security," the task force sees it as more likely that this was gained by espionage, evasion of export controls and availability of open literature than by scientific and technical cooperation.

The Pollack report also recognizes that the Pentagon's attempts to dominate US actions in space "is far more serious than a simple struggle over turf." It observes that "the political battle between NASA and the DOD over the shape and scope of the US space program has already caused confusion in Europe, Canada and Japan over collaboration in the space station." Accordingly, the report urges the NASA administrator to take the initiative to establish with the Secretary of Defense new and workable terms for a productive relationship between their organizations.

Among the other recommendations is an eloquent appeal for top levels of government to provide "leadership in space as the product of excellence in goals and achievements rather than as an end in itself. . . . Unless a sense of purpose, vitality and long-term vision is restored to the US civil space program so that other nations find the US the most attractive partner for association and cooperation, they will be less interested in accepting US leadership."

—IRWIN GOODWIN

SEMATECH GROUP SELECTS AUSTIN, TEXAS, IN EFFORT TO REGAIN CHIP DOMINANCE

After a nine-month search for a suitable location for a research venture that would develop innovative ways of making semiconductors, the SEMATECH consortium announced on 6 January that it had chosen Austin, Texas. The decision for Austin ended a national shootout that came down to 13 finalists from a field that had originally attracted 135 sites in 34 states. Austin, which is already the home base of another electronics research cooperative, the Microelectronics & Computer Corp, was selected because the city offered an unused integrated circuit plant that had been built, in better times for US chip makers, by Data General Corp. Texas sweetened its bid with $68 million in state and university funds. Other factors in favor of Austin included a proposed new $20 million center seven miles north of the university campus for microelectronics and materials research, as well as MCC's presence, which provides a unique opportunity for synergism.

SEMATECH (a foreshortening of Semiconductor Manufacturing and Technology Institute) was conceived by top executives of major semiconductor firms during the industry's deep slump in 1986. The concept was backed in studies conducted independently by the Defense Science Board and the National Research Council as a way of sharpening the US edge to cut down Japan's startling growth in chip technology (PHYSICS TODAY, January, page 49). Since SEMATECH was launched last March, it has enlisted 14 top US companies, including such customary combatants in global electronics as AT&T, Digital Equipment, Hewlett–Packard, Intel, IBM, Texas Instruments, Motorola, National Semiconductor and Rockwell International. This group's goal is to develop state-of-the-art semiconductor manufacturing techniques that can be adopted by commercial companies. Members of the consortium would have first call on any successful production processes. All foreign participation in the venture is forbidden.

Congress appropriated $100 million in the Defense Department's fiscal 1988 budget for the consortium and has promised a similar sum for the next five years. SEMATECH's total annual budget is $250 million, which includes $100 million contributed by its member companies as well as something like $50 million from state and local governments, universities and other sources. The total cost of the project is figured at $1.5 billion through 1992.

Texas was a somewhat surprising choice because its offer of $68 million was modest in comparison with a $440 million package from Massachusetts, whose governor, Michael S. Dukakis, is campaigning for the Democratic nomination for President as a high-tech head of state. Some members of the SEMATECH board considered Massachusetts the front runner, though others favored Phoenix, Arizona, where several chip-making plants are located, and Research Triangle Park, near Raleigh–Durham, North Carolina. One reason for the intense competition is that SEMATECH is expected to employ 800 people, half from the member firms. Texas officials estimate that SEMATECH could create an additional 2100 jobs in related industries and services.

The idea of Austin as a high-tech center has been nurtured for decades by the faculty of the hometown university. One of the city's biggest employers, Tracor Inc, a maker of military electronics and analytical instruments, was begun in 1955 by three physicists and a mechanical engineer at the university. Tracor employees subsequently started some two dozen other companies in Austin, including Radian Corp, which produces robotics and waste management equipment, and Continuum Co, a developer of computer software. Then in the late 1960s, IBM became the first large corporation to set up a research and manufacturing center in Austin. After IBM was followed by Texas Instruments, Motorola, Advanced Micro Devices, Lockheed Missiles & Space Co and 3M Co, city officials spoke of Austin as another Silicon Valley or Research Triangle Park.

During this period, the University of Texas also grew. Its endowment is now more than $3 billion, second only to Harvard's. The university and private donors together set up 32 new faculty chairs, each endowed with $1 million or more, in physics and engineering, attracting such prestigious figures as Steven Weinberg, John A. Wheeler, Ilya Prigogine and Roman Smoluchowski. When the worldwide oil glut sent prices tumbling in the mid-1980s, the Texas legislature ordered the university to cut its spending to offset declining tax revenue from the oil industry. Last year, after the university lost some 30 professors, the cuts were restored.

SEMATECH's choice of Austin is likely to improve the area's chances of being a leading electronics producer. That Austin had the right connections on Capitol Hill also helped its chances. Jim Wright, the House Speaker, and J. J. Pickle, who represents Austin and is a leading member of the House Ways and Means Committee, both campaigned to oppose efforts to reduce or remove funding for SEMATECH during attempts last fall to hold down discretionary items in the fiscal 1988 Federal budget.

According to Charles E. Sporck, president and chief executive of National Semiconductor Corp and SEMATECH's chairman, the project will be operating by next fall. Its work will

be closely coordinated with research in computer sciences at MCC. That center was begun four years ago to head off Japan's vaunted Fifth Generation project by devising innovative computer concepts and advanced software.

To get a running start, SEMATECH will be given some of today's most advanced integrated circuits by IBM and AT&T, which both design and produce chips for their own use. Under an agreement announced on 26 January IBM will provide the design and manufacturing specifications for its 4-megabit dynamic random-access memory chip and AT&T will contribute the technology for its 64-kilobit static RAM device.

—IRWIN GOODWIN

WASHINGTON INS & OUTS

DOE'S SNOW GOES TO CHICAGO; MARQUET AND KERBER LEAVE DOD

On 22 January, **Joel A. Snow,** director of science and technology affairs at the Department of Energy's Office of Energy Research for the past ten years, became associate vice president for research at the University of Chicago. The vice president for research at Chicago is Walter Massey. Among its many functions, the research office oversees management of Argonne National Laboratory.

In fact, Snow has spent 20 years in Washington science programs and, as such, has been involved in some of the capital's most contentious research issues in that period. In government circles he is known as an informed, urbane and often acerbic commentator on policy matters.

Snow got a PhD in physics in 1967 at Washington University in St. Louis, in its halcyon days, when Edward U. Condon, George Pake and Arthur Holly Compton were there. In 1968, after a postdoctoral year at the University of Illinois, he joined the National Science Foundation, where he helped develop Research Applied to National Needs, a program that owed its origin to a widely held assumption in the late 1960s that government-funded research could help solve many of society's problems. RANN was mired in controversy from the start. Its birth certificate was issued by Congress in P. L. 90-407 in 1968 and its wet nurse was the White House Office of Management and Budget. But Congress and OMB had not sought prior approval for their actions from the National Science Board, which oversees NSF policies.

The upshot was that the Science Board, irked at being ignored, decided it needed to approve all RANN proposals, because P. L. 90-407 required NSF to support the program not only at universities but at other government agencies and nonprofit organizations. From fiscal 1971, when RANN began obligating money, until NSF killed it in 1978, a total of $484 million was spent on the program—notably for R&D on alternative supplies of energy after the Arab oil embargo forced Americans to stand in gas lines. Not surprisingly, the death knell for RANN came from academics who argued that it was a dangerous new direction for NSF, one veering away from the agency's original purpose of supporting university grants and fellowships in basic research.

Before RANN's demise, Snow joined the White House Office of Science and Technology Policy, where he helped guide the creation of the DOE Office of Energy Research in 1977. He remembers the stormy meeting in the Roosevelt Room of the White House at which Wolfgang K. H. Panofsky, Frank Press and Pake confronted Energy Secretary James Schlesinger to hammer out the structure and substance of a DOE basic-sciences program. Less than a year later Snow joined DOE, where one of his main jobs has been to manage the Energy Research Advisory Board and to administer the selection of winners of the annual Fermi and Lawrence Prizes. He also assisted Alvin W. Trivelpiece, who was his boss at DOE's Office of Energy Research, in developing a strategy for selling the giant $5.3 billion Superconducting Super Collider to the Reagan Administration and Congress. "Joel is extremely effective behind the scenes," says Trivelpiece, now executive officer of the American Association for the Advancement of Science.

One of the small band of physicists brought on board the newly launched Strategic Defense Initiative Organization in 1984, **Louis C. Marquet** jumped ship on 4 January to sign on as vice president for research at Atlantic Aerospace Electronic Corp in Greenbelt, Maryland. He had been one of three deputies to the program's director, Lieutenant General James Abrahamson. Before coming to "Star Wars," Marquet was at DARPA, where he managed directed-energy projects. He headed all research and technology in the SDI operation. To his credit, as SDIO's liaison with the American Physical Society panel that issued its examination of directed-energy weapons last April, Marquet told news reporters the report ought to receive a final grade of A, in disagreement with some of his Pentagon colleagues who had fought its release.

Marquet earned a PhD from the University of California at Berkeley in 1964 and taught physics at the University of Arizona before going to MIT's Lincoln Laboratories, where he became associate head of the optics division. In 1983 he went to DARPA. In leaving SDI for Atlantic Aerospace, Marquet rejoins his old boss, former DARPA chief Robert Cooper.

While Abrahamson seeks a successor for Marquet, he has appointed Air Force Colonel **Garry A. Schnelzer** the acting deputy for research and technology. Schnelzer, who holds an MS degree from the Air Force Institute program at the University of Hawaii, worked as a research physicist on inertial guidance systems at the Air Force Cambridge Laboratories in Massachusetts and as a program manager for space-based radar and antisatellite weapons at the Air Force Space Division in Los Angeles. Since 1985 he has been director of the sensors office in SDIO.

Ronald L. Kerber resigned as deputy secretary of Defense for research and engineering on 5 February to become vice president for aerospace advanced systems and technology at McDonnell Douglas in St. Louis. Before coming to the Pentagon in 1985, Kerber had been associate dean for graduate studies and research and director of the division of engineering research at Michigan State University.

He received his MS and PhD in engineering science from Caltech in 1966 and 1970, respectively. Kerber joined the MSU faculty in 1969, and left in 1971 to spend a year at the Aerospace Corp, where he worked on chemical lasers. Upon returning to MSU he conducted research in a wide range of fields, including laser physics, plasma chemistry, fluid dynamics, energy conversion and materials science. During 1983–84 Kerber served as program manager in DARPA's materials science division, specializing in laser hardening and electromagnetic processing.

—IRWIN GOODWIN ■