information about the volume within the pressure boundary, which determines how large a pressure rise would accompany a given release into the containment-confinement volume. U.S. plants have either large dry-volume containments or somewhat smaller volumes supplemented with ice-water systems to condense vapor and thus reduce the pressure increase; they are designed to withstand a complete break of the largest pipe in the system. Chernobyl's RBMK-1000 confinement systems design, on the other hand, has a much smaller volume and is in fact designed to accommodate at most the rupture of only one of the more than 1600 small pipes passing through the graphite stack that constitutes the core.

Ahearne does not compare releases and health effects. The TMI containment performed its design function: virtually no radioactivity (other than noble gases, which contribute little to population exposure) was released, and the offsite health effects were virtually negligible. By now, the severe radiological impacts of Chernobyl are well known. This difference reflects the radical differences in design and safety philosophies that underlie the features of the two reactors and profoundly affected the consequences of the two accidents.

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*Response*: Silver is correct that the Chernobyl RBMK reactor is far more sensitive than the TMI reactor. However, as I stated in my article (p. 677), the TMI "design is well known within the U.S. nuclear reactor industry as being more responsive to perturbations than other U.S. reactors." Nuclear Regulatory Commission studies after TMI showed that for some accident scenarios involving this type of reactor, operator reaction times would have to be much less than 2 hours.

With regard to the TMI operators' ignorance of the status of the PORV, the operator interpretation was complicated by the operating staff's willingness to allow a violation to go uncorrected. That PORV had been leaking for weeks (*1*, p. 46). Company instructions called for the block valve to have been closed under those conditions (*1*, p. 116). But it had not. This was a violation of required procedures (*2*). Very early in the accident an operator read that temperature downstream of the PORV was 50°F higher than the maximum allowable, indicating the valve was stuck open (*3*, p. 14). Over the next 3 hours, the operators disregarded additional warnings and misinterpreted indications, such as rise in containment pressure (*3*, pp. 17 and 18). However, when the Babcock & Wilcox technical support person was briefed over the phone on what was happening, he immediately figured out that the block valve should be closed, and the replacement shift supervisor took only 20 minutes to reach the same conclusion (*3*, p. 19). The TMI crew did take deliberate actions, even if misguided: "the operators override the emergency system and sharply reduce flow from the HPI [high pressure injection] pumps" (*3*, p. 17). "There is no question that operators erred when they interfered with the automatic operation of the high pressure (HPI) system even though conditions that initiated the system (low pressure) persisted . . ." (*3*, p. 102). It is also true that the operators had not been trained to handle the events that were developing at TMI: "It is a human intervention in the automatic chain of events not inconsistent with the operators' training . . ." (*3*, p. 17). One major review concluded: "First, the operators on duty had not received training adequate to ensure that they would be able to recognize and respond to a serious accident . . . Second, neither the operating crew nor their supervisors . . . possessed the necessary combination of technical competence and familiarity with the plant . . ." (*3*, p. 103). Nevertheless, "these operating personnel made some improper decisions, took some improper actions and failed to take some correct actions, causing what should have been a minor incident to develop into the TMI-2 accident" (*1*, p. 27).

I agree there were major differences in design and safety philosophy. However, complacency, lack of understanding, inadequate training, and poor management were not that different, unfortunately.

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2. "Investigation into the March 28, 1979 Three Mile Island accident by the Office of Inspection and Enforcement" (NUREG-0600, Nuclear Regulatory Commission, Washington, DC, August 1979), pp. I-1–5.
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*Erratum*: In the issues of 21 August (p. 816) and 28 August (p. 956), the volume number (237) was incorrectly given as 238 in the Table of Contents heading.