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Memorandum

SUPPLEMENTAL FILE COPY

TO : Roger S. Boyd, AD/RP, DRL
THRU: R. L. Tedesco, Chief, RPB-2, DRL

DATE: May 9, 1968

FROM : V. Stello, Jr.
Reactor Project Branch 2, DRL

SUBJECT: MINUTES OF THE MAY 3, 1968 OYSTER CREEK MEETING, DOCKET NO. 50-219

A detailed agenda, covering certain problem areas identified in our letters to Jersey Central (JC), dated January 9, 1968 was prepared and transmitted to the applicant ten days prior to the meeting. Those items not included on the agenda and noted in the January 9, 1968 letter relate to the main steam line valve tests, pressure vessel difficulties and certain areas where documentation would be required. A list of attendees is attached. The item numbers below correspond to those used in Amendments 32 and 34.

1. (a) In order to provide protection for a break in any of the feedwater lines, the feedwater logic system will be removed. The effect of this change results in actuation of the auto relief system for break sizes in excess of 0.06 ft^2. It is noted in our letter, dated November 7, 1968, that we stated a requirement that auto-relief actuation should be prevented for a break size range up to about 0.2 ft^2. The applicant was not prepared to discuss all of the details of this change (e.g., effects on fuel rod perforations, redundancy of systems and peak clad temperatures).

   (b) The seismic analysis has not been completed, however, the intent is to back fit the system to meet Class I requirements (0.11 g design and 0.22 g safe shutdown) to the extent possible. It is expected that all piping systems (associated with FWCI) can be brought up to these standards.

   (c) Changes to the instrumentation, control and power systems will be discussed in a forthcoming I&PTB memorandum.

2. (a) The analysis of leakage from the reactor building closed cooling water system (RBCCW) coincident with a loss of off-site power was explained. The effect of leakage from the primary coolant system is not an important parameter. For example, actuation of the blowdown system would occur in 21 minutes with primary system leak rate of 5 gpm and in 18 minutes with primary system leak rate of 50 gpm. The effect of a 20% increase in isolation condenser heat transfer would reduce the available time by 5 minutes.

A 20% increase in flow through the auto relief system results in a decrease of 1 minute and accounting for expected errors in level sensors would result in an additional decrease of 0.75 minutes. Therefore, the minimum time available for blowdown might be as little as 11 minutes.

(b) Operator procedures to cope with such an event have not been prepared. The applicant believes it is possible to develop procedures that would be effective even if the time available to prevent blowdown is only 11 minutes.

(c) The RBCCW system provides the heat sink for the control rod drive pumps, containment and core spray pumps, containment fan coolers and certain non-safety related auxiliaries. Pipelines that interconnect these components are not redundant, however, the individual heat exchangers could be isolated. In addition, temporary hose connections could be used for the control rod drive pumps to assure adequate cooling. The diesel driven fire pumps could also be aligned so that they could be used to cool the core following blowdown (applicant expected that about 5 minutes would be required to perform this operation).

(d) GE has contacted the manufacturer of the control rod drive pumps to determine how long they could operate without cooling. Based on preliminary discussions, it is believed that operation for as long as one hour might be possible.

3. (a) The applicant feels that the reduced capability of the containment is acceptable and meets the design intent. It was pointed out that GE stated that the containment would be designed to withstand the amount of metal-water reaction associated with the meltdown model. GE was not aware of such a requirement but would pursue it further.

(b) The ECCS pumps do not require containment pressure for the required NPSH.

(c) Actuation of the containment spray system will be automatic without reliance on the operator for control.

(d) The installation of the third diesel generator (for FWCI) will include tornadic wind loads but will not include requirements for missile protection (as for the other two diesels). The effect of the third diesel generator will be such that the containment capability will be improved (with respect to 3(a) above).

5. GE was not prepared to discuss this item in detail. Effects of break size on MCHFR, fuel rod perforations and doses were not available. It was noted, however, that the panels (top of the reactor building) would be blown out as indicated in the following table:

Break Size Ft^2	Time to "blow" the panels Seconds
.0025	7200
.025	400
.25	12

8. An interlock would not be provided unless required by us. GE views the ACRS letter on Pilgrim with regard to this matter as a study item.

11. The response to our questions as related to conduct of operations was made available. Several areas were noted as being inadequately treated. The absence of a discussion on supervisory personnel with previous BWR operating experience was pointed out. JC does not intend to fill the position of Technical Engineer. It is JC's belief that the assistant technical engineers (2 of them) can perform the necessary functions and if required, authority would be delegated to higher levels of supervision.

12. (a) A rupture of the fuel pool liner would result in a leak rate of 300 gpm. This leak rate is limited by the 2" line connecting the fuel pool leak detection system to the equipment drain tank; consequently, the leak rate is insensitive to the break size of the fuel pool liner. This line (2") can be isolated. If it is isolated, the leakage would be reduced to seepage through porosities in the concrete and perhaps fine cracks that might be caused by a missile. The estimated seepage would be a few ($\sim$ 10) gpm.

(b) The applicant did not analyze the effect of damage to fuel elements caused by various missiles.

(c) The applicant stated that he would not incorporate special procedures to minimize the effect of missiles.

14. (a) The applicant intends to make a formal statement to the effect that no pipe whip could occur which would prevent automatic actuation of the engineered safety features. It was not clear that an analysis was performed to demonstrate that the foregoing criterion is satisfied.

(b) If a major rupture occurred in a recirculation line, it would cause a rupture in a neighboring recirculation loop. At most two loops would be ruptured.

(c) An analysis was made to demonstrate that pipe whip would not cause unacceptable damage to the reactor vessel support pedestal.

15. The expected leak rate from the primary system is about 5 gpm (2.5 gpm from recirculation pumps and 2.5 gpm from valves). The leak rate from a crack of "critical" size is estimated to be approximately 150 gpm. These calculations were believed to be correct to within $\pm$ 75 gpm. Methods to detect leakage within the reactor vessel support structure are still being evaluated.

Attachment:
List of Attendees

cc: P. A. Morris
F. Schroeder
S. Levine
D. Skovholt
Branch Chiefs, RL
D. C. Fischer
S. D. MacKay
R. Powell
H. Denton
CO (2)

ATTENDEES

Jersey Central

D. E. Hetrick
T. J. McCluskey
D. R. Rees
G. H. Ritter
G. F. Trowbridge
J. K. Pickard (Pickard & Lowe)

General Electric

W. L. Fiock
R. V. Poe
R. A. Huggins

Reactor Licensing

F. Schroeder
R. S. Boyd*
R. L. Tedesco
D. C. Fischer*
S. D. MacKay*
R. Powell*
V. Stello

Compliance

J. J. Rizzo

*Part Time