

# CERTIFIED

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PROPOSED MEETING SUMMARY/MINUTES FOR  
THE ACRS CLASS 9 ACCIDENTS SUBCOMMITTEE MEETING  
MARCH 14, 1985 - WASHINGTON, DC

Purpose

The Subcommittee met with New York Power Authority (NYPA) on March 14, 1985 to discuss their recent assessment of the source term under certain severe accident conditions for Fitzpatrick. NYPA also proposed to address various Subcommittee comments and questions as a result of a similar meeting on the Indian Point-3 (IP-3) source term reassessment.

Principal Attendees:

ACRS

W. Kerr, Chairman  
P. Shewmon, Member  
I. Catton, Consultant  
J. Lee, Consultant  
A. Wang, Staff, DFO

NYPA

H. Specter  
R. Deem  
W. Iyer

Risk Management Associates

P. Bieniarz

Introduction

W. Kerr opened the meeting and commended NYPA on its efforts. He inquired what are NYPA's motives for performing this work. H. Specter stated NYPA proposed to address earlier Subcommittee comments on their IP-3 source term assessment and then present some results of their current source term reassessment of Fitzpatrick. He stated that NYPA has attempted to seek comments on their work from as many different forums as possible. The final usage of this work is still being debated. For IP-3, he hopes this work will be used in some future licensing decisions. For Fitzpatrick, the usage would be different as they have not gone through a hearing. BWR Mark I's have received some

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notoriety from some other analysis as risk outliers with regard to source terms. NYPA is hoping to learn more about Mark I's to avoid an IP-3 like hearings in the future.

#### Indian Point-3

P. Bieniarz stated as a result of the last Subcommittee meeting NYPA has done a parametric study for the large overpressurization accident at IP-3 for various leak rates. The leak rates were in addition to the design leak rate. Hole sizes were estimated by determining the area of a hole which at the design pressure of the containment would result in the leakage rates of interest. D. Ward asked if the study produced a maximum hole size at which point the source term release is unaffected by the hole size. P. Bieniarz stated he believes a hole size of 25 square inches is close to that point. H. Specter stated he believes their study shows as long as the containment fails late ( $> 24$  hours) the calculated source term release is insensitive to the MARCH code calculations. NYPA believes one could take the entire core inventory throw it in the air of the containment, let it settle and the source term numbers would be of little changed from a MARCH calculation given that there is no early failure of containment. W. Kerr asked if this is the case, why even do a MARCH analysis. H. Specter stated this conclusion is highly dependent on the containment type and NYPA also needed to produce the pressure-time history for the containment.

#### CRAC Code Results

W. Iyer presented the CRAC code results based on the previous analysis. W. Kerr asked what level of confidence does NYPA have in these results? For instance would NYPA be willing to propose changes to their emergency planning based on these numbers? W. Iyer stated he believes the results would not vary by more than 50%. He stated the calculated fatal radius is 1.6 miles, and in his opinion could be as high as 2.4 miles, as compared to the 6 miles using WASH-1400 numbers. J. Lee asked NYPA what

are the most significant fission products with respect to early fatalities.

S. Masciulli agreed to provide this information. W. Kerr asked if NYPA was prepared to re-examine their Appendix J test requirements based on the results of their work. H. Specter stated again NYPA has not decided how to apply this work but his own opinion is that the maximum allowed leak rate in Appendix J can be higher.

#### Fitzpatrick Analysis

H. Specter noted that unlike IP-3 there is no PRA available for Fitzpatrick. Because of this NYPA was dependent on the BMI-2104 work to determine what sequences should be analyzed. Currently NYPA proposes to analyze four sequences of which the AE sequence and the ATWS sequence have been completed.

R. Deem noted NYPA has made substantial changes to the MARCH 2.0 code to allow for use for BWR analysis. He stated the most important of these changes was the modelling of the individual safety relief valves.

J. Lee asked whether NYPA is performing a multi-dimensional problem.

P. Bieniarz stated while they are not solving the momentum equation, they are doing a lump parameter-type calculation for each volume.

J. Lee stated since the IP-3 results were concluded to be so insensitive to the MARCH calculations, why go through the trouble of doing a detailed MARCH analysis for Fitzpatrick. P. Bieniarz stated for the smaller volume MARK I containments the time of failure is shorter and the amount of fission product release becomes much more sensitive to the MARCH calculations. R. Deem stated they have also coupled TRAP-MELT, MERGE and CORSOR. This provides a totally coupled set of fission product migration codes that interact and run on the same time clock. Therefore, at each timestep the program recalculates every important parameter according to the changes that have been calculated throughout all of the computer programs. They have also added models to account

for fission product heating of surfaces, energy losses through insulation, fission product behavior in the vessel after vessel failure and resuspension of deposited solid particles on sudden depressurization. J. Lee inquired, is there any new physical phenomena modelling. I. Catton stated he interprets NYPA as saying they have produced a better coordinated, more efficient running code but there has not been a whole lot of new physics introduced. R. Deem stated the algorithms were vectorized where feasible to allow the code to run on a CYBER 205 system. This decreased the run times by approximately a factor of four. J. Lee and I. Catton questioned why there seemed to be oscillations in the pressure plot. P. Bienairz felt these were instabilities due to the time steps used in the analysis. J. Lee and I. Catton felt more attention should be paid to what seems to be numerical instabilities in NYPA's analysis. W. Kerr asked based on NYPA's analysis is there any case where one might want to limit the amount of water on the core, contrary to current wisdom. R. Deem believes there may be cases where NYPA may someday change their procedures based on this analysis. W. Kerr closed the meeting by stating he would not put any more effort in fine tuning the source term analysis but would rather concentrate on preventing the possibility of having a severe accident by having a good source of electric power and do everything feasible to eliminate the likelihood of an ATWS.

The meeting was adjourned at 6:05 p.m.

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NOTE: Additional meeting details can be obtained from a transcript of this meeting available in the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C., or can be purchased from ACE-Federal Reporters, 444 North Capitol Street, Washington, D.C. 20001, (202) 347-3700.