

We can live with nuclear power only if we are willing to pay the price of living with dangerous technologies.

booming. The 1973–1974 oil price increases were at first assumed to make nuclear energy even more competitive with other fuels and thus to be a spur to nuclear orders. As we know, they have had the opposite effect. Higher energy prices reduced electricity demand growth and power plant orders—both nuclear and coal—were slowed to a mere trickle.

Then, in March of 1979, came Three Mile Island. The accident at Middletown added a new dimension to the uncertainties over the future of nuclear energy, bringing long-ignored reactor safety problems into sharp focus. The fact that things happened at Three Mile Island that weren't supposed to happen rocked the industry and the regulatory agency. And the American public, along with the rest of the world, was treated to a quick course on what can go wrong with nuclear reactors.

Machines failed and men failed. Features of the reactor design that had never come under close regulatory review because they were not regarded as "safety related" actually contributed to the accident. Control room instruments were inadequate. Operators made mistakes. Meters to measure the radioactivity leaving the reactor went off scale. Communications links failed to function, in part because phones were jammed, in part because individuals did not seem to understand what they were supposed to report. The power company didn't inform the Regulatory Commission, that first day, of dangerously high temperatures, or of a hydrogen explosion in the reactor containment. And it turned out that a warning flashed by a similar event at another plant a year earlier had been ignored by the Nuclear Regulatory Commission.

Many of the specific deficiencies in plant design and operator procedures can be corrected relatively

easily; such corrections, in fact, were initiated immediately following the accident. Reactor systems that were not reviewed will be reviewed. New control room instruments are being required. A stricter program for operator training and qualification is underway. The NRC will require instruments to permit accurate measurement of offsite releases. Emergency planning for evacuation of those living near reactors will be required as a condition of reactor operation. Direct phone lines have already been installed. And safety information will be reviewed more closely and systematically by a new NRC office.

But the failures in the system for assuring public safety go deeper. Changes will certainly be made because they *must* be made—in the industry, in the operating utilities and among the government regulators—to eliminate the downright laxity up and down the line which was exposed during the accident and in subsequent reviews. Nuclear plants are not like ordinary power plants. They must be built and operated with meticulous and disciplined attention to detail and government re-

gulators have to exercise tight control. Unfortunately, Three Mile Island has not yet fully driven that point home, at least not to everyone involved.

It is still too early to gauge the full effect of all this on the role nuclear power is expected to play in America's energy policies. If fewer nuclear power plants are to be built, it will be because we need fewer, or because we think coal is cheaper, or safer—all considerations we have not yet made up our minds about.

In the end we will return to the big questions of the 1970s: Can we live *without* nuclear power? The answer is yes. But we would be better off if we could find a way to take advantage of the increase in diversity, and therefore energy stability, that comes with this alternative energy source.

Can we live *with* nuclear power? The answer is again yes. But only if we are willing to pay the price of living with dangerous high technologies. That price is extraordinary care, discipline and superior craftsmanship. On the question of whether this would be too much for us, the jury is still out. □

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The Kemeny Commission report

Like *The Bible*, the final report of the President's Commission on the Accident at Three Mile Island offers within its voluminous pages almost any message an attentive reader wants to find.

Floyd Lewis, chairman of the utility industry's study group on Three Mile Island for the Edison Electric Institute, concluded within hours of the release of the Kemeny commission report: "It is quite clear that the

President's commission has given us and the American public a simple message on nuclear power: proceed, but proceed with caution." Richard Pollack of Critical Mass, the anti-nuclear group, quickly found another message: "We consider the Kemeny commission report a blistering indictment of the NRC and the nuclear industry."

Editorial writers also picked through the report for quotes that

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were just right for their purposes. The *Wall Street Journal*, for example, excised the reassuring phrase that the investigation results, standing alone, do not "require the conclusion that nuclear power is inherently too dangerous to permit it to continue and expand as a form of power generation . . ." But its writers failed to quote the Kemeny report's next sentence: "Neither do they suggest that the nation should move forward aggressively to develop additional commercial nuclear power."

The fact that so many seemingly contrary conclusions could be drawn from this document should not suggest that its reasoning or its presentation were ambiguous or careless; rather, they highlight the polarization that is an essential feature of the nuclear debate. Furthermore, the report itself takes care to note where conclusions were *not* attempted, and where the available evidence yielded no clear results.

However, if the document is taken as a whole, as chairman John G. Kemeny (the president of Dartmouth College) urged it should be, it presents an overwhelmingly negative conclusion: that to proceed with the continued expansion of nuclear power involves grave social and political decisions, not just technical and bureaucratic ones. The report's findings "simply state that if the country wishes, for larger reasons, to confront the risks that are inherently associated with nuclear power, fundamental changes are necessary if those risks are to be kept within tolerable limits."

Those risks were found everywhere: with operator error, a failure to learn from previous incidents, design deficiencies, and other shortcomings attributable to the utility, the suppliers of equipment, and the Nuclear Regulatory Commission. Given all these de-

ficiencies, the commission concluded, "we are convinced that an accident like Three Mile Island was eventually inevitable."

The 12-member panel concluded its six-month study of the nuclear power industry's most traumatic public spectacle with a set of findings and conclusions that criticize the basic structures, practices, and attitudes of the Nuclear Regulatory Commission and the nuclear industry itself.

"To prevent nuclear accidents as serious as Three Mile Island," the commission concluded, "fundamental changes will be necessary in the organization, procedures, and practices—and above all—in the attitudes of the Nuclear Regulatory Commission and, to the extent that the institutions we investigated are typical, of the nuclear industry."

Ominously, the report warned, "this conclusion speaks of *necessary* fundamental changes. We do not claim that our proposed recommendations are sufficient to assure the safety of nuclear power." Commission member Theodore B. Taylor warned, at a press conference the day the report was released, that until the recommended changes are made "we are going through a period of risk."

The Kemeny commission concluded that the accident, which began at 4 A.M. on March 28, "occurred as a result of a series of human, institutional, and mechanical failures" that were compounded by inept emergency responses. "The response to the emergency was dominated by an atmosphere of almost total confusion," the report stated. "There was a lack of communication at all levels. Many key recommendations were made by individuals who were not in possession of accurate information, and those who

managed the accident were slow to realize the significance and implications of the events that had taken place."

Indeed, so important were the communications problems to the course of the accident that the Kemeny commission convened a separate task force to study the topic.* In its report the task force found that "the public information operations mounted by the utility and the NRC were so inadequate that it is impossible to find any evidence of a conspiracy or a coordinated effort to mislead the public on the facts of the accident—though the confusion may have had the same net effect." It noted that Metropolitan Edison Company

"was slow to recognize and acknowledge 'pessimistic' information on such subjects as core damage, operator error, and off-site radiation releases. Some NRC officials, particularly from Region I, tended to support the utility's optimistic view of the accident to the media. The lack of a consistent posture by the NRC seems in part attributable to the agency's own ambivalence with its regulatory and promotional roles . . . and the freedom many NRC officials felt to speak their minds, regardless of the consequences."

The news media, too, failed often to present timely, accurate, and understandable information to the public, although, as the task force noted, there were days when "the only type of 'accurate' reporting possible under the circumstances was the presentation of contradictory and competing statements

*Report of the Public's Right to Information Task Force, David M. Rubin (head). Washington, D.C., U.S. Government Printing Office, forthcoming.