

400 Chestnut Street Tower II

January 7, 1980

Director of Nuclear Reactor Regulation
Attention: Mr. Thomas A. Ippolito, Chief
Branch No. 3
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Ippolito:

TVA received a letter dated November 16, 1979, from William E. Vesely, Probabilistic Analysis Staff, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission. Mr. Vesely requested TVA to provide information and/or comments concerning NRC's program for development of quantitative risk criteria for nuclear power plants. We are pleased to provide you with our enclosed comments which we believe are pertinent in the establishment of numerical risk criteria for nuclear power plants.

In the future, we request that you submit all information and/or requests for information to:

H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street Tower II
Chattanooga, Tennessee 37401

This will allow us to respond to your requests as expeditiously as possible. Also, please keep TVA informed of the progress of this program.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

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ENCLOSURE

RESPONSE TO W. E. VESELEY'S LETTER
DATED NOVEMBER 16, 1979,
QUANTITATIVE RISK CRITERIA FOR NUCLEAR POWER PLANTS

We agree that a program to develop numerical criteria for evaluating public risks from nuclear power plants should be undertaken at this time. Risk from natural phenomena such as earthquake can be evaluated numerically and compared. Risk from nuclear power plants can also be evaluated numerically using probability techniques and an acceptable level of risk assigned by comparison to other hazards. It might be useful to develop risk curves for other industries to form a base for comparison with the nuclear industry.

There will be a degree of uncertainty in this program and a major effort must be made to provide an accurate and usable component failure data base for use in the numerical calculations. The degree of uncertainty in the numerical calculations would be expected to be large at the beginning of the program and decrease as more experience is gained. Procedures should be defined in advance as to how uncertainty is to be handled. Procedures should also be defined in advance for evaluating the costs and benefits of changes as a result of applying numerical criteria for public risk, and we believe the program should address this issue from the beginning.

The determination of acceptable curves of accident probability versus accident consequences is believed to be the key to a successful program. TVA believes that acceptable curves of accident probability versus accident consequences for nuclear power plants must be better than those associated with other human phenomena of rare occurrence such as dam failures by a margin which would be determined during the course of this program. We base this belief on the fact that the public perception of the risk from nuclear power plant is different from the public perception of the risk of other human activities. Margin must be allowed to account for the difference in perception.

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TVA believes that the major effort of the NRC program should be to define acceptable curves of accident probability versus accident consequences for early fatalities and immediate damage. The determination of acceptable curves for latent fatalities and long-term damage would be better left to a longer range program. We also do not believe that it is necessary to define an acceptable number for the probability of a core melt or the "average" risk as these would be included in the consideration of accident probability versus accident consequence curves.

There are a limited number of system unavailability evaluations presently underway at TVA and the NRC will be kept informed of the results of these evaluations as they become available. TVA is also participating in the Sandia Laboratories' study on system interaction (Generic Task No. A-17).

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