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A. Edward Scherer
Manager of
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November 10, 1998

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

**SUBJECT: Docket Nos. 50-361 and 50-362
Additional Information Regarding Amendment
Application Nos. 138 and 122
Use of NUREG-0800 Standard Review Plan Guidance in
Evaluating Tornado-Generated Missiles
San Onofre Nuclear Generating Station, Units 2 & 3**

- References: 1) Letter dated March 13, 1998, from J. L. Rainsberry (SCE) to Document Control Desk (NRC), Subject: Docket Nos. 50-361 and 50-362, Additional Information Regarding Amendment Application Nos. 138 and 122, Use of NUREG-0800 Standard Review Plan Guidance in Evaluating Tornado-Generated Missiles, San Onofre Nuclear Generating Station, Units 2 and 3
- 2) Letter dated November 14, 1997, from Dwight. E. Nunn (SCE) to Document Control Desk (NRC), Subject: Docket Nos. 50-361 and 50-362 Supplement 1 to Amendment Application Nos. 138 and 122, Use of NUREG-0800 Standard Review Plan Guidance in Evaluating Tornado-Generated Missiles, San Onofre Nuclear Generating Station Units 2 and 3.

This letter provides an update and a correction to information that was submitted (Reference 1) to support an NRC review of Supplement 1 to Amendment Applications 138 and 122 for the San Onofre Nuclear Generating Station, Units 2 and 3 (Reference 2). Supplement 1 to Amendment Applications 138 and 122 consisted of Proposed Change Number (PCN) 433, Supplement 1. PCN 433, Supplement 1 requests a change in methodology for evaluating tornado missile protection. Additional information was submitted in Reference 1 concerning the time required to perform operator actions following a Severe Weather Warning. 11
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Specifically, Reference 1 stated that actions to protect the station from the effects of a tornado could be completed within 4 hours following a Severe Weather Warning. These actions included two specific operator actions that were credited in the calculations to support approval of Reference 2: closure of Control Room Lobby Missile Doors and isolation of Condensate Transfer Piping.

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As stated in Reference 1, operator actions following receipt of a Severe Weather Warning were listed in San Onofre procedure S023-13-3, "Natural Disaster/Severe Weather," Attachment 4, "Severe Weather Preparations." Step 2.5, "Restore Important-to-Safety Systems to Service," required closure of the Control Room Lobby Missile Doors. Step 2.10 of Attachment 4, "Maximize Condensate Inventory," required isolation of the Condensate Transfer Piping. Reference 1 stated that the estimated amount of time to complete all steps of Attachment 4 of S023-13-3 was 4 hours.

On March 31, 1998, waterspouts were sighted off of the coast at San Onofre, which resulted in a Special Marine Advisory. The response to this event showed that while Steps 2.5 and 2.10 of Attachment 4 could have been performed within 4 hours, completion of all the actions in Attachment 4 would have taken longer than the estimated 4 hours.

Following the weather event on March 31, 1998, actions in response to Weather Events have been moved to a separate procedure, S023-13-8, "Severe Weather." In accordance with the new procedure, tornado preparations would now be initiated earlier. Previously, preparations were initiated on notification of a Tornado Warning; now, preparations are initiated at the lower threshold of notification of a Tornado Watch. Notification sources are also updated and expanded.

Some of the tornado preparations have been changed and their order in the procedure has been changed. However, the two specific operator actions credited in the proposed licensing basis have not been substantially changed. The enclosed Table 1 lists operator actions for Severe Weather as they were described in Attachment 4 to S023-13-3. The enclosed Table 2 provides the steps as described in the new S023-13-8, Attachment 1. A comparison of the steps from the old set of actions to the new set (Table 3) is also enclosed.

It should be noted that, due to personnel safety concerns, S023-13-8 contains a new precaution which states that tornado preparation steps will be completed "if possible before onset of the tornado." If, for example, a Tornado Watch was declared, Attachment 1 would be initiated. If a tornado was then sighted before all tornado preparation steps were completed, and this tornado was likely to pose a threat to personnel safety, the remaining steps would not be performed.

This procedure change was completed on June 25, 1998. It is estimated that the two tornado preparation steps necessary to support the conclusions of Reference 2 can be completed within 4 hours following notification of a Tornado Watch, assuming that there are no personnel safety concerns due to an imminent tornado.

Conclusion

Reference 2 states that the overall annual probability of damage to critical equipment due to tornado missiles is less than 1×10^{-7} per unit. This conclusion is based in part on performance of two operator actions, closure of Control Room Lobby Missile Doors and isolation of Condensate Transfer Piping.

By performing tornado preparations in accordance with the old Attachment 4 of S023-13-3, these two steps would have been completed within 4 hours of receipt of a Tornado Warning. Therefore, the conclusions of Reference 2 were valid. However, it is likely that more than 4 hours would have been required to complete all steps of Attachment 4 of S023-13-3.

Following the procedure revision to move severe weather preparations to a separate procedure, it is now estimated that the two tornado preparation actions required to support the conclusions of Reference 2 can be completed within 4 hours of receipt of a Tornado Watch, assuming that there are no personnel safety concerns due to an imminent tornado. Again, the conclusions of Reference 2 remain valid.

If you have any further questions on this subject, please call me.

Sincerely,



Enclosure

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3
J. W. Clifford, NRC Project Manager, San Onofre Units 2 and 3

Enclosure

Operator Actions Required in Preparation for
Severe Weather Events

Table 1

OPERATOR ACTIONS FOR SEVERE WEATHER
S023-13-3, Attachment 4

Receipt of Severe Weather Warning, Initiate S023-13-3, Attachment 4	
Step 2.1	Perform plant management notifications
Step 2.2	Plant shutdown determination
Step 2.3	Perform potential missile inspections
Step 2.4	Ensure adequate staffing
Step 2.5	Restore important-to-safety systems to service
Step 2.6	Isolate control room envelope
Step 2.7	Verify 220 Kv electrical distribution system status
Step 2.8	Verify the status of Class 1E distribution system
Step 2.9	Verify the status of non-1E distribution system
Step 2.10	Maximize condensate inventory
Step 2.11	Sumps and liquid waste
Step 2.12	Station blackout preparations
Step 2.13	Final missile inspection
	Preparations complete (Senior Reactor Operator/Operations Supervisor signoff on Att. 4)

Table 2

OPERATOR ACTIONS FOR SEVERE WEATHER
S023-13-8, Attachment 1

Initiate S023-13-8, Attachment 1	
Step 2.1	Severe Weather Verification
Step 2.2	Required Actions Determination
Step 2.3	Isolate Control Room Envelope
Step 2.4	Perform Plant Management Notifications
Step 2.5	Make PA Announcement
Step 2.6	Perform Severe Weather Barrier Inspection
Step 2.7	Maximize Unit 2 Condensate Inventory
Step 2.8	Maximize Unit 3 Condensate Inventory
Step 2.9	Perform Potential Missile Inspections
Step 2.10	Restore Important-to-Safety Systems/Components to Service
Step 2.11*	Evaluate Need for a Site Evacuation
Step 2.12*	Ensure Adequate Staffing
Step 2.13*	Verify 220 kV Electrical Distribution System Status
Step 2.14*	Verify Status of Class 1E Distribution System
Step 2.15*	Verify Status of Non-1E Distribution System
Step 2.16*	Minimize Liquid Radwaste
Step 2.17*	Station Blackout Preparations
Step 2.18	Post-Incident PA Announcement
Step 2.19	Post-Incident Plant Management Notifications

*Only required if tornado total wind speed is expected to exceed 157 mph.

Table 3

**Comparison of Severe Weather Actions
Before and After Procedure Change**

S023-13-3 Step No.	S023-13-3 Action	S023-13-8 Action
2.1	Perform plant management notifications	Moved to Step 2.4
2.2	Plant shutdown determination	Part of Step 2.2, Required Actions Determination
2.3	Perform potential missile inspections	Moved to Step 2.9; requirement to relocate parked vehicles outside the Protected Area has been deleted.
2.4	Ensure adequate staffing	Moved to Step 2.12
2.5	Restore important-to-safety systems to service	Moved to Step 2.10; closure of Control Room Lobby Missile Doors moved to Step 2.3, barrier inspections moved to Step 2.6
2.6	Isolate control room envelope	Moved to Step 2.3
2.7	Verify 220 Kv electrical distribution system status	Moved to Step 2.13
2.8	Verify the status of Class 1E distribution system	Moved to Step 2.14
2.9	Verify the status of non-1E distribution system	Moved to Step 2.15
2.10	Maximize condensate inventory	Moved to Steps 2.7 and 2.8
2.11	Sumps and liquid waste	Moved to Step 2.16; requirement to lower sump levels to Low-Low has been deleted
2.12	Station blackout preparations	Moved to Step 2.17
2.13	Final missile inspection	Deleted
n/a		Added Step 2.1, Severe Weather Verification
n/a		Added Step 2.5, Make PA Announcement
n/a		Added Step 2.11, Evaluate Need for a Site Evacuation
n/a		Added Step 2.18, Post-Incident PA Announcement
n/a		Added Step 2.19, Post-Incident Plant Management Notifications