Los Alamos: The Winds of Mutiny

Does responsibility for bad morale at the birthplace of the bomb lie with the captain or the crew?

Los Alamos. Something akin to joy might be expected at a weapons lab, given the Administration's policy of expanding the nuclear arsenal. But here, in the remote mountains of New Mexico at one of the nation's top facilities for the design of nuclear weapons, the rank and file often seem on the brink of rebellion.

"The problem is morale," says Carlyle B. Storm, recently a visiting scientist at Los Alamos. "You'd go to coffee breaks and instead of people talking about science, they'd grumble about the latest management upset."

Discord came in 1979 with the arrival of a new director, an ambitious manager wise in the ways of the nation's capital. Moans were soon heard when basic researchers were forced to submit detailed project goals, where before they had been guided largely by intuition. To better measure job performance and pave the way for possible layoffs, the director in April announced a tough new policy whereby 10 percent of all workers would be found superior and 10 percent unsatisfactory. The scheme was abandoned after what one observer calls a "spontaneous uproar." Disgruntled employees this summer leaked lab documents to columnist Jack Anderson, who penned an exposé not on layoffs but on nepotism among top management. Another sign of discontent came in August, when a Los Alamos newspaper asked 400 readers if a system of "matrix" management introduced by the director had improved research at the lab. A startling 89 percent of those who answered said no.

"There are too many managers," says Louis Rosen, 64, head of a $65-million particle accelerator at Los Alamos and a widely respected physicist. "I don't know if morale will recover."

The man at the center of the storm is Donald M. Kerr, 43, who became the fourth director of Los Alamos a little more than 3 years ago after heading the high commands for energy and weapons at the Department of Energy.

Despite the easy target presented by a headstrong captain, responsibility for bad morale at times seems to lie with a crew grown fat and sassy after decades of easy wages.

Kerr has tried to steer Los Alamos through an increasingly choppy sea. The budget is down after 40 years of nearly steady growth, and the lab last year faced its first layoffs in more than a decade. More important, Kerr's stewardship comes amid a radical shift of focus. In three short years, defense programs have expanded from about 45 to 60 percent of the budget—a sharp departure from the days of the energy crisis, when a majority of the budget was spent on ways to produce power.

The National Labs

The Department of Energy's big, multipurpose national laboratories are in a period of flux, and they are being investigated by the White House Science Council and the Energy Research Advisory Board. This article examines the changes taking place at the Los Alamos National Laboratory. A future article will examine Argonne National Laboratory.

Kerr, a compact, energetic man with thick glasses and a quick smile, waxes optimistic about the lab, in spite of occasional headaches due to charges of nepotism or complaints from his 7000 employees. The $500-million-a-year enterprise is healthy and its future bright, he says, ticking off a list of accomplishments. The main difficulties, he recounted in a 2-hour interview, have been ones of misunderstanding.

To appreciate Kerr's problems and the concerns of the scientists, it is necessary to know something of the lab's history, especially its explosive growth and diversification during the decade past.

In 1970, with 4000 employees and a budget of $100 million, the lab's main mission was the development of nuclear weapons. Bombs took almost 70 percent of the budget. Nonmilitary projects had a nuclear link, such as work on reactors or a project to develop an atomic-powered rocket. Most of the work was done in secrecy. Nixon and détente, Earth Day, and the Arab oil embargo soon combined to help chart a new course for atomic city. The switch was symbolized by the dedication in 1972 of LAMPF, the Los Alamos Meson Physics Facility, the proton accelerator run by Rosen. It was the lab's first "open" facility. The mission of the machine soon expanded to include the production of negative pi mesons to treat cancer.

With the onset of the energy crisis, dollars poured into the development of magnetic and laser fusion, geothermal energy, solar energy, synfuels, and hydrogen as an energy source for cars and buses. Solar buildings and homes sprung up around the lab and the nearby town, while a few miles down the road multimillion-dollar holes were sunk to test the power of hot dry rock to generate steam and electricity. Native Americans were aided in their development of vast energy holdings when the lab in 1977 held its first Navajo Energy Conference. By this time, the scope of the lab's activities had expanded to the point that a group of regional universities made an unsuccessful bid for control, arguing that Los Alamos had become a key energy research center. (Los Alamos since the days of the Manhattan project has been run by the University of California.) Yet diversification had not apparently hurt the weapons program, which during the decade scored a number of victories over its competitor, the Lawrence Livermore Laboratory. In short, the era was characterized by growth. The lab by 1980 boasted a budget of nearly $400 million.

The expansion was overseen by a benevolent master, Harold M. Agnew, who became the director of Los Alamos in 1970 and left in 1979 to become president of General Atomic Corp. The age of Agnew was one of decentralization, where division leaders and project heads wielded much power—"kings," according to one veteran. Groups of scientists would fly off to lobby for projects in Washington and other spots. One team picked up a contract in Toronto to study alternative fuels for city buses. Recalls J. J. Wechsler, a manager who exemplified the spirit of the era: "Division leaders were very strong in the lab. Ones who felt strongly could make things happen."

Agnew, who joined Los Alamos in

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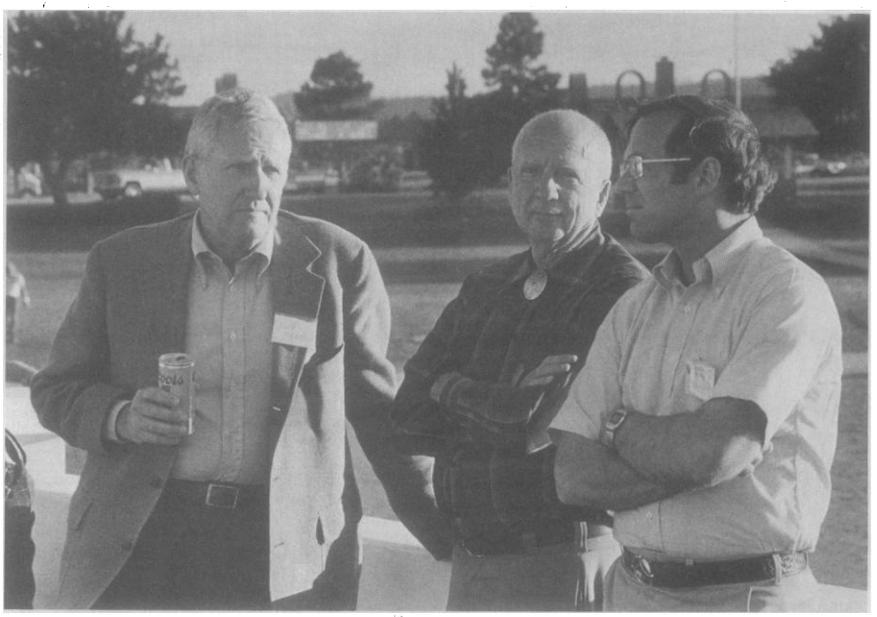
1943 and later flew on the atomic strike against Hiroshima, railed in private about his lack of control. The Washington bureaucracy soon began to share his sentiments. The style of the Atomic Energy Commission had been laissez-faire, but after the AEC closed shop in 1974 a new breed of Washington bureaucrat started to push for tighter control of the national labs.

For Los Alamos, that drive culminated in 1979 with the appointment of Kerr, fresh from 3 years at the Department of Energy where he participated in the effort to bring the national labs to heel (*Science*, 12 September 1980, p. 1211). He was not unsympathetic, having spent a decade at the lab as a working scientist, yet his aim was to streamline operations and reduce costs. The mission had merit. During the 1970's not a few employees had gone out to scientific pasture, prodded by big budgets and the splendid isolation of the Jemez Mountains. The remarks of a mid-level basic scientist hint at the problem: "I'd been here for 7 years and never written a research proposal. No one ever asked to see my list of publications. I did what I wanted, when I wanted." The tone is not one of resentment, but of disbelief.

Not everyone liked Kerr's call for accountability. The Los Alamos Fellows, a group of scientists on sabbatical, this spring held a formal dinner at which courses were punctuated by complaints about forced writing of proposals.

Not one to move on tiptoe, Kerr initiated a series of sweeping reforms during his first week in office. The key reform of Kerr's era is matrix management, a system whereby talent can be focused quickly on concrete projects. Its main feature is that heads of traditional divisions—theory, physics, life sciences, and so forth—have been joined by managers with responsibilities that cut across old lab boundaries, forming new ranks of managers for programs such as weapons and energy. The nub of the approach is flexibility. The goal fits with the philosophical shift called for by the Reagan Administration, dictating a switch of focus from energy to weapons, from practical applications to basic research. Matrix was also hailed as a way to simplify finances, which had grown complex because of the funding of projects by dozens of sponsors.

Yet the outcry was immediate. "One problem," says Kerr, who has little sympathy for complainers, "is that we've had people here since 1943, and they really haven't assimilated the fact that the laboratory has gone from one program [building the first atomic bomb] to 600 programs. They haven't thought about how to be fiscally accountable for all those activities."



Postwar directors, from left to right: Harold M. Agnew, who flew on the atomic strike against Hiroshima, directed from 1970 to 1979; Norris E. Bradbury directed for 25 years, from 1945 until retirement; and Donald M. Kerr was appointed in 1979.

Kerr clearly overlooked the psychological impact of the changes. Rigorously applied, matrix means one scientist has many masters: division chief, project manager, matrix manager, and perhaps more. The system sowed confusion in the everyday tasks of evaluating work, giving promotions, and settling disputes. Complaints soared. Satirical essays gained wide circulation in the lab, one describing the odds Columbus would have discovered America under a system of matrix management. Says one scientist: "We needed two times as many managers. Kerr gave us eight. It was a case of monumental overkill." That sentiment is widespread, according to the poll in the Los Alamos *Chronicle*.

What thrives in the matrix are apparently programs with concete goals, such as the design of nuclear weapons. Less nourished are individuals. Keith Boyer, a long-time Los Alamos veteran and past leader of the laser division puts it this way: "A consequence of all the management is to make it more difficult for the really brilliant and capable people."

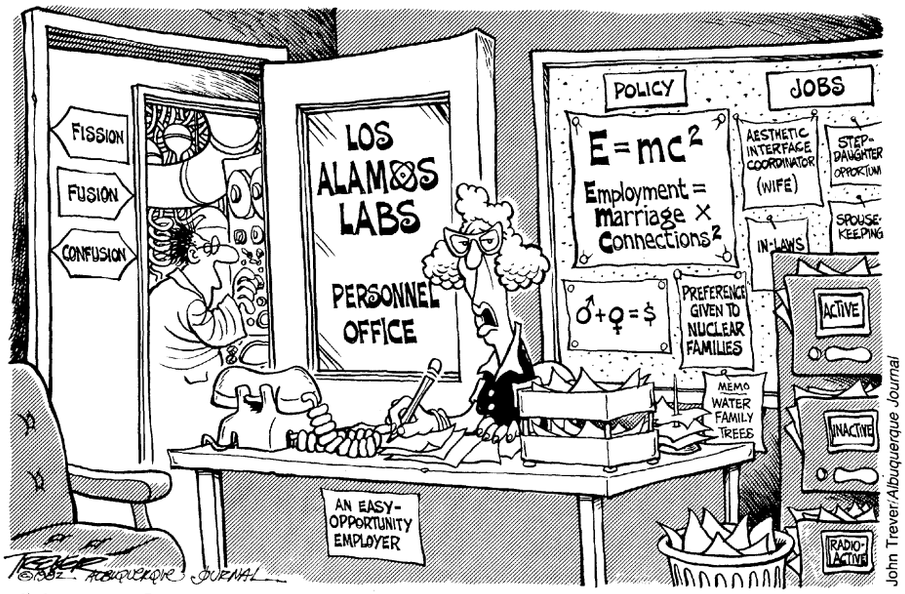
The threat to creativity was delicately pointed out by Peter Carruthers, head of the theoretical division for 7 years, in an interview that appeared in a recent issue of *Los Alamos Science*: "Ever since I've been here there's been an increasing trend, both externally and internally, towards the illusion that you can manage science, whereas all you can really do is to get good people who are interested in the subject you want to develop. This increasing accountability at all levels of the federal establishment exudes a cold air that drives out the kind of neurotic and creative people that you need to make a breakthrough. There has to be a feeling of freedom and reward. You can't get good science out of people who recognize that they are being managed."

At the dawn of the Kerr era, the future health of pure science was a concern of Hans Bethe, a Nobel laureate at Cornell University who has deep ties to Los Alamos and is widely respected. Bethe now prefers not to respond to questions about Kerr's performance. "It's a family affair," he says.

What all this means for the long-term health of the weapons program is hard to pin down. Pure research is where many bright ideas start, where scientific energies often find direction, and where nuclear blasts ultimately get their force. That formula may today be underrated, according to some of Kerr's critics. The harmful effects of disgruntled scientists, moreover, might not show up for years because of long lead times in the development of nuclear warheads.

Another key question not amenable to easy answer is what impact the Kerr regime may have had on the retention of talented researchers. "In that atmosphere it's difficult to hire and hang on to good people," says Storm, a chemist who left Los Alamos in June.

Morale has clearly suffered a series of setbacks. Reductions in force have ended in lawsuits, most alleging discrimination due to race or sex. It was after losing a number of suits that Kerr in April announced the tough new policy on job



Jack Anderson's charges of nepotism, as seen by the Albuquerque Journal.

evaluations, which were intended, according to an article in the *Los Alamos Bulletin*, to give "management adequate information for decision-making on promotions, transfers, reductions in force, discipline, and merit increases." The *Bulletin* carried two other gloomy articles that day: one about 45 employees getting the ax amid a reduction in force, the other about an impending drop of $15 million in the lab's new budget. This barrage of bad news apparently helped prod employees to leak documents on nepotism to Jack Anderson. The column, distributed across the country in August, hit hard because the alleged improprieties concerned Alison Kerr, wife of the director, as well as three other recent hirees with close connections to top management. The column alleged that the positions went unadvertised and implied that salaries were inflated. The lab pooh-poohed the charges, saying no rules had been violated and that family hiring is an old tradition for the isolated community. About 840 married couples work at Los Alamos. The tradition dates back to the days of the Manhattan project, when Kitty Oppenheimer, wife of the first director and a biologist, worked in the laboratory. Despite the substantive rebuttal of the charges, the incident and its timing clearly did nothing to warm relations between captain and crew.

Scientific pride also suffered a setback this year when it was announced that Los Alamos had lost two key contracts. The National Institutes of Health cut $7.2 million out of its budget by eliminating support for the LAMPF program of cancer treatment, which had been a source of good press. Over the course of 5 years, more than 200 cancer patients had been treated. The lab also lost a multiyear $500-million contract with the Department of Energy for the development of laser enrichment of uranium.

Despite bouts of gloom, the rank and file are often quite sanguine about the future of the lab—and even about Kerr. Heavy-handed at times, he nonetheless learns from his mistakes, a point repeated by many persons. They praise his expeditious retreat on job evaluations, and even on major points in the matrix. In June Kerr dismantled the office of the Assistant Director of Energy Programs, a matrix creation. In a deft move, he placed the assistant director in a vacant post at the head of a division structure. "Kerr is modifying his stand as he goes along," says Boyer, a soft-spoken physicist. "When you think about the sweeping changes that were made here you inevitably are going to find some things that don't work out. It's a difficult balancing act. You can't change too fast or you lose the confidence of your people, even if you are trying to correct a mistake." Kerr himself admits to no substantive changes in the matrix, "although perhaps there are things I would have done differently in hindsight. . . ."

Kerr is also proud of his accomplishments. He points to three new research centers that draw on the expertise of scientists from outside the lab: the Institute for Geophysics and Planetary Physics, the Center for Nonlinear Studies, and the Center for Materials Science. "They're attempts," he says, "to bring a focus to research areas of great interest to the lab that don't fit within the normal organizational mode." Other Kerr initiatives include the advent of annual reports and a slick, well-written magazine, *Los Alamos Science*, which gives a remarkably clear view into the workings of the lab. Kerr has also created independent study programs with scientific refreshment in mind.

Perhaps it is ironic, given the complaints from some of the scientists, that Kerr considers his greatest coup to be the support of basic research. "In the 3 years that I've been back, we've been doing increasingly more science, doing it better, and publishing it."

Bad morale, he says, comes easily when people are isolated amid tall pines and beautiful mountains, and over the years have become very much set in their ways. "This lab has been extraordinarily stable. I'm the fourth director in 40 years. For 25 years it had one director and nothing changed. You couple that kind of stability with the relative isolation, and it means that change becomes much harder than if you were in a more urban environment."

The complaints do have an odd quality about them, at times seeming to stand out in unusually high relief amid the cool mountain air. Perhaps the novelty is inevitable in a place born amid wartime secrecy and unaccustomed to ripples of dissent. More than one person would swear a blue streak about lab problems, and then suddenly say something like: "You know, I love it here." And when conversation turned from management to science, there often arose an almost palpable feeling of excitement as a scientist would describe his work.

Clearly, the Kerr era arrived with a thud. It has also mellowed with time. The problems that Kerr set out to deal with, the unproductiveness of scientists out to pasture, were real, as were cries of distress from the crew over his more radical solutions. Perhaps the age of a middle path is at hand.

Even in hard times, the merits of the place far outweigh the problems, at least according to one experienced observer, a bureaucrat at the Department of Energy who left the lab during the first tumultuous year of the Kerr era. After working at Los Alamos for more than a decade, this individual moved on to oversee programs both here and at a host of other national labs. From his vantage point far beyond the throb of daily life at atomic city, he talks of Kerr, of Los Alamos, and of his experience with programs at other labs. He sips his drink and says with a smile: "They just don't know how good they've got it."

—WILLIAM J. BROAD