India–U.S. Wrangle Over Nuclear Fuel Ended

Accord reached in time for Gandhi-Reagan meeting; critics worry that it sets poor nonproliferation precedent

India and the United States have patched up their dispute over nuclear fuel for India's Tarapur power reactors with an agreement that apparently owes much to the desire of both governments to improve the generally strained relations of recent years.

The salient features of the agreement are that India will get the low-enriched uranium fuel it sought and the United States will achieve its aim of seeing the Tarapur facility remain under international nuclear nonproliferation safeguards. The two countries broke an impasse on the terms under which the United States would continue to supply fuel by invoking the assistance of a third party—France—which agreed to furnish the fuel.

While the India–U.S. accord is narrow in scope, dealing exclusively with the Tarapur problem, it has prompted misgivings among congressional critics who express concern that the U.S. position on nonproliferation will be weakened.

Under a nuclear cooperation agreement dating from 1963, the United States was committed for 30 years to supplying fuel for Tarapur, which was built with U.S. assistance. The agreement has been under stress since 1974 when India exploded a nuclear device using plutonium obtained by reprocessing fuel from a facility other than Tarapur. Tarapur became a sore point in India–U.S. relations in 1978 after the U.S. Congress enacted the Nuclear Non-Proliferation Act (NNPA), which provides that the United States may not export nuclear fuel or equipment to any country which does not have nuclear weapons unless that country accepts full-scope nuclear safeguards on all nuclear facilities. India has declined to sign the Nuclear Nonproliferation Treaty of 1968 and refuses to permit inspection of Indian-built nuclear facilities by the International Atomic Energy Agency (IAEA).

When informed that the United States would cut off the supply of fuel to comply with the NNPA, the Indian government angrily took the position that the United States was reneging on its long-standing commitment to supply fuel and a wrangle began that continued until now.

In 1980, the Carter Administration obtained a waiver from Congress for a single shipment of fuel for Tarapur, but opposition was so determined that the accepted political judgment was that another waiver would be too difficult to secure. Failure by the Reagan Administration late last year to negotiate a satisfactory resolution of the dispute produced press reports that the two countries were on the verge of ending their 18-year cooperation on nuclear energy matters.

The break never came, however, and the new agreement is attributed to the recent efforts to repair India–U.S. relations culminating in the state visit by Indian Prime Minister Indira Gandhi to Washington, which had a strong aura of diplomatic fence-mending.

Details of the new agreement were not available when it was announced on 29 July, suggesting that a settlement on the broad terms of the accord was pushed in order that it could be made public during the Gandhi visit. The agreement is to be formalized with an exchange of notes during a forthcoming visit to Washington of H. N. Sethna, chairman of India's Atomic Energy Commission.

A major U.S. concern throughout the Tarapur dispute has been the reprocessing of spent reactor fuel. One product of such reprocessing is plutonium, which is regarded as highly susceptible to diversion for use in nuclear weapons.

A provision in the original India–U.S. agreement on Tarapur gave the United States power of consent over the reprocessing of spent fuel from the reactor. Since the agreement provided that only U.S. fuel would be used at Tarapur, the consent clause gave the United States an effective veto over reprocessing. Now French fuel will be used in the Tarapur reactors, but U.S. officials say that under the new agreement this country retains consent over the French fuel also.

In fact, the reprocessing issue remains somewhat clouded by differences in American and Indian interpretations of the consent provisions. These differ-

Science Helps Break the Ice

Science and technology exchange agreements have, over the past 20 years, become a sine qua non of American foreign policy. Lyndon Johnson used to summon one up just about every time he met a leader of a foreign state. Richard Nixon used them to help cement détente with the Soviet Union and dispensed them liberally during his visit to the Middle East. And now the Reagan Administration has followed this well-trodden path as part of its diplomatic thaw with India.

During Prime Minister Indira Gandhi's visit to Washington last month, it was announced that a high-level U.S.-India task force is being established to draw up a list of scientific projects on which scientists from the two countries will collaborate. The projects will focus on food production, the production of energy from biomass, and human health. In particular, research on leprosy, nutrition-related blindness, and immunology have been selected for study by the task force.

George Keyworth, President Reagan's science adviser, said that the level of funding for the research has not yet been decided, but "we are definitely looking at substantial increases." But Nyle Brady, head of science and technology at the Agency for International Development (AID), who announced the agreement at a press conference with Keyworth, immediately noted that any additional money for the research will probably be reprogrammed from AID's existing support for India. The agreement, he said, will help AID focus more of its resources on science and technology, a trend that Brady has been pushing within the agency.

A major push for the agreement came from U.S. Ambassador to India Harry G. Barnes, who was one of only about half a dozen ambassadors who went to see Keyworth before going abroad.—COLIN NORMAN

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ences predate the U.S. threat to cut off fuel supplies. Essentially, the cooperative agreement said that reprocessing was to be permitted only through a joint determination by the United States and India that reprocessing facilities for Tarapur fuel could be operated under effective safeguards. When the IAEA declared that a new reprocessing plant built near Tarapur could be adequately safeguarded, India took the view that the requirement had been met. The United States disagreed. During her Washington visit, Prime Minister Gandhi told journalists that, in her view, India does not need U.S. consent to reprocess Tarapur fuel. No fuel has been reprocessed, but

Wide World

Prime Minister and President

both sides are reserving their positions on the issue and that seems to have been good enough for U.S. negotiators.

In discussing the new agreement, Administration officials emphasize the advantages of preserving the safeguards on Tarapur and accepting the substitution of French fuel to the alternative of ending the agreement. In earlier talks, Indian officials had left a strong impression that, if the agreement were terminated, Tarapur fuel would be reprocessed.

The conflict of the new accord with the NNPA seems to be limited because the original cooperative agreement differs from most U.S. bilaterals on nuclear cooperation in covering only Tarapur, not several facilities and programs. U.S. officials insist that the new agreement does not change the application of the NNPA in any way.

Most critics in Congress reacted uneasily to the announcement of the new

Did Success Spoil Ag Research?

At a time when crop surpluses are a big problem for farmers and the federal government it might appear that the agricultural research establishment has done its work only too well. But the U.S. Department of Agriculture (USDA) has lately been taken to task for its research policies and performance in several reports and, in late July, hearings in Congress inquired into what that criticism is all about.

For the agricultural establishment, the point was not simply that it was the target of unaccustomed sharp questioning but that some of it came from a representative of the White House Office of Science and Technology Policy (OSTP). Until recently, agricultural research largely escaped the attention of the White House science office.

The hearings were called by the House Science and Technology Committee's subcommittee on natural resources, agriculture research and environment, which is chaired by Representative James H. Scheuer (D–N.Y.). Elected from a district that includes sections of Brooklyn and Queens, Scheuer disclaimed expertise in agricultural research and indicated he was observing the general mandate of the committee by following up on the critical reports, notably those from the General Accounting Office and Office of Technology Assessment (OTA).

Scheuer took his text particularly from a recent OTA report (*Science*, 29 January, p. 483) that gave low marks to USDA for research planning and coordination, arguing that the system concentrated on local, state, and regional problems with the result that problems of national scope are slighted. Scheuer also questioned whether the system is preparing adequately to deal in the future with serious problems such as those posed by a shortage of water, soil erosion, high energy costs, and population growth.

The brunt of Scheuer's interrogation was borne by USDA acting assistant secretary for science and education Terry B. Kinney, Jr. Kinney, whose regular post is director of the Agricultural Research Service, got sympathy at the hearings from some critics of USDA who credit him with having a better understanding of science and being more open to innovation than many USDA bureaucrats.

As the discussion proceeded, it became clearer that thumping USDA for its failings in planning and coordination may be too simplistic. The agricultural research system is a highly decentralized, pluralistic enterprise based on a federal-state "partnership." Several witnesses made the point that federal funding has been declining steadily in comparison to state funding, with a consequent reduction of federal leverage on the system.

The OSTP emissary, assistant director Denis J. Prager, put his comments in the context of the overall science policy of the Reagan Administration. Major principles of this policy he described as optimal use of resources in both public and private sectors; concentration of federal efforts on long-term, high-risk, basic research; and selection of projects with highest potential. He indicated that agricultural research fails to measure up.

Prager's main suggestion for improvement was to replace a preoccupation with budgets and administration with closer attention to science. As for planning, he clearly did not regard it as the sole path to salvation:

"In general, I expect little in the way of real substantive progress in advancing science and technology from formal, centralized planning. It is my contention that the agricultural community expends more time, effort, and travel funds on needs identification, priority setting, and budget and program planning than most other areas of science combined, with precious little to show for it."

Significantly, the recent hearings did not involve the authorization or appropriations panels in Congress on which agricultural research relies for support, both financial and moral, and it is unlikely that a storm of reform is about to break about the system. But the airing of criticism from academe, industry, and the Executive, indicates that the era is past when legislators and the envoys of agricultural research would meet on Capitol Hill only to congratulate each other on the wonders wrought by research.

—JOHN WALSH

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agreement. In an op-ed piece in the Washington *Post* on 29 July, Senator John H. Glenn (D–Ohio) acknowledged the value of improved U.S.–Indian relations, but expressed disappointment at the failure to gain Indian acceptance of full-scope safeguards or assurances against further nuclear tests. His main point was admonitory, however, saying that, "In any case, it is extremely important that our cooperation in obtaining an alternative supplier for India under the special circumstances surrounding Tarapur not be considered a precedent for moving us away from the provisions of the NNPA in the future."

Representative Richard L. Ottinger (D–N.Y.), a persistent critic of the Administration on nonproliferation issues, called Reagan's action "unconscionable and ironic. He is playing fast and loose with the U.S. nonproliferation law enacted because of India's past misuse of nuclear technology."

Some critics of the Administration action are raising the question of its legality, asking whether the understanding reached by diplomacy does not amend the law in a way that requires congressional action. Whatever the legalities, the realities are that it is late in an election-year congressional session and, as one Hill staffer conceded, "When two heads of state meet and make an announcement like this, it's awfully hard to turn it around."—JOHN WALSH

Butler Leaving Institute on Aging

America's number one advocate for old people warns that rapid changes are necessary to accommodate the aging population

"We have before us one of the most extraordinary demographic changes in history, not only in this country but in the world," but "we're just not facing the music yet," says Robert N. Butler, who will be leaving as director of the National Institute on Aging (NIA) on 16 August. In a conversation with *Science* Butler, who has headed NIA since its inception in 1977, argued that we have barely begun to deal with the problems posed by an aging population. Federal policy is shortsighted and often conflicting, and research into the medical, social, and psychological aspects of aging is still in its infancy in many respects.

Having pioneered as the first director of the institute, he will now be breaking new ground as head of the first department for geriatrics at an American medical school, at Mount Sinai School of Medicine in New York. There he will occupy the newly established Brookdale Chair in the new Gerald and May Ellen Department of Geriatrics and Adult Development. The chair and the department each has an endowment of $2 million.

A psychiatrist with broad gauge expertise in the social, economic, and political issues surrounding aging, Butler is well aware of the deep irony in the fact that while society has enthusiastically supported research to increase life expectancy—26 years have been added since 1900—it is now becoming alarmed at the consequences. People are now asking whether we can afford an aging population and "we have got old people scared to death as to whether they're going to get Social Security."

Butler is particularly concerned about what will happen as the huge blip in the population curve known as the baby boom—people born between 1946 and 1964—moves toward the end of the life cycle. He's even thinking of writing a book about it, called "Generation at Risk: When the baby boom grows gray." The baby boomers are the ones who have had trouble finding spots in schools and colleges; currently many are having trouble finding jobs and housing. By 2020, they will comprise most of the population over 65, estimated at 50 million, or 20 percent of all Americans. "We have not really in a very serious way looked at what's coming, and it's happening very fast," warns Butler. "The implications could be staggering."

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Butler sees conflicting and ill-thought-out policies everywhere. For example there is talk of raising the Social Security age to 68; yet this overlooks the fact that because of life-prolonging measures there are more disabled people in every age group. The government has proposed that employers' contributions to health insurance be raised for older workers, but this will cause companies to hire fewer older people—just when the retirement age has been raised and there is talk of eliminating it entirely.

Butler thinks there really should be a policy council formed within the Executive Branch so the directors of the NIA, Social Security, the Office of Management and Budget, the Health Care Financing Administration, and the Department of Education could coordinate their policies. He notes that despite their common concerns the directors of the NIA and Social Security have never gotten together.

Butler has also been working on introducing more coordination in scientific research related to aging. For example, the NIA has given money to the National Institute of Mental Health (NIMH) so it can add people over 65 to an epidemiological study of psychiatric disorders it is conducting in New Haven. The NIA is also working with the National Heart, Lung, and Blood Institute on hypertension studies, and with the National Cancer Institute to include older people in clinical trials of chemotherapy. "The tendency of all the disease institutes is not to study older people" says Butler. They are more difficult to manage since they usually suffer from a handful of different diseases and they commonly manifest distinctly different reactions to drugs than younger people. Yet to omit them from studies is to omit representatives from the population that suffers the most—50 percent of all cancer, for example, occurs in individuals over 65.

The NIA has been growing, relatively

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