

J. Cook

NOV 9 1979

The Honorable Robert N. Giaimo
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Giaimo:

In response to your request to Mr. Thadani, here is a non-technical response to the question raised by our constituent Mr. Howard Altschuler of New Haven.

In NUREG 0460, page 39, Vol. 1, the statement is made, "With these assumptions, the probability of a core melt resulting from an ATWS event in the next 3 years is about 10⁻²". This means that there is a 1 in 100 chance that one of the 70 nuclear power plants licensed to operate in the United States would have an accident of this type in the next 3 years and 99 out of 100 chance that no such accident would take place anywhere in the United States anytime in the next 3 years.

To see what this risk means to any given person, it is necessary to estimate the risk at the particular location where this person lives. Since nuclear plants are scattered over the United States, any one person would be at risk from an accident at only a very small number of plants. At present, no single site has more than 3 nuclear power plants. A person living in the vicinity of such a site with 3 plants would, on the average, have about 1 chance in 2000 of such an accident taking place near him sometime during the next 3 years. A person living next to a site with fewer than 3 reactors would be subjected to correspondingly less risk while many people are not near enough to any nuclear unit for the risk to be significant.

These calculations have many uncertainties and unknowns and are believed to be rather worse than the reality would be if such an event were to occur. They are based on probabilities of events which have never occurred and so the numbers have a considerable uncertainty. The nuclear industry contends that the likelihood of this type of accident is significantly lower than our estimates.

More recently, in December 1978, Vol. 3 of NUREG 0460 was published. Appendix F to this report includes some probability calculations using NRC staff estimates of the likelihood of an ATWS event. The results for the next year or two are approximately the same as those discussed

above, or a factor of two higher. This is within the accuracy of making such predictions, so the difference is not significant.

However, the NRC staff has recommended implementation of plant

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hardware improvements which would substantially decrease the risk. Depending on the plant and the details of the change, the improvements are calculated to decrease the risk by factors ranging from 8 to 80. Thus, in some future 3-year period the chance for an individual being placed at risk would be 1 in 10,000 or less.

It should also be noted that many kinds of accidents which are calculated to result in damage to the reactor core or even melting of the reactor core are predicted not to result in serious consequences to the public health and safety. This is borne out by recent experience at Three Mile Island.

As a prudent course, in order to reduce the risk for ATWS events before the hardware changes can be implemented, we have required that emergency procedures to deal directly with ATWS events be developed for each plant and the operators trained to recognize such events if they should occur and to take corrective action. We believe that these measures reduce the likelihood of a severe ATWS event below the numbers I quoted above, and that continued operation of nuclear power plants will for this reason be allowable and safe in spite of the calculated risk these numbers would otherwise represent.

We would be glad to supply additional information or answer questions on this subject if requested.

Sincerely,

Original signed by R. G. Smith

Lee V. Gossick
Executive Director for Operations

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