US nuclear power

Disaster by many small cuts

Washington

NOT all the warm-hearted support of the Reagan Administration has stilled the worries of the nuclear power industry in the United States. In recent months, Congress has voted to abandon the Clinch River fast breeder reactor project; a federal grand jury has accused the Metropolitan Edison Company of criminal safety violations just before the 1979 accident at its plant at Three Mile Island; and several new reactors are bogged down in angry disputes about their safety and cost. What follows is a report from some of the trouble spots.

The Shoreham power plant on Long Island seems likely to become the most expensive reactor in the country and may never be turned on. Ordered in 1967, the 820-megawatt plant is expected to cost at least \$3,400 million to complete, 15 times more than planned. The latest in a long series of engineering defects came to light this year with the discovery that all three of the plant's emergency diesel generators were cracked. But attention is now focused on Shoreham's emergency planning procedures, which have turned the troubled reactor into a national test case.

At issue is the insistence of the Nuclear Regulatory Commission (NRC), since the 1979 accident at Three Mile Island, that plans be prepared to evacuate, in an emergency, people living within a ten-mile radius of any nuclear power plant. Shoreham is struggling to comply with this regulation but the local municipality, Suffolk County, is refusing to cooperate. Suffolk argues, with some support from a panel appointed by the state governor, that restricted access roads and unpredictable winds on Long Island make safe evacuation impossible. Unless Shoreham can persuade NRC to approve an emergency plan in which utility employees take the place of municipal workers, the plant may not be allowed to go on to full power.

Shoreham's owner, the Long Island Lighting Company (LILCO), is encouraged by NRC's recent decision to hear details of the company's evacuation plan, but concedes that NRC's decision could go either way. The legal issues are in any case so fuzzy that prolonged litigation is expected to cause further delays in the licensing process. If Suffolk prevails, local municipalities will be able to block the operation of completed reactors simply by refusing to cooperate in emergency planning, a prospect that terrifies the utility. Early hopes that the state government might intervene to end the impasse between Suffolk and LILCO have been dashed by Governor Cuomo's politically astute decision that it would be wrong to force a reactor on a hostile community.

In Ohio, complaints by an employee about the safety of the Zimmer power plant, now upheld by NRC, have

transformed the economics of this 820 megawatt reactor. Although Zimmer is more than 90 per cent completed, the consortium of utilities that owns it believes it may cost as much as has already been spent to rectify structural defects identified by NRC.

The Cincinnati Gas and Electric Company, the major shareholder, has already invested some \$1,600 million in Zimmer, but is considering abandoning the project, even though Ohio law prohibits passing the costs of a cancelled plant on to electricity consumers. Another partner, the Dayton Power and Light Company, is considering a plan to "convert" the unfinished reactor into a gas or coal-fired plant. In California the two reactors at Diablo Canyon have only just received permission to load fuel after a year's delay caused by the last-minute discovery that the reactors, built above the San Andreas fault, would not be able to meet NRC requirements for withstanding earth tremors.

Work on cleaning-up the damaged Unit 2 reactor at Three Mile Island is slowing to a halt because its owner, the General Public Utilities (GPU) Corporation, is short of money. A financial plan drawn up by Pennsylvania's Governor Thornburgh called on the nuclear industry as a whole to contribute \$150 million to the operation,

but pledges from the industry have so far reached only \$66 million.

Adding to the financial squeeze on GPU is NRC's failure to decide whether the company has the management competence and integrity needed to operate a nuclear plant. GPU has responded to allegations that it violated safety procedures by commissioning independent studies that have, so far, exonerated the company. An NRC inquiry, however, found that rules had indeed been violated and one NRC commissioner is refusing to let GPU restart the undamaged Unit 1 reactor until the company's top management is replaced. The company announced last week that its president is stepping down.

Other highly-publicized difficulties have plagued the nuclear industry this year. Twice within a single week in February, a defective circuit breaker prevented the automatic shutdown of a pressurized water reactor in Salem, New Jersey. An equally spectacular financial failure hit the Washington Public Power Supply System later in the year, resulting in the costly abandonment of at least two reactors.

Spokesmen for the industry complain, with justice, that public attention is drawn to the spectacular failures but takes all too little notice of the many reactors that are completed more or less on schedule and which function safely. Even the industry, however, concedes that the fall in the price of oil and slack demand for electricity have plunged the nuclear business into its darkest hour.

Peter David

Comfort for Three Mile Island

Washington

SOME good news, at last, for the General Public Utilities (GPU) Corporation, the luckless owner of the nuclear power plants at Three Mile Island. After an independent investigation, Admiral Hyman Rickover, former head of nuclear propulsion for the US Navy, has declared that GPU has the competence and integrity to run the undamaged Unit 1 reactor. And a separate investigation by a prominent lawyer has dismissed as "unfounded" a number of allegations that GPU has mismanaged the clean-up operation at Unit 2, the reactor seriously damaged in the March 1979 accident.

The reports have come none too soon for the company. In September, an interim report by the Nuclear Regulatory Commission (NRC) claimed that GPU had violated numerous safety regulations in its haste to salvage Unit 2 (see *Nature* 6 October, p.461). At the same time, NRC has withheld permission to restart reactor 1, partly because of doubts about the company's competence. And last month, a federal grand jury indicted the Metropolitan Edison Company, a GPU subsidiary, for "a pattern of criminal violations" in its handling of the plant

before the accident in 1979.

Neither of the new reports will directly affect NRC's decision whether to allow the undamaged Unit 1 to restart, or the continuing NRC investigation of alleged malpractices at Unit 2. But both will go some way towards rehabilitating the utility in the public eye. Admiral Rickover's report, the shorter of the two, is emphatic about the ability of GPU to operate a nuclear power plant. The second report, by Edwin Stier, former head of criminal justice for New Jersey, is more complex.

The 12,000-page report, issued last week, denies claims (upheld by NRC) that the management at Unit 2 has violated safety procedures and (not yet upheld by NRC) that it retaliated against employees who had tried to draw attention to the violations. It concedes that there were "procedural" violations of safety rules but argues that, for the most part, GPU has done its best to strengthen safety procedures. Finally, it rejects — as has NRC — allegations of collusion between GPU and NRC's office at Three Mile Island.

Stier and Rickover conducted their separate investigations at GPU's request, but both authors emphasize their independence.

Peter David