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Alexander Gaskins
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Dr. Edward Friedman

Improvements on an Atomic Level

The accident at Three Mile Island (TMI) resulted in chaos not just at the TMI-2 reactor in Pennsylvania, but across the entire United States. Following a minor malfunction in the secondary cooling circuit of the reactor, causing the temperature of the primary coolant to rise to a point where a relief valve failed to close, a large amount of coolant was lost, which led to a series of increasing mechanical failures. In response, the Presidential Commission was formed under the Carter administration to investigate the accident, and ultimately, critique the current nuclear energy industry during that time. A key finding from the commission claimed that the meltdown was due to "a series of human, institutional, and mechanical failures." This included the fact that operators were not properly trained for such an event, which only amplified the design flaws that initiated the situation. The committee concluded that changes needed to be made in the organization, procedures and practices – and above all – in the attitudes of the Nuclear Regulatory Commission (NRC). While there were many recommendations made by the Presidential Commission, three of these proposals seemed to outweigh the others in their importance towards preventing future nuclear reactor disasters. The first of these recommendations dealt with emergency planning and response guidelines to be standardized for all nuclear power plants to operate. The plans must clearly define the actions that should be made by public officials and utilities in the event of off-site radiation doses resulting from a release of radioactivity. This requires a FEMA-approved emergency response plan to be on file prior to granting an operating license to a new nuclear power plant, and demanding currently operating plants to update their plans within a certain period of time to keep their operating license. This is vital, as the release of radiation can be deadly. One of the most fatal flaws in the handling of the

TMI incident was the amount of time it took to handle the situation. Recordings show that after the incident began at 04:00 on the morning of March 28, 1979, the first sign of rising radiation levels occurred at 06:30, where it then took over 20 minutes before a site emergency was declared. In such an event, 20 minutes could mean the difference between radiation poisoning and avoiding overexposure. The second recommendation of importance dealt with agency organization and management. This meant abolishing the five-member NRC administration and replacing it with one single administrator. It also required the NRC to be conjoined in the same building. Besides that, it sought to establish an oversight committee on nuclear reactor safety, while retaining the Advisory Committee on Reactor Safeguards to continue providing an independent check on safety matters. The response to the TMI incident was significantly delayed by the amount of confusion among the NRC administration and other public officials regarding what measures should be taken. The fact that there were five administrators meant coming to a compromise on an issue could seem impossible at times. When dealing with a dire situation, such as TMI, immediate response is necessary, which gives the reformation of the NRC a crucial role in preventing confusion over what actions should be made. The last, and perhaps most important recommendation, dealt with improvements to the training of operating personnel. They advocated for the formation of agency-accredited training institutions, from which operators and their immediate supervisors must graduate. Under this recommendation, utilities should also provide training to new employees on specs of their respective plant, while also providing routine training. In order to improve efficiency, utilities should use simulators to train operators as well. Unfortunately, while the initial cause of the TMI incident was due to a minor mechanical failure, the whole situation was made much worse as “a result of the initial failure of plant operators to recognize the situation as a loss of coolant accident.” All in all, while all of the proposed recommendations from the presidential commission were valid in their own right, it is evident that the factor that required the most remediation was human responsivity and leadership.