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March 24, 1980

John Ahearne, Chairman  
Peter Bradford, Commissioner  
Joseph Hendrie, Commissioner  
Victor Gilinsky, Commissioner  
Richard Kennedy, Commissioner  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gentlemen:

On behalf of the New England Coalition on Nuclear Pollution we urge you to approve the NRC Staff recommendation to require the immediate inerting of Mark I and II containments as discussed in SECY-80-107 (February 22, 1980) and in your meeting with the Staff on Wednesday, March 19, 1980.

In light of the discussion during that meeting and the comments made by representatives of General Electric and Yankee Atomic, two points require emphasis. First, given the experience at Three Mile Island and the relative size of the Mark I and II containments, it is clear that those containments must be inerted regardless of the design basis that is ultimately established for hydrogen release or for degraded core purposes generally. The Staff has concluded rightly that the operating Mark I's - Vermont Yankee and Hatch 2 - are a present threat to public safety. Second, given the minimal risk involved in the use of readily available oxygen support systems, inerting these containments poses no practical threat to worker safety or to adequate inspection and maintenance of instruments or systems within the containment. The experience of all of the other operating Mark I plants fully supports this conclusion.

Contrary to all previous predictions by the NRC and the nuclear industry, the accident at Three Mile Island involved a metal-water reaction of from 30% to 50% of the fuel cladding in the reactor core, with a resulting large release of

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combustible hydrogen into the containment. As a result, the Staff is now recommending that the Commission consider requiring the industry to take certain steps to reduce the risk of a breach of containment that would be caused by combustion or detonation of hydrogen. One of the major issues in the Commission's deliberations will be the percentage of metal-water reaction that should be established as the basis for determining the design of hydrogen control measures at particular reactors. To date, the design basis has been 5% metal-water reaction. With a metal-water reaction at TMI as much as ten times as high as the existing design basis, it is clear that some change is required.

The immediate question, however, is not what should be established as the ultimate design basis through what will certainly be a lengthy rulemaking proceeding proposed by the staff, but whether the Commission should require inerting of the Mark I and II containments immediately. It is clear that, whatever design basis for hydrogen control is selected, it will certainly require inerting of the Mark I and Mark II containments. There is no justification for allowing those reactors to continue operating without inerting, considering the case presented by the Staff.

The salient point is that a Mark I containment will fail if there is combustion of the hydrogen resulting from a mere 9% metal-water reaction during an accident.<sup>1/</sup> That is less than twice as much as the current design basis, and it is less than one-third the metal-water reaction that occurred at TMI, assuming the conservative 30% figure. It is less than one-fifth of the 50% metal-water reaction that may have occurred at TMI. Moreover, even if the 9% figure is incorrect by a factor of 2, and an 18% metal-water reaction plus combustion is required to breach a Mark I containment, the figure is still barely half of the metal-water reaction that occurred at TMI.

In the aftermath of TMI, it is inconceivable that the Commission will adopt a design basis that would be low enough

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<sup>1/</sup> In the case of the Mark II containment, the figure is only 6%, so that the need for protection is even greater. This discussion will focus on the Mark I containment since there are no Mark II's in operation.

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to allow Mark I containments to avoid the hydrogen control requirements. Even the most liberal approach would adopt at least the 30% figure as the design basis. The conservative approach, which the Commission has long argued that it takes on nuclear safety issues, would require a higher figure. Either would cover the Mark I containment. Accordingly, there is no basis for awaiting the outcome of the proposed rulemaking proceeding before requiring reactors with Mark I containments to adopt stringent hydrogen control measures.

Since inerting has worked successfully in every containment in which it has been used - all but two of the Mark I containments - it is the logical choice at least until the rulemaking proceeding has shown that some other procedure would be more effective. At this point, those opposed to inerting must bear a very heavy burden to show that inerting would be unsafe or ineffective and that an equally effective method can be implemented at least as quickly.

General Electric and Yankee Atomic have concentrated their arguments against inerting on two points: (1) danger to operating personnel and (2) deterrent to adequate reactor maintenance. The simplest and strongest answer to these arguments is that, according to the Staff's figures, sixteen reactors with inerted Mark I containments have been operating successfully for a number of years in this country without demonstrated harm to the operating personnel or to the public safety. When that record is contrasted to the immediate need to take stringent hydrogen control measures at Mark I containments, failure to require inerting of the two unprotected Mark I containments cannot be justified.

Further, the industry seems to ignore the availability of simple and effective methods of eliminating any hazards that inerting might pose to operating personnel or to adequate maintenance of containment instruments and systems. Even the most elementary type of self-contained breathing apparatus (SCBA) would both protect any personnel required to enter the containment and allow them to carry out any inspection or maintenance operations that may be required.

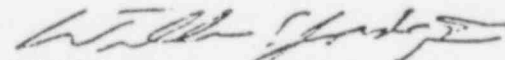
According to Dr. Nelson Leidel, Deputy Director of Health Standards for the Occupational Safety and Health Administration, as many as 600,000 SCBAs are currently in use, including those that protect the nation's 250,000 fire fighters every day in extremely hazardous conditions. Fire fighters and many others who rely on SCBAs do so in atmospheres containing extremely toxic deadly gasses under unknown and uncontrollable conditions.

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By contrast, operating personnel at nuclear reactors with inerted containments face an oxygen-deficient but otherwise non-toxic atmosphere under conditions that are thoroughly monitored and constantly controlled. With a buddy system and minimal protective measures, the utility can assure both worker safety and adequate maintenance while also protecting the public through inerting the containment.

We urge you to adopt the Staff's recommendation that all Mark I containments be inerted immediately. An interim rule, as proposed by the Staff, will serve this purpose.

Sincerely,

  
William S. Jordan, III

  
Ellyn R. Weiss

cc: Diana S. Sullivan