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THRU : Saul Levine, Chief, Test & Power Reactor Safety Branch
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MEETING TO DISCUSS PEACH BOTTOM APPLICATION, SEPTEMBER 4, 1964

DRL:JEM & KRG

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A meeting was held at Bethesda to discuss methods of containment building testing as well as other matters pertaining to Philadelphia Electric's current application for a provisional (1 MW) operating license for the Peach Bottom (HTGR) Plant. In attendance at this meeting were:

V. S. Boyer	Philadelphia Electric Co.
J. L. Allen	" "
T. R. Moffette	General Atomic
H. Friend	Bechtel Corporation
G. K. Cooper	" "
R. V. McGrath*	Chicago Bridge & Iron
J. E. McEwen	Division of Reactor Licensing
K. R. Goller	" "
R. E. Ireland	" "
R. R. Maccary*	Division of Safety Standards
S. Levine*	Division of Reactor Licensing

Philadelphia Electric (P.E.) presented the following revised proposal for containment leak rate testing:

1. Integrated leak rate test of containment at the full 8 psig design pressure initially and then one year later. Frequency and other details of subsequent testing would be determined thereafter, "after some experience has been gained with the containment." P. E. indicated a preference not to be committed to any subsequent frequency of testing at this time.

2. Instead of testing all penetrations, a sampling approach would be used where some 20% of each type of penetration would be tested periodically, and the results accepted as being representative of the condition of all penetrations. The integrated leak tests would serve as a check on the adequacy of this method.

*Part time

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3. Periodic testing of all three personnel airlocks at the full 8 psig design pressure.

We indicated that this overall program was sufficiently in accord with our thinking that we would like to consider it in detail. In regard to containment testing, we raised the following specific questions:

Ques. What will be done about testing the spent fuel chute penetration seal and the equipment access door?

Ans. We will look into these items further.

Ques. Explain the source of the difference between the calculated accident maximum temperature of 158°F and the containment design temperature of 150°F.

Ans. This is probably a "paper" problem since we can see no reason to limit containment temperature to 150°F. We will resolve this point.

Ques. What assurance is provided that the single, normally closed manual valves in certain lines will not be left open and cause a breech in containment?

Ans. Our present plans call only for administrative control, but we'll look into this further.

Ques. Have you established the NDT valve of your containment using Charpey V-notch test result correlations?

Ans. No, we've used only Charpey keyhole, but we'll investigate the need for additional NDT information.

Ques. Have you established an activity level at which the stack gas monitor will trip to cause containment isolation?

Ans. No, but we will.

Ques. In some lines where there are two containment isolation valves in series (including the steam generator emergency water dump systems), why is only one of these two valves closed on containment isolation?

Ans. We would prefer to evaluate each individual case before attempting to provide an answer.

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Ques. What assurance is provided that a vacuum greater than the design value cannot be pulled on the containment? Would the addition of another vacuum breaker valve reduce this liklihood?

Ans. The most likely means of drawing an excessive vacuum is by operation of the ventilation exhaust fan. A low pressure protection system has been included which is not discussed in our present application, but we will include this information as an amendment.

In addition P. E. agreed to provide us with curves of containment atmosphere pressure and temperature vs. time following the reference accident.

In a separate session not related to containment testing, a number of other areas were discussed.

We suggested the following as items which we felt could come up for discussion at the forthcoming ACRS Subcommittee Meeting. We emphasized that additional items might arise as our review progressed.

1. Consequences of the MCA for the full duration of the accident, including the doses of outer boundary of low population zone calculated for the entire period of passage of the radioactive cloud of fission products leaking from the containment building after the MCA.

2. Calculated dose values at the site boundary for the first 2 hours for (1) the primary system rupture accident with the primary blowers operable and (2) the MCA.

3. Discussion of accidents considered in selecting the maximum credible accident. This should include possibility and consequences of following accidents:

   a. Accident in which reactor is brought critical with reflector blocks and fuel elements all leaning out radially the maximum possible amount and then all suddenly swing in and compress core.

   b. Possibility and consequences of control rod ejection as a result of a control rod vessel nozzle extension failure.

   c. Possibility and consequences of damaging primary helium compressor(s) as a result of a sudden depressurization or other stall or surge condition.

   d. Effectiveness of the missile shield in restraining a ruptured reactor vessel nozzle and thereby limiting consequences of depressurization.

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e. Loss of all electric power to water intake structure during power operation.

4. Basis for assumption that only one steam generator tube fails during any accident, including MCA, and the possible consequences if more than one fails.

5. Considerations and criteria used in the design of the emergency cooling system, with particular emphasis on:

   a. Initial and periodic testing.

   b. Details of when and how system is activated.

   c. Thermal stress considerations of cold river water entering hot system.

6. Periodic testing of containment isolation system and containment leak tightness.

7. Operator observations and actions following various possible accidents.

8. Verification that control and safety instrumentation will operate properly at all permissible operating values of line voltage and frequency, and of control room ambient temperature.

9. Considerations and criteria used in the design of the plant to provide for seismic disturbances.

10. Conditions under which reactor may be operated with only one primary coolant loop operating.

11. Discussion if integrity of mechanical lock which prevents inadvertent fall of a fully inserted control rod.

12. Provisions for and procedures concerning the post-accident ventilation of the control room.

13. Scope of the preoperational test program including those tests which must be completed prior to operation at 1 Mw.

14. Those systems (or parts thereof) which need not or will not be operable for the 1 Mw application.

15. Plans to supplement the application if fuel burnup proceeds beyond 900 full power days presently used as a reference end of life condition (see p. II-27).

16. Membership and responsibilities of safety review committees.

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The fact that the application does not identify a MCA was discussed. The application discusses a number of accidents, some of which are considered credible and some of which are considered hypothetical, but which are not identified as such. P. E. indicated that they preferred not to identify a MCA. We stated that we felt that we could work with the present scope of identified accidents and resulting consequences. We cautioned that if our review indicated more severe consequences than contemplated for various accidents more analyses might have to be done and the question of "credibility" could become more important.

P. E. agreed to formally submit their site evacuation plan.

We requested a complete analysis of the accident which is initiated by the "massive" failure of steam generator tubes. At present only the failure of one tube is considered. P. E. agreed to perform this analysis.

P. E. informed us that they were developing a procedure for initiating emergency cooling and that copies of this procedure would be posted at the appropriate control locations. This procedure, which does not have to be initiated for a number of hours, includes a warmup procedure to limit thermal shock.

At the close of the meeting we stated that we would compile those questions which we felt required formal answers in a letter to be sent to P. E. in the very near future.

bcc: E. G. Case
K. R. Goller
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