

Reagan Administration did not seek repeal of the Nuclear Nonproliferation Act, and it did not put its full weight into an effort to revive commercial reprocessing and the Clinch River breeder project. An Administration plan to extract plutonium from spent commercial reactor fuel for use in the US weapons program was blocked by an amendment introduced by Senator Gary Hart.

In the first important instance involving a transfer of nuclear materials—a shipment of plutonium from a reprocessing plant in France to Japan—the Reagan Administration ended up taking an extremely tough stand on security measures for the shipment: When the shipment finally left France last year after nearly two years of negotiations, it went under military escort, with elaborate procedures for monitoring its position by satellite at every stage.

The other major decision on a plutonium transfer by the Reagan Administration involved a shipment last year from France to Switzerland of plutonium from Swiss spent fuel reprocessed in France. The Administration stalled on the request, apparently because of annoyance about assistance a Swiss company gave to Argentina in building a secret uranium-enrichment facility and to South Africa in building a heavy-water production plant.

Last year Switzerland and France started to recycle plutonium from spent reactor fuels, and Germany and Japan have recycled on a modest scale for several years. Sweden and the United States, on the other hand, have decided against recycling.

Commercial reprocessing, ever since the United States got out of the business, has been virtually the exclusive preserve of United Reprocessors, an international partnership in which the major facilities are the French plant at Cap la Hague operated by COGEMA (Compagnie Générale des Matières Nucléaires) and the British Nuclear Fuels Ltd plant at Sellafield (previously called Windscale), UK. In the late 1970s and early 1980s, BNFL and COGEMA negotiated reprocessing contracts with foreign utilities in Japan, West Germany, Belgium, the Netherlands, Italy, Sweden and Switzerland. For countries such as Germany and Sweden, where legislation had been enacted in the mid-1970s saying that no further reactors could be commissioned until there were concrete steps to solve the problem of nuclear-waste disposal, the United Reprocessors contracts provided apparent evidence that such steps indeed were being taken.

To handle the extra business, COGEMA started to build a third reprocessing plant at Cap la Hague, UP3, designed to handle 800 metric tons of

spent fuel a year, and Britain started to build THORP, a thermal oxide reprocessing plant designed to handle 1200 metric tons of fuel annually, at Sellafield. Altogether, COGEMA and BNFL have contracted to treat about 10 000 tons of spent fuel from abroad.

BNFL's contracts are cost-plus, a good deal for the government-owned company that liberates it from financial risk—but not from technical, environmental and political risk. The Windscale-Sellafield plants have a long history of accidents and unintended radiation releases and still give rise to "constant disclosures of leaks or news of leaks that were worse than originally reported," according to John Surrey, a member of the science-policy unit at the University of Sussex. Walter Patterson, a leading writer on nuclear energy based in the UK, says that most people he knows are convinced that the name Windscale was changed to Sellafield because Windscale had come to have such a negative public image.

Partly but not mainly because of Chernobyl, which has had less impact in the UK than in Germany, plans for THORP are increasingly controversial. The plant is scheduled to start operations in four or five years, and spent fuel from British advanced gas-cooled reactors and foreign light-water reactors already is accumulating at Sellafield.

A recent report prepared by an all-party parliamentary committee recommends, however, that the whole project should be reconsidered. While the report concedes that reprocessing is good business for BNFL, it raises questions about whether it is good for the general public. The report finds no overriding technical reason for reprocessing and says that recent research indicates that solidified oxide fuels may be more stable and more leach resistant than vitrified waste. The parliamentary report says that "it is not safe to justify THORP on the basis of an experimental fast reactor program which may or may not become commer-

cially successful sometime in the next century." The report takes note of another recent parliamentary report, in which it is said that Britain already has spent £2.4 billion on breeder R&D in the first 25–30 years of the program, that Britain seems to be about halfway through a 60-year development program and that a cumulative total of £5.7 billion would likely be spent before a commercially successful breeder is built.

The Thatcher government has rejected the all-party committee's recommendations, saying that abandonment of THORP would waste nearly \$1 billion already spent and that reprocessing is a necessary preparation for the 21st century.

A second reprocessing plant, designed for extraction of breeder-blanket plutonium, is slated for construction at Dounreay, the breeder-research facility in northern Scotland. British sources indicate that this proposed plant is part of a web of agreements with France, Germany, Italy and Belgium in which the deal, roughly, was that France was to get the first breeder, Germany the second and the UK the reprocessing facilities. Conversations about the proposed reprocessing plant tend to resonate with the Franco-German argument about the second breeder.

When one asks French engineers where the fuel from the Superphénix is to be reprocessed, the usual answer is that a new facility probably will be built at Marcoule, France's plutonium-production complex on the lower Rhône north of Avignon. Nobody mentions the supposed agreement with the UK. British officials, on the other hand, are talking about a facility that would be built to treat spent fuel from three breeders initially, and ultimately six or seven. They seem oblivious to the news that a second breeder may not be built anytime soon and unaware that the French do not appear to be thinking of having the Superphénix fuel treated in Britain.

—WILLIAM SWEET

AURA gets new leadership

Goetz K. H. Oertel has been elected president of the Association of Universities for Research in Astronomy by the AURA board of directors, and Robert W. Noyes has been elected chairman of the board. Oertel, who left the Department of Energy to take office as AURA president on 1 October, succeeds John M. Teem. Noyes, a physicist at the Smithsonian Astrophysical Observatory and an astronomy professor at Harvard, succeeds Peter Conti of the

University of Colorado.

AURA Inc is a consortium of 20 US universities that operates, under contract with the National Science Foundation, the National Optical Astronomy Observatories, comprising Kitt Peak National Observatory in Arizona, Cerro Tololo Inter-American Observatory in Chile, the National Solar Observatory, with facilities at Kitt Peak and Sacramento Peak, New Mexico, and the Advanced Development Program,

which is charged with the design of a 15-meter National New Technology Telescope (see PHYSICS TODAY, January 1985, page 91). Under a separate contract with NASA, AURA operates the Space Telescope Science Institute at Johns Hopkins University.

Oertel, a native of Germany, graduated from the University of Kiel in 1956 and received a PhD at the University of Maryland in 1963. He worked for NASA from 1963 to 1975, doing laboratory research in astrophysics and managing space-astronomy programs. In 1974-75 he was accepted into the Federal Executive Development Program and was assigned to the President's science-advisory office, the Office of Management and Budget and the National Science Foundation, where he headed the astronomy section.

Oertel worked for the Energy Research and Development Administration from 1975 to 1977 and then for the Department of Energy, serving in a number of positions: staff director for

the assistant administrator for nuclear energy, director of the Office of Defense Waste and Byproducts, acting manager of the Savannah River Operations Office in Aiken, South Carolina, and deputy manager of the Albuquerque Operations Office. From 1985 to 1986 he was deputy assistant secretary for safety, health and quality assurance and was responsible for developing policy and regulations for the safety of nuclear facilities.

Noyes received a BA at Haverford College in 1957 and a PhD in physics at Caltech in 1963. He has been a physicist at the Smithsonian Astrophysical Observatory since 1962 and a full professor at Harvard University since 1973. From 1973 to 1980 he was associate director of the Center for Astrophysics at Harvard.

Noyes has done research on aerodynamics and spectroscopy of the solar atmosphere, ultraviolet observations of solar and stellar spectra from space vehicles, and infrared solar and stellar spectroscopy.

report's principal recommendation is that a high-flux reactor proposed by the Technical University in Munich should be built. The proposed 20-MW steady-state reactor would have a neutron flux of 7×10^{14} neutrons/cm² sec, greater than from the Orphée reactor at Saclay (3×10^{14}) but less than from the Institut Laue-Langevin reactor at Grenoble (1×10^{15}). The proposed reactor's innovative compact-core design was developed by the Munich Technical University in collaboration with the firms NUKEM and INTERATOM, and it would operate on highly enriched uranium.

The report's main recommendation is interpreted as a decision in favor of a national solution over regional solutions, in the sense that one big reactor is being preferred over a set of smaller neutron sources. According to the federal Ministry of Research and Technology, however, construction of the reactor would be primarily the responsibility of the state of Bavaria. The ministry would be willing to support the development and construction of the part of the reactor that is based on innovative technology, the compact core.

The report notes that German researchers remain interested mainly in work with thermal, cold and ultracold neutrons, but it recommends that the Federal Republic participate in the use and further development of Isis, Britain's spallation neutron source.

The report concludes that it is time now to start considering a very large European neutron source with capabilities substantially greater than those of ILL or Isis. It could be either a reactor or a spallation neutron source and it could be sited in Germany, for example at Jülich, the report suggests.

—WILLIAM SWEET

ACA elects Bugg vice-president

Charles Bugg of the University of Alabama at Birmingham has been elected vice-president of the American Crystallographic Association. Bugg replaces William Duax of the Medical Foundation of Buffalo, who succeeded to the office of president.

Bugg received a BA in chemistry from Duke University in 1962 and a PhD in physical chemistry from Rice University in 1965. He was a postdoc at Caltech in 1965-66 and 1967-68, working the year in between at E. I. du Pont de Nemours. He has been on the faculty of the University of Alabama since 1968. He became full professor in 1975, associate director of the Comprehensive Cancer Center at the university's medical school in 1978 and director last year of the newly established Center for Macromolecular Crystallography.

Bugg does crystallographic studies of biological molecules and protein crystallography. He also has worked on protein crystal growth processes and drug design by protein crystallography. He is a coeditor of *Acta Crystallographica*.



BUGG

Catherine Foris of du Pont has been elected treasurer of ACA. She replaces Robert Sparks, a consultant in Palo Alto, California, who served six years. Hugo Steinfink of the University of Texas, Austin, continues to serve as secretary.

New German research reactor proposed

An expert committee commissioned by the West German Ministry of Research and Technology has issued a report on how the country should proceed with neutron sources for research, in light of the decision last year to cancel a

proposed spallation neutron source slated for Jülich (PHYSICS TODAY, December, page 69).

The report says that demand in the research community for neutron sources is outstripping supply, and the

New AIP translation journal on Chinese lasers appears

The first issue of *Chinese Physics—Lasers*, the new translation journal launched this year by the American Institute of Physics and the Optical Society of America (PHYSICS TODAY, January, page 82), appeared on schedule and as hoped this June. It was a success not to be taken for granted. As John T. Scott, manager of publishing services for AIP, put it in a memorandum to his staff, "When we were asked to have the first issue of *Chinese Physics—Lasers* ready in time for distribution at the CLEO conference this week I did not promise that we would succeed; I said only that we would try. . . . Not only is it on time; the issue appears to have been produced with all the care normally applied only to well-established journals for which start-up problems have long been solved."