Getting to the core of Three Mile Island

The damaged core of the Three Mile Island nuclear reactor is likely to find a temporary home in Idaho after it is removed from the plant. Officials from the U.S. Department of Energy and General Public Utilities Corp., which operates the facility at Three Mile Island, last week signed an agreement that signaled the beginning of negotiations to allow Energy Department laboratories to study the core.

The department would acquire the core for its research program related to the 1979 accident, while the utility would reimburse the federal government for all expenses related to shipping, storing and disposing of the core, beyond those involved in the research program. Philip A. Garon, an Energy Department spokesman, says most of the core will go to the Idaho National Engineering Laboratory in Idaho Falls, where facilities are available to examine evidence of what happened during the accident, the types of fission products created and how well the core held up.

"There's a lot of uncertainty about the state of the core," Garon says. "Three Mile Island provides a unique source of scientific data we can use to avoid future problems." The research effort is part of a $120 million program that started soon after the accident. About $30 million has already been spent for various experiments, with four to five years still remaining in the program.

The reactor core will not be ready for removal until 1985, as cleanup efforts at the plant slowly continue. Almost all the radioactive water in the reactor building has been decontaminated and stored in two onsite tanks (SN: 10/1/81, p. 247). The next stage is decontaminating reactor coolant water, says Douglas Bedell, a spokesman for GPU Nuclear at Three Mile Island. This operation may take six months.

In March, the Energy Department helped fund an experiment in which the walls and floors of the reactor building were flushed with the processed water to reduce the radioactivity of the surfaces. Bedell says the experiment was successful in reducing radiation levels. Later this year, a television camera will be inserted into the reactor core to provide a first look at the internal damage.

Bedell says serious work will not start on core removal until funding for the full operation is assured. GPU is spending about $60 million a year for the cleanup, but insurance money, which covers two-thirds of the cost, will not be available beyond 1983. In one effort to help pay for the cost of the cleanup, the U.S. Senate is considering a bill that requires all utilities with nuclear reactors, except those building a first unit, to pay a cleanup fee to raise $170 million over six years. However, the House, so far, has not taken up the issue.

The TMI cleanup remains clouded by uncertainties concerning funding, says Bedell. What happens to the damaged reactor core will depend on progress in resolving the funding issue. —*I. Peterson*

NSF proposes computer donating program

The National Science Foundation is inviting companies to donate computers and related hardware for its Development in Science Education Program, according to the April 1 FEDERAL REGISTER. The program is designed to help improve "science and engineering education at the 10th, 11th and 12th grades and at the introductory college levels."

The idea for the proposal was triggered last September when a microcomputer manufacturer offered to donate 100 machines, the first gift of equipment ever offered to the NSF. Soon after, another manufacturer made a similar offer, and the NSF staff spent six months working out a plan for using the donations in conjunction with $500,000 of NSF research grant funds. The NSF is now looking for other companies that want to donate equipment and then for persons with education research ideas that require use of the computer equipment.

Companies must be able to provide at least $50,000 worth (at list price) of the latest equipment as well as a willingness to provide technical expertise and information about the hardware. Grant recipients must come up with innovative ideas that "should anticipate requirements for science and engineering education in the late 1980s and 1990s and the capabilities of future generations of information technology."

Dorothy Deringer of the NSF science personnel and education office says that grant recipients will need to provide a portion of the research funds required. Guidelines for the grants, along with a list of participating computer companies, will be published in mid-May and proposals will be accepted until July 6.

Deringer emphasizes that this is a research and development project looking for breakthroughs. "We want to get ideas that will make a difference in the future."

Although this is the last year for the science education development program, according to the recent federal budget, other branches of the NSF are looking closely at how the donated-equipment aspect works. This project may be a model for future NSF efforts to involve industry in NSF programs.

The response to the notice so far has been overwhelming for the short-staffed science education program, Deringer says. —*I. Peterson*

India in orbit again—and paying

A multipurpose communications-weather-and-then-some satellite called INSAT-1 was launched April 10 by NASA for the Indian Space Research Organization. India's sixth satellite, it is the fifth to have been carried aloft by a non-Indian rocket. It is also the first of the five for which India paid the launching bill.

India's maiden orbital payload was Aryabhata, an astronomy satellite launched on April 19, 1975, primarily to demonstrate the nation's capabilities at spacecraft design, data-handling, tracking and other technologies (SN: 4/26/75, p. 271). The launching, however, was handled —gratis—by the Soviet Union, with which India had been conducting a cooperative sounding-rocket program for several years. In 1979, India's second satellite, an earth-resources monitor called Bhaskara-1, was also launched by the Soviets, and again for free.

The only orbit-bound flight by an Indian rocket took place on July 18, 1980, when the country launched a tiny test capsule called Rohini aboard a booster based on its sounding-rocket work (SN: 7/26/80, p. 53). The booster, SLV-3, is scheduled for a second developmental flight this September, and versions capable of larger payloads and polar orbits are in the works.

India found its next free ride in 1981 aboard the third of the European Space Agency's Ariane rockets, which were carrying satellites — at the customers' risk — as part of Ariane's own development program. Ariane's chief role is to carry payloads to transfer orbits from which they can be raised into geosynchronous stations by auxiliary "kick-motors." India's candidate was an experimental communications satellite known as Apple. Also last year, the Soviet Union contributed a launching for Bhaskara-2.

Last week's launching of INSAT-1 was conducted from Cape Canaveral, aboard a U.S. Delta rocket, and India paid the bill—$25 million. A second INSAT is scheduled to be launched next year on the eighth flight of the space shuttle, again with a fee attached. The sophisticated INSATs are built by Ford Aerospace in California, so a Soviet launch (free or otherwise) would have been unlikely, and Ariane, declared operational early this year, is past the free-ride stage.

The roles of INSAT, the first-generation Indian National SATellite System, include carrying telephone and data communications, sending direct TV broadcasts to remote village receivers, providing weather observations every half-hour and relaying data from various types of ground-based instruments. (Engineers early this week were studying a possibly stuck antenna on INSAT-1 that might affect the direct-broadcast activity.) —*J. Eberhart*