A Poor Start for the Militarization of Space

The rush to build a $1.4-billion command post has resulted in waste, fragmentation, and a computer system that will be obsolete the day it is switched on

A futuristic U.S. military command post for the coordination of space war, space shuttles, spy satellites, and other overt and covert missions in space is taking shape. Located near the Colorado Rocky Mountains, the $1.4-billion, 440-acre complex upon completion in 1987 will resemble a small city with a population of 1800.

But the Pentagon's rush to militarize space has resulted in a flock of problems for the new facility. Because of interservice turf wars it will consolidate only a smattering of the military's myriad space programs. The ones it does bring together will not be unified and streamlined but will remain autonomous, often with separate commands, buildings, and computer facilities. And the reliance on software from older missions means the space-age facility will use computers that today are two generations old and, when first turned on, will be obsolete.

The General Accounting Office (GAO), after outlining some of the problems in a report,* recommended early this year that Congress stop the project in its tracks until the military can come up with a better plan.

Such a slow, deliberate strategy does not seem to be in the cards, however. Just a few weeks after the GAO report was released, the push for the post got stronger. Representative Ken Kramer (R–Colo.), in whose district the project resides, leaked secret testimony of the Pentagon's top scientist, who claimed the Soviet military will deploy laser battle stations in space as early as next year. The revelation, pooh-poohed by many in the defense community, touched off a spate of articles and increased pressure in Congress for a crash effort in the military space race. Kramer brushed aside suggestions that his disclosure was a deliberate attempt to speed planning for the project.

The space command post is known as the Consolidated Space Operations Center (CSOC, pronounced See-Sock). Construction of the facility, to be located outside Colorado Springs, is slated to begin in fiscal year 1983.

CSOC will take over two major missions that currently are carried out in other parts of the country. The first is the Satellite Control Facility at Sunnyvale, California, the nerve center of the military's satellite control network. It currently controls about 40 satellites and by 1985 will control about 65. The Air Force for some time has been itching to move the facility, which is run by the Lockheed Corporation, because it is close to three major earthquake fault lines. In addition, it is located on a crowded, 20-acre site surrounded by freeways and industrial parks, making it an ideal target for saboteurs.

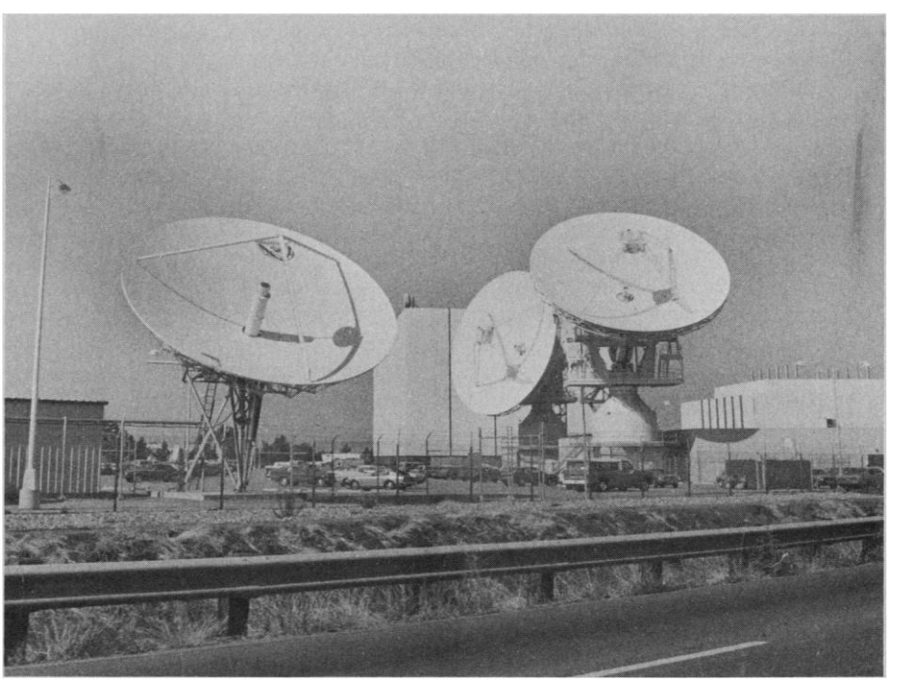
The second task for CSOC is control of military missions for the space shuttle, which are currently orchestrated out of the Johnson Space Center in Houston, Texas. The Pentagon wants control of military missions out of the hands of the National Aeronautics and Space Administration (NASA) because of the classified nature of the payloads.

In its rush to militarize space, the Pentagon is already asserting control over a segment of Johnson. This takeover illustrates the nature of some of the problems that will be transferred to the space command in Colorado.

At Johnson, the Air Force has created a separate post known as the "Controlled Mode." This $85-million facility currently employs about 150 Air Force personnel, many of whom wear civilian clothes to reduce their visibility. Seventy more are expected by 1984. Said Secretary of the Air Force Verne Orr during a recent tour of the facility: "I think most people in the Air Force think far enough downstream. We will probably be running the shuttle."

On 16 April, the civilian head of NASA's entire shuttle program was replaced with a military man, Major General James A. Abrahamson of the Air Force.

The Controlled Mode is getting new computers in order to facilitate shuttle



"Within bazooka range of a highway"

Vulnerable to sabotage because of nearby freeways, the military's Satellite Control Facility in Sunnyvale, California, is one of the key bases to be incorporated into the new central space command post near Colorado Springs, Colorado. The photo was taken by Atlanta Constitution *reporter Joseph Albright for a series of articles known as "The Message Gap," which appeared starting 21 September 1980. In the series, Albright quoted a defense official who said it was "unforgivable" that such a critical base was "within bazooka range of a highway."*

**Consolidated Space Operations Center Lacks Adequate DOD Planning* (MASAD-82-14, General Accounting Office, Washington, D.C., 29 January 1982).

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control by the military. These, according to the GAO, for the most part will be large mainframes from International Business Machines (IBM) known as 3033's, which were developed around 1977. These already are two generations old, having been superseded by IBM model 3081 and the recently announced IBM 3083.

What is to be gained by the use of obsolete equipment? For one thing it is cheap. The 3033's are no longer selling well, and IBM recently announced a price cut on some models of up to 17 percent. Perhaps more important is that the old computers will allow the military to use software that already runs on computers at Johnson, a great savings since developing software is often more expensive than buying the computers themselves. The problem is that the software, too, is far from state of the art. Many of the astrophysical algorithms go back to the days of Project Mercury.

"At some point," says Charles F. Rey, a GAO auditor who worked on the report, "you've got to upgrade. You've got to optimize your software."

What the military gains most in this approach is speed—not efficiency, accuracy, or low cost, but speed. And, taking the headlong approach one step further, the Air Force has signed a contract with IBM so that the antiquated setup at the Controlled Mode can be exactly duplicated in Colorado, so the military can further save steps in its mushrooming space program.

Using the Controlled Mode layout is only part of the replication strategy. In order to speed the space effort, the military is also building in Colorado a near

Security Checks on USDA Peer Reviewers

The U.S. Department of Agriculture (USDA), according to a well-informed Administration official, has been screening scientists for security risks and political compatibility before inviting them to sit on peer review panels. These panels, composed of people supposedly chosen for their expertise alone, will decide which research proposals deserve to be funded by the USDA's competitive and special grants offices. Spokesmen for the National Science Foundation and the National Institutes of Health say these procedures are unusual; their agencies do not subject peer reviewers to Federal Bureau of Investigation (FBI) or political checks.

The practice of screening scientists for their political views is irregular in itself. But, according to several observers, it has also caused severe problems in scheduling basic research awards this year. Background checks are time consuming. At present, nominations are moving slowly through the bureaucratic maze, and the review system seems threatened with delay.

In the case of the 4-year-old competitive grants program, names of 140 potential reviewers were submitted for approval early this year. As of 23 April, only 15 of the 72 needed to conduct business had been cleared by the Secretary of Agriculture. These reviewers are supposed to meet and give their final decisions on grant applications on 3 May. Many have been reading applications for weeks in preparation.

The person responsible most directly for screening the nominations, Charles Grizzle, confidential assistant to Secretary of Agriculture John Block, says there has been no impropriety in selecting members of peer review committees this year. It is true that nominees for policy or advisory committees are checked for their political coloration. "If two names are submitted to us and one is a Democrat and one is a Republican, we will choose the Republican," he says. Candidates for the scientific panels are not scrutinized as carefully as those for the policy committees, but they are screened.

Grizzle says that nominations to the peer panels are sent to the FBI for a routine name check. Then they undergo a "very cursory check" at the Agriculture Department "to make sure that we've got people in the right slot and that they haven't gotten mixed up somewhere along the line," Grizzle says. "Our principal criterion is scientific qualification." However, if there is a choice between two people and one is "more philosophically aligned with this Administration, we are going to choose that person." But Grizzle insists that "there is no effort to politicize those panels." Anyone who suggests otherwise, he adds, "must be trying to embarrass the secretary, and we're not too pleased about that."

There are two reasons for the delay in setting up the peer panels for the research programs, according to Grizzle. One is that the department has been required to operate according to the rules of the Federal Advisory Committee Act this year for the first time. The procedures are unfamiliar. Second, the nominations came in late, arriving at the end of February. Grizzle says the FBI clearances came through 6 to 8 weeks later, and that he hopes to complete the department's in-house "cursory check" within 4 days. Of the 270 nominations for the various peer review panels, 80 had been cleared by 23 April, according to Grizzle. (A spokesman for the FBI says it takes 10 to 14 days to process a routine name check.) Grizzle says he has been working "rather feverishly" to review all the lists sent over by the FBI. He hopes to have all the names cleared by the night of 26 April.

There was, however, no clear explanation for the delay in hiring the man who was recruited to direct the competitive grants program, David Krogmann, professor of biochemistry at Purdue University. He ran the same program while taking a year's leave from Purdue in 1980. This year he has been asked to run it again, splitting his time between Purdue and the USDA. He recruited his own administrative staff early this year at the USDA's behest. But as of 23 April, he and his recruits still had not been given formal approval to take control of the program. This delay of 5 months in getting started, Krogmann says, "may set a new record for the department."

The first director of the competitive grants program, Joe Key, now a professor in the botany department at the University of Georgia, fears that some USDA officials may be practicing a form of malign neglect. The competitive grants program has never been liked by traditionalists at USDA. Key says, "If the department is not mature enough to handle an open basic research program, perhaps we should consider moving it somewhere else."

—ELIOT MARSHALL

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carbon copy of the multimillion-dollar computer center at the Satellite Control Facility in Sunnyvale.

The duplication of out-of-date computer centers might not have occurred except that the military in fiscal year 1982 received a broad exemption to Public Law 89-306, known as the Brooks Bill after its author, Representative Jack Brooks (D–Tex.). The law forces federal agencies to acquire computers through full and open competition and to justify the purchases. In essence, the military received an exemption because it said red tape was threatening the national security.

Troubles with hardware are perhaps the least of the facility's problems. The space command post, though a high security area, is considered impossible to protect against attack by accurate Soviet missiles. Thus when the space command is completed on the plain outside Colorado Springs, the military facilities at Johnson and Sunnyvale will remain operational as backups. The control of space is so important, Orr told a reporter for the Houston *Post*, that the nation should not "risk putting all of our eggs in one ground basket."

Despite the potential for cost reduction through the unification of certain tasks, the satellite and shuttle missions at Colorado will be kept separate. According to the GAO, this is something of a waste. A single set of computers, for instance, could perform the complex computations needed to track satellites as well as the shuttle. The Air Force itself in one report estimated that such a consolidation would produce savings of 10 to 30 percent. At the moment, however, the missions will be totally separate. One reason the Air Force gives is that it urgently needs a backup for the vulnerable facility in Sunnyvale. A consolidation of operations for the various missions would have taken time and better planning.

Fragmentation within the futuristic space command is only part of the bureaucratic headache. Turf wars within the military as a whole have limited the scope of CSOC's mission, with a resulting duplication of facilities and the potential for chaos in the chain of command if space war ever broke out. Twenty-seven miles away from the CSOC site, for example, is the Cheyenne complex, the hollowed out mountain that holds the North American Aerospace Defense Command. The Space Defense Operations Center (SPADOC) at Cheyenne, which tracks Soviet missiles and satellites and ensures the safety of North American airspace, is a logical candidate

Chip Makers Turn to Academe with Offer of Research Support

Manufacturers and users of computer chips in the United States have launched a cooperative research venture that could ultimately become the largest single conduit for industrial support of university research. Called the Semiconductor Research Cooperative (SRC), its mandate is to fund long-term basic research of interest to the microelectronics industry; its underlying purpose is to help shore up the United States' technological lead in integrated circuitry, which is fast being eroded by Japanese companies.

The venture has several unusual features, not the least of which is its size. If all goes according to plan, the SRC will channel about $6 million into university laboratories this year, between $12 and $15 million next year, and perhaps as much as $40 million a year by 1986. Members of the cooperative, which one participant predicts will be like a *Who's Who* of the electronics industry, will contribute amounts based on their total semiconductor sales or on the value of the semiconductors they incorporate into their products. This arrangement will mean that not only semiconductor manufacturers but also companies that rely on other firms for integrated circuits will be making a contribution to basic semiconductor research.

The SRC will be a nonprofit foundation linked to the Semiconductor Industry Association (SIA), the industry's trade group. It will get under way in earnest in May, when an executive director will assume full-time responsibilities. Last week, the SIA announced that Larry Sumney, who has for the past few years headed the Department of Defense program to develop very high speed integrated circuits (the so-called VHSIC program), has been chosen for the job.

The aim is for the SRC to fund research that is either too basic or too long-term to fall within the R & D programs of most companies, but which could play a key role in future microelectronics technology. It will, for example, support work on new techniques for imprinting circuits on silicon wafers, alternative semiconductor materials, and computer-aided circuit design.

The idea came largely from officials of International Business Machines (IBM). In June last year, IBM president Robert Evans raised the possibility at an SIA board meeting, and Erich Bloch, IBM's vice president for research, was subsequently asked to draw up a firm proposal. Bloch has been named chairman of the SRC's board.

Bloch said in a recent interview that a major stimulus for launching the cooperative was that Japanese companies have recently been making substantial inroads into world markets for computer chips. They have captured about 40 percent of the market for the current generation of memory chips, the 16K RAM, and according to some projections, they may end up with 70 percent of the market for the next generation, the 64K RAM. United States companies are generally believed to hold a technological edge in some areas, such as the design of microprocessors, however, and it is this lead that the SRC could help maintain.

Members of the cooperative would benefit directly in two ways. First, although the work funded by the SRC would be published in the usual way, SRC members would get an early look at the results, perhaps by being briefed on work in progress. And second, they would get at least royalty-free rights to any inventions resulting from the work. Actual ownership of patents has not yet been decided, but Bloch says, "we are not going to pay royalty for something we are funding."

Cooperative ventures of this type run the risk of falling afoul of the antitrust laws, but Bloch maintains that provided the SRC is open to anybody who wants to join and restricts itself to basic research, there will be no problem. Open membership implies, however, that U.S. subsidiaries of Japanese companies would be eligible to join. To get around that possibility, the SRC may insist on reciprocal membership in cooperative research in other countries—such as the $250 million program, supported in part by the Japanese government, to develop very large scale integrated circuits in Japan.—COLIN NORMAN

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for inclusion in the CSOC complex. Its computers perform the same sort of space-tracking functions. During a fight in outer space, moreover, it would be in charge of identifying hostile forces. Yet this type of urgent information at SPADOC would have to go through complex communication networks in order to reach the offensive command post 27 miles away at CSOC. In the meantime, the battle may have been lost.

The Air Force recognizes the problem. In a 1979 report it said: "The capability to calculate orbits for predictive avoidance in CSOC and SPADOC would allow the flexibility to run the program in SPADOC while CSOC is saturated with another high priority job, or during a subsystem failure." Nevertheless, the commands remain separate. One problem is that they are run by different generals.

Other programs that could be consolidated into the space command post include the Global Positioning System satellites and the Defense Meteorological Satellite Program. Yet these programs remain autonomous.

Is the rush to build a $1.4-billion space operations center really necessary, especially when it appears to leave careful planning far behind? One of the critical arguments the military makes in favor of haste is that the expansion of the military shuttle program requires immediate action. The Controlled Mode at Johnson can handle only 6 to 8 missions a year, not the 12 to 14 the military expects by 1989. The GAO takes sharp issue with this analysis. First, it questions whether enough shuttles will be built to reach this goal. Second, the current turnaround time of 90 days would limit the Pentagon's flights to four or five per year by 1987. "In this event," notes the GAO report, "the controlled mode at Johnson Space Center should be able to accommodate the Department of Defense needs, on an interim basis, until CSOC is properly developed." GAO also recommends an interim backup for the satellite control facility in Sunnyvale until the central space facility gets a better blueprint.

It seems that the poor start for the command post is about to trigger yet another GAO investigation, this time into the policy implications of a centralized space command. Says a Capitol Hill aide who has been watching the developments, "There is a major policy shift concerning space that is taking place. It is all being done on the sly, with the Controlled Mode and all that. We intend to examine the process in more of a public manner."—WILLIAM J. BROAD

Environmentalists Now Targeting Reagan

A coalition of environmentalist groups has launched a "spring offensive" on the Administration's energy, environmental, and natural resource policies. On 31 March the groups issued a 35-page "indictment," claiming that the President has "broken faith with the American people on environmental protection" and has appointed officials who "have simply refused to do the job that the laws require."

The criticism reflects a shift in the environmentalists' strategy away from blaming Reagan appointees for environmental transgressions and instead calling the President himself to task.

The report primarily covers the activities and proposed activities of the Environmental Protection Agency (EPA) and the Department of the Interior. The scores of offenses, large and small, enumerated in the indictment add up to a description of a coherent and extensive program designed to ease the burdens of regulation on private industry; stimulate the development of oil and mineral resources; promote nuclear power as the nation's foremost energy priority; reduce public participation in decision-making; cut back on health research and environmental analyses; halt designation of new national parks, wildlife refuges, and wilderness areas; relax controls on pollution emissions; cut back on enforcement; eliminate subsidies for conservation and the development of renewable energy sources; delay development of regulations called for by environmental protection laws; sell public resources to private interests at artificially low prices; and pump new blood into hoary pork-barrel projects that were long ago shown to be unsound.

"The Reagan Administration's approach to the environment and natural resources is not conservative; it is radical," says the indictment.

The indictment was issued on the heels of a report by a coalition of many of the same groups damning the Reagan energy policies. Describing these as "radical, costly, dangerous, and inconsistent," it contends that the precipitous plunge in funding for conservation and renewable energy sources undermines goals of economic revitalization, national security, and increased energy self-sufficiency.

The report says the Administration's commitment to reviving the nuclear power industry "comes at a time when energy economists have all but declared the industry dead," and chastises the Administration for blurring the line between nuclear power and weapons by reviving plutonium reprocessing, pushing the breeder reactor, and eyeing plant wastes as a source for plutonium for weapons.

The Interior Department and the EPA have pooh-poohed the indictment as politically motivated, and a detailed rebuttal of the charges is being prepared at Interior.

—Constance Holden

Fewer Grants Next Year, Says Future NIH Director

The Reagan Administration is sticking to its guns on two key budget issues concerning the National Institutes of Health (NIH), according to the director-designate of the institutes.

James B. Wyngaarden, testifying at his Senate confirmation hearing on 21 April, said that the Administration's proposal to fund only 4100 competing grants appears to be a "firm figure" for fiscal 1983. He told the Labor and Human Resources Committee that 4100 is "a substantial number," but added that he still believes in the previous goal of 5000 competing grants a year. The 5000 grant figure was the recommendation of a National Academy of Sciences committee, which said the number would assure the continuity of research from year to year. Wyngaarden, who was a member of that committee, said at the hearing, "as the economy recovers, I hope it can be restored."

Wyngaarden reiterated the Administration's position that full funding of 4100 grants was possible only with a 10 percent cutback in indirect cost reimbursement and a transfer of money from noncompeting grants. Proposed reductions in indirect cost reimbursements have caused a furor among institutions, which are now reimbursed 100 percent of their overhead expenses by NIH. Wyngaarden noted that methods of calculating re-

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