

U.S. Study Reassesses Risk Of Nuclear Plant Accidents

By MATTHEW L. WALD

A study of thousands of mishaps at nuclear plants from 1969 through 1979 has concluded that an accident as bad as the one at Three Mile Island, or worse, could have been expected every 10 to 15 years, given the equipment in place at the plants in that period.

The study, which was made for the Nuclear Regulatory Commission by the Oak Ridge National Laboratory, represents a sharp reassessment of the risks of nuclear power. It found the likelihood of a major accident to be one in 1,000 years of reactor operation, as against the commission's historic Reactor Safety Study, which made a risk assessment of one such accident in 20,000 years of reactor operation.

The probability of accident established by the Oak Ridge study is "about 10 times higher than we would like to see it," said Robert Bernero, director of the Division of Risk Analysis of the regulatory commission.

He added, however, that the chance of accident had already been cut by changes ordered after the March 1979 accident at Three Mile Island in Pennsylvania. For example, one change would improve the reliability of equipment that supplies cooling water.

The Oak Ridge study includes no data after 1979, he said, and it is not possible to assess in probability terms the value of each of those changes, but he said it was his impression that the industry average was one in 10,000 years of operation, with some plants higher and others lower. The commission recently set one such accident in 10,000 years of reactor operation as a safety goal.

The Oak Ridge report is a tool for the plant owner, according to Mr. Bernero, to "tell him which are the most important systems in his plant, which are the most important weak points in his plant, and where he should concentrate inspections, surveillance, testing and quality control."

74 Plants in Operation

There are 74 operating nuclear power plants in the United States, counting both Three Mile Island units, so that the nation gains 1,000 years of reactor operating experience every 13 and a half years. Core damage at the Three Mile Island Unit 2 plant, the most severe power reactor accident ever, resulted in minor release of radioactivity into the environment, but will cost about \$1 billion to repair. More severe core damage could result in an extensive release of radiation with severe impact on health and the environment.

The Oak Ridge study surveyed 19,400 failures in the 11-year period, and identified 169 as being potential contributors to serious accidents.

According to Mr. Bernero, copies of the study will be rushed to commission staff personnel and others involved in special hearings in White Plains, N. Y., that are considering whether the Indian Point plants should be closed for safety reasons. Those hearings are to resume today with testimony about the adequacy of emergency plans.

The study, called "Potential Precursors to Severe Core Damage," was undertaken after criticism of the Reactor Safety Study, also known as the Rasmussen Report. That analysis, which focused on one reactor in Virginia, concluded that multiple equipment failures would have to occur before an accident could damage the core, and that the chance of such an accident was only one in 20,000 years of operation. Before the Three Mile Island accident, skepticism about the Rasmussen estimate prompted the commission to order the Oak Ridge study.

The new study measured the frequency with which single failures occurred. "What we discovered is that in some cases, events were showing a higher probability than we had predict-

ed," Mr. Bernero said. For example, he said, small leaks of cooling water were more common than expected.

The one-in-1,000 years of operation estimate was made by combining the risk estimates for failures of individual systems.

The significance of the 169 incidents, all of which had been previously reported, is disputed. Many of the failures posed little threat because they occurred in plants that were temporarily shut down, and in most incidents, several additional failures would have been required to produce a serious accident even if the plant had been running. Some resulted in worker exposure.

'Potential Melt-Downs'

Over the weekend, Public Citizen's Critical Mass Energy Project, an anti-nuclear group affiliated with Ralph Nader, distributed copies of a draft version of the report and described the incidents studied as "potential melt-downs."

Noting the frequency of these incidents, Richard Udell, a safety analyst with the group, said, "It's only a matter of time before there is a serious accident."

Mr. Udell also disputed the value of the Three Mile Island experience. Of 347 steps in the "action plan" established after that accident, 236 had not been completed by January of this year, including 123 of the highest priority, he said.