August 29, 1989

TO: ALL LICENSEES HOLDING OPERATING LICENSES AND CONSTRUCTION PERMITS FOR NUCLEAR POWER REACTOR FACILITIES

SUBJECT: INITIATION OF THE INDIVIDUAL PLANT EXAMINATION FOR SEVERE ACCIDENT VULNERABILITIES-10 CFR 50.54(f) - GENERIC LETTER NO. 88-20, SUPPLEMENT NO. 1

This letter announces the availability of NUREG-1335, "Individual Plant Examination: Submittal Guidance," (enclosed) and initiation of the Individual Plant Examination (IPE) process. In accordance with Generic Letter No. 88-20, licensees are requested to submit within 60 days from the date of the Federal Register notice announcing the availability of the enclosed guidance document, their proposed programs for completing their IPEs. The proposed programs should be submitted to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, and should:

1. Identify the method and approach selected for performing the IPE,
2. Describe the method to be used, if it has not been previously submitted for staff review (the description may be referenced), and
3. Identify the milestones and schedules for performing the IPE and submitting the results to the NRC.

NUREG-1335 was published in draft form in January 1989 and issued for public comment. All comments received, including those made during the IPE Workshop on February 28 through March 2, 1989, and staff responses to them, may be found in Appendix C of NUREG-1335. Licensees may find it useful in preparing their initial responses to review two options discussed on the matters of internal flooding and submittal format in Appendix C, in response to comments 5.1 and 11.3 respectively.

In accordance with a recent Commission decision on staff recommendations for enhancements to BWR Mark I plants, the staff plans to communicate directly with each licensee who possesses a Mark I plant on the matter of a hardened vent path. A summary of the staff's conclusions and recommendations for other potential Mark I enhancements is given in the enclosure hereto, for consideration in each Mark I licensee's IPE. Additional information is contained in SECY 89-017, "Mark I Containment Performance Improvement Program," dated January 23, 1989. The staff expects to issue conclusions and recommendations for all other plants and containment types in about 6 months for similar consideration in IPEs.

Regulatory Basis

Generic Letter 88-20 was issued pursuant to 10 CFR 50.54(f). A copy of the 10 CFR 50.54(f) evaluation which justified issuance of Generic Letter 88-20

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is in the Public Document Room. This supplement does not change the scope of Generic Letter 88-20. Therefore, there is no additional burden associated with this letter, and an OMB clearance number is not required.

Sincerely,

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. NUREG-1335, "Individual Plant Examination: Submittal Guidance," August 1989
2. Mark I Containment Performance Improvements
3. List of Most Recently Issued Generic Letters

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Enclosure 2

Mark I Containment Performance Improvements

The NRC staff has identified certain containment performance improvements that would likely reduce the vulnerability of the Mark I containment to severe accident challenges (Ref. 1 and 2). The Commission expects that licensees of Mark I plants will seriously consider these improvements during their Individual Plant Examinations. It should be noted that these improvements should be considered in addition to improvements that stem from the evaluation and implementation of the hardened vent.

(a) Alternate Water Supply for Drywell Spray/Vessel Injection:

An important improvement would be to employ a backup or alternate supply of water and a pumping capability that is independent of normal and emergency AC power. By connecting this source to the low pressure residual heat removal system (RHR) system as well as to the existing drywell sprays, water could be delivered either into the reactor vessel or to the drywell, by use of an appropriate valving arrangement.

An alternate source of water injection into the reactor vessel would greatly reduce the likelihood of core melt due to station blackout or loss of long-term decay heat removal, as well as provide significant accident management capability.

Water for the drywell sprays would also provide significant mitigative capability to cool core debris, to cool the containment steel shell to delay or prevent its failure, and scrub airborne particulate fission products from the atmosphere.

A review of some BWR Mark I facilities indicates that most plants have one or more diesel driven pumps which could be used to provide an alternate water supply. The flow rate using this backup water system may be significantly less than the design flow rate for drywell sprays. The potential benefits of modifying the spray headers to assure a spray were compared to having water run out of the spray nozzles. Fission product removal in the small crowded volume in which the sprays would be effective was judged to be small compared with the benefit of having a water pool on top of the core debris.

(b) Enhanced Reactor Pressure Vessel (RPV) Depressurization System Reliability:

The Automatic Depressurization System (ADS) consists of relief valves which can be manually operated to depressurize the reactor coolant system. Actuation of the ADS valves requires DC power and pneumatic
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supply. In an extended station blackout after station batteries have been depleted, the ADS would not be available and the reactor would be re-pressurized. With enhanced RPV depressurization system reliability, depressurization of the reactor coolant system would have a greater degree of assurance. Together with a low pressure alternate source of water injection into the reactor vessel, the major benefit of enhanced RPV depressurization reliability would be to provide an additional source of core cooling which could significantly reduce the likelihood of high pressure severe accidents, such as from the short-term station blackout.

Another important benefit is in the area of accident mitigation. Reduced reactor pressure would greatly reduce the possibility of core debris being expelled under high pressure, given a core melt and failure of the reactor pressure vessel. Enhanced RPV depressurization system reliability would also delay containment failure and reduce the quantity and type of fission products ultimately released to the environment. In order to increase reliability of

the RPV depressurization system, assurance of electrical power beyond the requirements of existing regulations may be necessary. Performance of the cables needs to be reviewed for temperature capability during severe accidents as well as the capacity of the pneumatic supply.

(c) Emergency Procedures and Training:

NRC has recently reviewed and approved Revision 4 of the BWR Owners Group EPGs (General Electric Topical Report NEDO-31331, BWR Owner's Group "Emergency Procedure Guidelines, Revision 4," March 1987).

Revision 4 to the BWR Owners Group EPG is a significant improvement over earlier versions in that they continue to be based on symptoms, they have been simplified, and all open items from previous versions have been resolved. The BWR EPGs extend well beyond the design bases and include many actions appropriate for severe accident management.

The improvement to EPGs is only as good as the plant-specific EOP implementation and the training that operators receive on use of the improved procedures. The NRC staff encourages licensees to implement Revision 4 of the EPGs and recognize the need for proper implementation and training of operators.

1. E. Claiborne et al., "Cost Analysis for Potential BWR Mark I Containment Improvements," Science and Engineering Associates Inc., NUREG/CR-5278, SEA 87-253-07-A:1, January 1989.

2. Wagner, K. C. et al., "An Overview of BWR Mark I Containment Venting Implications, Addendum 1: An Evaluation of Potential Mark I Containment Improvements, NUREG/CR-5225 Addendum 1, July 1989.