Nuclear Power Debate: Signing Up the Pros and Cons

The escalating political battle over nuclear power has been marked by a proliferation of petitions, polls, and statements purporting to reveal what the nation's scientists and engineers—those supposedly in the best position to judge the merits of the issue—really think about the controversial technology. Each side in the debate has been marshaling the names of Nobel laureates and of hundreds of more ordinary workaday professionals in an effort to demonstrate that the informed technical community believes that the commitment to nuclear power should either be accelerated, continued, slowed, halted, or phased out (pick one).

Keeping track of all the petitions is difficult since each local battle over a proposed reactor tends to produce a new flurry of statements and counterstatements. But *Science* has contacted several of the organizations most actively campaigning on either side of the nuclear issue and has compiled a list of those petitions and polls which have become most visible at the national level. For what it's worth, in terms of sheer weight of signatures, vast numbers of engineers have come out in favor of nuclear power while a preponderance of those scientists who have signed petitions seem opposed or cool to nuclear power. However, each of the most visible petitions has been attacked by the opposition for alleged flaws and distortions that supposedly render them meaningless.

The differences within the technical community have also spread outward as competing technical experts try to sway the minds of such groups as labor unions, bar associations, medical societies, and church groups. In early March a group of antinuclear scientists scored a major success when they helped swing the National Council of Churches behind an antinuclear resolution.

The opening round in the battle of the petitions seems to have been a pronuclear statement that was drafted primarily by Nobel laureate Hans Bethe and released with some fanfare at a press conference on 16 January 1975. Before then the nuclear debate had been conducted by what might be called a "hard core" of involved scientists and engineers. There were small groups of scientists—such as the Massachusetts-based Union of Concerned Scientists—campaigning against the hazards of nuclear power, and there was a cadre of industry and government experts touting the need for nuclear power. But Bethe sought to demonstrate that nuclear power had substantial support from eminent figures in the technical community who were not visibly involved in the controversy. As he told *Science*: "I saw hundreds of people on the antinuclear side screaming at the top of their voices. . . . It seemed to me necessary that some independent people come out on the pronuclear side."

So Bethe drafted a statement which warned that the United States is threatened with an "energy famine" that poses the most serious crisis to the Republic since World War II. The nation must rely on both coal and uranium, the statement said; there is "no reasonable alternative to an increased use of nuclear power to satisfy our energy needs." Bethe rounded up a glittering array of cosigners, more than 30 in all, including 11 Nobel laureates and such luminaries as William O. Baker, president of Bell Telephone Laboratories, Harold Brown, president of the California Institute of Technology, and Frederick Seitz, president of Rockefeller University.

Attacks on the Bethe Statement

Unfortunately, as often happens in such petition battles, he rounded up one too many. Victor Weisskopf, a physicist at the Massachusetts Institute of Technology, was listed as one of the endorsers even though he had neither seen the final version of the statement nor signed it. He subsequently dissociated himself from the Bethe statement and signed an antinuclear statement circulated by the Union of Concerned Scientists. Thus keen students of the fine print can sometimes find Weisskopf's name invoked by both sides of the nuclear debate.

The significance of the Bethe statement has been questioned on at least two grounds. Daniel Ford, a leader of the Union of Concerned Scientists, discounts it because Bethe presumably circulated it to those he deemed most apt to sign it, and 30 luminaries could probably be rounded up to take virtually any position. Secondly, Charles Schwartz, a radical physicist at Berkeley, has charged that the seeming independence of the Bethe group must be taken with "a bit of salt." Schwartz was incensed that the Bethe statement got wide publicity, including a large ad in the *Wall Street Journal* paid for by a utility company and verbatim reproduction on the editorial page of the San Francisco *Chronicle*. So Schwartz did some library research on the backgrounds of the signers and concluded that a substantial number had ties to the government's atomic energy programs or to major corporations, including companies involved in energy production. That charge was repeated by Nobelist George Wald in a recent article for the *New York Times* "Op-Ed" page in which he suggested that the Bethe group was biased by "conflict of interest."

Still, such sniping is seldom an effective political counterweight, so the antinuclear forces sought to come up with their own group of luminaries. Ralph Nader, one of the chief nuclear critics, dispatched a letter to President Ford warning that nuclear accidents could have "terrible, and long-lasting consequences." The letter, which asked Ford to reevaluate the Administration's commitment to nuclear power, was endorsed by eight eminent scientists, including five Nobel laureates. But that didn't quite match Bethe's effort. So the Union of Concerned Scientists in mid-1975 mailed out a petition to some 16,000 persons, mostly drawn from the mailing lists of the Federation of American Scientists and the *Bulletin of the Atomic Scientists*. The individuals on these lists had been exposed to a substantial amount of material on the nuclear debate. The Federation's newsletter had carried a balanced array of material developed by proponents of various points of view, and the *Bulletin* had carried numerous articles on the subject, most of which questioned reliance on nuclear power. Ultimately, some 2300 scientists on the two lists signed the petition calling for a "drastic reduction" in construction of new reactors. The petition called it "imprudent" to move forward with a rapidly expanding nuclear effort until solutions are found for problems of reactor safety, radioactive waste disposal, and possible diversion of nuclear materials to make bombs. It was delivered to the White House and Congress on the 30th anniversary of the dropping of the atomic bomb on Hiroshima. At least ten Nobel laureates were among the signers.

The large number of presumably informed signers led the Union of Concerned Scientists to claim victory over Bethe. "We thought the publicity asso-

ciated with Bethe's statement was very misleading," says Daniel Ford. "He was getting together a group of long-standing supporters of nuclear power. It gave a very distorted picture of what the scientific community thought. The industry keeps saying that the objections to nuclear power are raised by ignorant, uninformed people—housewives with gross misconceptions about what radiation can do to them. We wanted to demonstrate that the educated, thoughtful technical community in fact has these types of concerns."

After adjusting the figures to eliminate duplications and nonscientists, the Union of Concerned Scientists concluded that about 20 percent of the scientists and engineers on the two mailing lists had signed their petition—a response which Ford calls "quite overwhelming" for a mail solicitation, far better than the 1 or 2 percent mailing experts had told them to expect. Months later the Mobil Oil Corporation, in one of its series of energy advertisements, pooh-poohed the notion that this was an impressive response. It quoted a "recognized expert" in opinion research as saying: "If the petition's viewpoint were strongly held in the scientific community, a 60 percent return wouldn't have been surprising, given the fact that these were concerned, articulate individuals." But Ford retorts that they couldn't get that kind of response "if we were giving away free Cadillacs."

The Union of Concerned Scientists' poll left a bad taste in the mouths of pronuclear experts who felt that *their* views had not been registered. Walter Meyer, chairman of the nuclear engineering department at the University of Missouri and head of the American Nuclear Society's public information committee, reports that he was deluged with calls from individuals who complained that they had not been able to express themselves in the Union of Concerned Scientists' petition. After getting the statement in the mail they had sent back letters disagreeing with it, Meyer said, but these views "didn't seem to get counted." So the American Nuclear Society launched a grass-roots signature-gathering effort through its local chapters, and the drive soon spread to several engineering societies as well. Petitions were passed around at professional meetings, places of employment, and any other place where substantial numbers of signatures could be gathered. By mid-November 1975, more than 32,000 names had been appended to a declaration asserting that both coal and uranium power are needed to achieve energy independence and that "there are no technical problems incapable of being effectively solved" in using these fuels. The declaration was ceremoniously presented to Frank Zarb, head of the Federal Energy Administration, on 14 November. It deplored the "unfounded statements" and "continued antagonism" toward nuclear power by "those lacking the knowledge" to understand the issues.

Meanwhile, the leadership units of many engineering societies were busily issuing pronuclear statements, as were members of nuclear engineering faculties scattered around the country. The Atomic Industrial Forum, an indefatigable tracker of such statements, reports that nuclear power has been endorsed by the energy committee and the power engineering society of the Institute of Electrical and Electronics Engineers, the national council of the American Institute of Chemical Engineers, an opinion poll of the National Society of Professional Engineers, the board of directors of the Health Physics Society, the heads of 30 nuclear engineering departments, 700 Swedish scientists, and 650 nonindustrial West German scientists. Such testimonials from "many thousands of scientists and engineers, here and abroad" demonstrate that the "melodramatic" charges of nuclear critics are mere "ripples of dissent in an ocean of support," in the opinion of Carl Walske, the president of the Atomic Industrial Forum.

But Daniel Ford is not impressed. "I think it's true that nuclear engineers support nuclear power," he says. He also suggests that there may have been some subtle arm-twisting in the signature-gathering drive. As an example, he notes that a personnel officer at one Westinghouse Electric Corp. plant sent a memo to "all management and professional employees" inviting them to sign the American Nuclear Society's declaration—an "invitation" that Ford considers close to "coercion." Similarly, *Nucleonics Week* reported that the petition signed by 700 Swedish scientists and technicians evoked bitterness among some of those solicited

President Ford's Technology Message

President Ford sent a science and technology message to Congress on 22 March—the first such message to emanate from the White House since 1972, when President Richard Nixon issued what was then touted as the first presidential message on science and technology ever issued.

The significance of such a claim is open to question, for Presidents have often discussed research and development in other messages, such as the annual review of the State of the Union. Still, the fact that a separate message is devoted to science is deemed encouraging to those who like to take the mental temperature of the nation's political leaders for indications of their warmth toward the research enterprise.

This year's message has two major themes. It calls for Congress to approve the Administration's budget request for $24.7 billion to support the R & D activities of various federal agencies in fiscal year 1977. The President describes the budget as "one measure of the importance I attach to a strong national effort in science and technology."

The message also urges Congress to pass legislation to establish a new Office of Science and Technology Policy in the Executive Office of the President as requested by the Administration last June. The office would be a successor to the science advisory apparatus that was wiped out by President Nixon. According to Ford's message, it would "permit us to have closer at hand advice on the scientific, engineering and technical aspects of issues and problems that require attention at the highest levels of government." The legislation establishing the office has been bottled up for months because of disagreements between the Senate, on the one hand, and the House and the Administration, on the other hand, over the responsibilities and powers to be assigned the new office. A conference committee was scheduled to meet on 29 March in an effort to resolve the differences.

One key Administration official said the message was issued in part because of growing impatience over the failure to get started on the new science advisory office, and because the White House wanted to reaffirm its budgetary desires to Congress in hopes of heading off a cut such as befell basic research supported by the National Science Foundation last year. However, another well-placed official cautioned: "Don't read too much into the message. It just seemed useful to issue it."—P.M.B.

because it was "a loyalty oath—who would dare refuse?"

Although most petitions from nuclear-oriented groups seem to favor nuclear energy, a dramatic exception is a statement drafted with the participation of some nuclear specialists at Los Alamos Scientific Laboratory, the famed nuclear weapons laboratory. The statement was issued in March 1975 by the board of directors of New Mexico Citizens for Clean Air and Water, an environmental group of some 2000 members, a few hundred of whom work at Los Alamos. The group said it was neither for nor against nuclear power. But it cited "potentially serious problems," including radioactive waste disposal, lack of a coherent national nuclear policy, and hazards associated with plutonium, ranging from toxicity to possible theft to possible diversion of plutonium to make weapons. Unless all the problems are solved or clearly on their way toward solution by March 1977, the group said, it will oppose further construction of nuclear power facilities (except for research purposes) "as an imminent hazard." According to John Bartlit, the group's chairman, a chemical engineer at Los Alamos who works in cryogenics, not nuclear research, about half of the 18 individuals most active in drafting the statement had degrees in nuclear engineering or related fields.

At least two polls of technical sentiment were conducted last year—with differing results for engineers and scientists. The Opinion Research Corporation, of Princeton, N.J., polled some 3200 engineers, mostly active and former members of the National Society of Professional Engineers. When asked which two or three energy sources should receive "immediate priority" in research and development and capital expenditures, 58 percent picked solar and 56 percent nuclear, with all other sources far behind. In contrast, when the Federation of American Scientists asked its members to choose among four different positions on nuclear power, 62 percent of the respondents favored either a moratorium on construction of new plants or a phaseout of existing reactors (*Science*, 16 January).

Both sides in the nuclear debate are claiming support from technical "experts" in an effort to influence the uncommitted public. There is some ground for believing that the public does in fact place great stock in what scientists say. A poll conducted by Louis Harris Associates last year concluded that "for the final word on nuclear energy the public looks not to environmentalists, not to government leaders, and not to the media," but rather to "scientists—in fact, scientists inspired confidence in people on both sides of the fence." However, the poll did not indicate how an individual would react if confronted with conflicting statements by scientists. Nor was it designed to probe the deeper question of whether all those scientists and engineers who are sounding off on nuclear power are really well informed or whether they are simply acting from the same emotions and impulses as the rest of the citizenry.

—PHILIP M. BOFFEY

Science Information: SIPI Expands, Puts New Emphasis on the Economy

The science information movement dates from the late 1950's, when scientists concerned about the threat of nuclear weapons began organizing to provide independent, expert information, particularly on the hazards of radioactive fallout. The pattern of organization was decentralized, with pioneering groups in St. Louis and New York providing models for groups in other places.

By 1963 the leaders of the movement felt that it needed a mechanism for national coordination to deal with what were recognized as national problems and established the Scientists' Institute for Public Information (SIPI) in New York. For the next decade, although SIPI did form task forces from time to time to deal with particular issues, it functioned primarily as a clearinghouse for information and a fund-raising arm for the local groups. In the past 2 or 3 years, however, SIPI has undergone a tranformation which amounts to a new start.

The change can be dated from 1973, when SIPI formally took over the ownership of *Environment* magazine (*Science*, 9 March 1973), which had been published by the St. Louis group. More significant, SIPI got its first full-time president, Alan McGowan. An engineer by training, McGowan has given SIPI a new direction and momentum.

The most obvious change in SIPI is a bigger budget and bigger staff. As recently as a year ago SIPI operated with three people on its regular staff. Now there are 18. The budget in 1974 was $74,000. Last year it rose to about $300,000 and the organization is now spending at an annual rate of over $400,000.

In terms of issues, the most noticeable change is that SIPI has developed as a major concern dealing with the impact of energy problems on the economy. What has occurred appears to be a broadening of SIPI's focus rather than a shift away from traditional concerns. The organization continues to be interested in environmental issues generally and nuclear energy problems in particular. But an example of SIPI's new economy-oriented activity, in this case in the field of occupational health and safety, is the initiation of a news service for union publications, Job Health News Service.

If expansion has meant a change in character for the organization, it is that SIPI has become less the institutional extension of environmentalist Barry Commoner. There is universal agreement among those who have been involved in SIPI over the years that Commoner played a primary role in shaping SIPI and keeping it going. As one SIPI veteran put it, "Barry spoke for SIPI, and SIPI spoke for Barry." Others have influenced SIPI and helped to raise money for it over the years, notably Margaret Mead, who is past president of SIPI.* But there seems to be general agreement that Commoner's interests and dynamism have been dominant.

SIPI's new departures seem to imply no rebuff to Commoner. McGowan, in fact, came to the SIPI president's job from St. Louis, where he had worked closely with Commoner in the St. Louis group. And the organization's new initia-

*Other officers are Commoner, Chairman; Peter J. Caws, vice chairman; Donald Dahlsten, vice chairman; Allen C. Nadler, vice chairman; Glenn Paulson, secretary; and Martin Sonenberg, treasurer.