not assign the task to a specific organization, but an institution in Florida is thought to be favored to receive the funds.

■ $19 million for manufacturing technology initiatives, including $13 million for the Concurrent Design and Assembly Science and Technology Project in West Virginia.

■ $3.5 million for research on nutrition at Louisiana State University's Pennington Biomedical Research Center.

■ $2.1 million shall be made available for the National Bone Marrow Donor Registry.

■ $1.8 million for University of Mississippi and the Institute of Technology Development, which will use the funds to initiate operations of the National Center for Physical Acoustics.

■ $8-million microelectronics R&D-work that may be directed to Mississippi's Institute for Technology Development. ■

MARK CRAWFORD

Expanded U.S.–Soviet Trade Tied to Shift on Technology

The reforms introduced by General Secretary Mikhail Gorbachev could produce radical change in the Soviet economy by the turn of the century and create market opportunities for Western companies, according to Jerry F. Hough, director of the Center on East-West Trade, Investment, and Communications in Honolulu. But Hough argues that U.S. companies need to position themselves to take advantage of these opportunities.

A specialist on the Soviet Union, Hough says in a new study published by the Brookings Institution, *Opening Up The Soviet Economy,** that the economic reforms are more than just a passing experiment. He believes that Gorbachev has the political backing to weather the storm that the reforms are likely to generate, and that dramatic changes in the Soviet economy will begin to occur by 2000.

While it is unclear how quickly economic reforms will move forward, U.S. firms need to start assessing the opportunities and barriers of doing business in the U.S.S.R. In 1986 U.S. exports to the Soviet Union totaled just $1.28 billion, but only $632 million of this was manufactured goods and services. Agricultural exports accounted for the remainder.

In particular, Hough says American executives will have to weigh the effects of the U.S. government's restrictions on the transfer of technologies to the Soviet Union. He predicts the problems concerning technology transfer from the West, especially in the United States, will become more problematical in the 1990s. Indeed, the Soviet Union's interest in joint ventures with western firms, Hough notes, will accelerate technology transfer.

American policy-makers have to become more realistic about restricting technology trade to the Soviet Union, Hough told reporters recently at a press briefing on his book. He is concerned that the Europeans, Japanese, and emerging industrial countries will expand their economic linkages with the Soviet Union ahead of the United States.

What the United States must recognize, Hough contends, is that Soviet Union is compelled to reorganize its economy for both strategic and domestic purposes. For the first time since the revolution, the Soviets have a sizable, well-educated middle class that wants more consumer goods and a better standard of living. And if the Soviet Union is going to remain a world leader, it must improve its technological base—not just to support the military, but to make it an economic power. At present, Hough notes, South Korea has pulled ahead of the Soviet Union in its ability to export medium and high technology goods to the West.

Hough notes that Europe's economic ties with the Soviet Union are likely to grow if the community feels less threatened militarily. This will undermine any American effort, he says, to continue a broad technology embargo against the Soviet Union and will add to frictions in the NATO alliance. ■

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*Jerry F. Hough, *Opening Up The Soviet Economy* (Brookings Institution, Washington, DC, 1988).