POLICY ISSUE
(Information)

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For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: ISSUANCE OF THE STAFF'S EVALUATION REPORT ON THE SEABROOK INDIVIDUAL PLANT EXAMINATION SUBMITTAL

Purpose: To inform the Commission that the first staff report associated with an Individual Plant Examination (IPE) licensee submittal (Seabrook) has been issued, what the licensee's and staff's findings and conclusions are, and to briefly discuss the process and schedule for the remaining IPE reviews.

Background: The staff issued Supplement 1 to Generic Letter 88-20, "Initiation of the Individual Plant Examination for Severe Accident Vulnerabilities - 10 CFR 50.54," on August 29, 1989, requiring all holders of operating licenses and construction permits to submit an IPE report within approximately 3 years of that date. The purpose of the IPE was to identify plant-specific severe accident vulnerabilities using probabilistic risk analysis methodology. The Public Service Company of New Hampshire, the licensee for the Seabrook Station, submitted the results of the Seabrook IPE for internal events on March 1, 1991, in response to Generic Letter 88-20, Supplement 1. The staff established a review team, coordinated by the Office of Nuclear Regulatory Research, to conduct a Step 1 screening review (See Enclosure 2) to confirm that the intent of the generic letter had been met. While performing the Step 1 review, the staff determined that a more detailed Step 2 review was not warranted, since the licensee for Seabrook had performed a full-scope probabilistic safety analysis, which was most recently updated in 1990 and the staff had the benefit of this prior work during the Seabrook licensing effort.

NOTE: TO BE MADE PUBLICLY AVAILABLE IN 10 WORKING DAYS FROM THE DATE OF THIS PAPER

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The staff issued the evaluation report (ER) documenting its review of the Seabrook IPE for internal events on February 28, 1992. The Commissioners' Technical Assistants were included on the distribution list for this report. This is the first such report to be issued by the staff. The staff is currently reviewing seven other IPEs, and 50 more licensees are scheduled to submit their IPE reports in 1992 (See Enclosure 3).

Discussion: The mean value total core damage frequency estimated in the Seabrook IPE was 1.1E-4 per reactor year, with about 55 percent of the contribution resulting from internal events and about 45 percent from external events. The staff does not plan to validate the licensee core damage frequency estimates during its review of the IPE results but will be vigilant to recognize any unusual vulnerabilities and scenarios that dominate high core damage frequency estimates. The staff's view is that IPE's may be used by licensees to justify certain licensing actions such as Technical Specification revisions, license renewals and integrated safety assessments. However, use of an IPE for these purposes could require additional review of the licensee submittal on a case-by-case basis.

The Seabrook IPE did not identify unusual vulnerabilities associated with core damage or unusually poor containment performance. However, the licensee found, and will review, a number of potential procedural and administrative improvements following completion of its IPEEE (for external events) to determine if these should be made. The staff has concluded that the Seabrook IPE meets the intent of Generic Letter 88-20, Supplement 1. Enclosure 1 summarizes the Seabrook IPE results and conclusions.

The Step 1 and Step 2 IPE reviews (See Enclosure 2) are now being performed solely by personnel (and contractors as needed for Step 2) from the Office of Nuclear Regulatory Research. Enclosure 2 provides additional information on the staff's review process. The Commission will be kept informed of the issuance of future staff IPE reports in the semiannual

severe accident status reports to the Commission, issued in April and October each year. The Commissioners' Technical Assistants will be on distribution for all evaluation reports [illegible] from the IPE program.

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Enclosures:
1. Summary of Seabrook Submittal
2. Summary of IPE Review Process
3. IPE Submittal Schedule

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SUMMARY OF SEABROOK INDIVIDUAL PLANT EXAMINATION (IPE) SUBMITTAL ON INTERNAL EVENTS

The staff has completed its review of the Seabrook IPE, which was submitted in response to Generic Letter (GL) 88-20. The staff's review of the Seabrook IPE covered the internal event analysis in the IPE submittal, and related documentation including Seabrook Station Probabilistic Safety Assessment (SSPSA), and licensee's response to USI A-45 "Decay Heat Removal," internal flood assessment, and Containment Performance Improvement (CPI) program recommendations. No other generic safety issues were proposed for resolution in the IPE submittal. Since the staff's review is a limited effort to look for any obvious or significant omissions, or inconsistencies with known PRA practices, it is not intended to validate the numbers generated in the IPE.

The licensee's IPE submittal contained a summary description of the IPE program organization, composition of independent review teams, areas of licensee review, IPE findings and conclusions. In addition, the licensee provided responses to the staff's questions.

The SSPSA is a full-scope Level 3 PRA completed in 1983. Subsequently, three substantial updates were performed and completed in 1986, 1989, and 1990. For each update, the applicable plant documents, including design documents and change requests, were reviewed and the models were changed as necessary. This process has been proceduralized as part of the risk management process at Seabrook.

The IPE submittal states that the latest PRA update is current through July, 1990. Successive updates involved increasing levels of participation by utility staff. The licensee states that the 1990 update, which forms the basis for the IPE submittal, was conducted completely by utility personnel.

Walkdowns discussed in the IPE submittal included systems walkdowns for system familiarity, spatial interactions walkdowns - including consideration of fire, flood and seismic effects containment walkdowns, and containment bypass walkdowns. The IPE submittal states that during each walkdown, utility personnel from engineering and/or operations participated. The walkdowns constituted the process the licensee used to confirm that the IPE represented the as-built, as-operated plant. The licensee has plans to keep the SSPSA as a living document.

The licensee has not found any vulnerabilities associated with core damage or "unusually poor"* containment performance. However, a number of potential procedural and administrative improvements were identified and will be evaluated following completion of the IPE for external events (IPEEE) and the accident management evaluations.

* Reference - Generic Letter No. 88-20

The licensee's IPE results* are summarized below:

- Total Core Damage Frequency: 1.1E-4/year (mean value)
  55% of total is due to internal events

- Major Initiating Events and contribution to core melt frequency (internal and external events):

	Total	Internal	External
Transients	(83%)	(42%)	(41%)
- Loss of Station Power	(40%)	(16%)	(24%)
- Loss of Support Systems	(24%)	(7%)	(17%)
- General Transient	(19%)	(19%)	(0%)
Loss of Coolant Accidents	(8%)	(7%)	(1%)
Anticipated Transients Without Scram	(9%)	(6%)	(3%)

- Conditional containment failure probability given core damage

Late Containment Failure	(65.4%)
Intact Containment	(20.2%)
Early Small Containment Failure/Bypass	(14.2%)
Early Large Containment Failure/Bypass	(0.2%)

- Conditional containment failure mode contributions to early large containment failure/bypass (unusually poor containment performance)

Containment Isolation Failure	(58.7%)
Induced Steam Generator Tube Rupture	(26.8%)
Direct Containment Heating	(11.1%)

- Proposed modifications under consideration to reduce core damage frequency:

1. Independent, automatic seal injection pump
2. Independent, manual seal injection pump
3. Independent, manual charging pump
4. Alternate emergency AC power source (e.g., swing diesel)
5. Alternate offsite power source that bypasses switchyard
6. Alternate scram button to remove power from MG sets to control rod drives
7. DC power enhancement:
   - independent AC source for battery chargers
   - credit operator action to cross-tie batteries within each train
   - additional batteries

- Proposed modifications under consideration to reduce offsite release:

1. Administrative control to reduce time the purge valves are open
2. Procedure to direct depressurization of reactor coolant system
3. Alternate, independent emergency feedwater pump
4. Containment leakage monitoring
5. Residual heat removal isolation valve leakage monitoring system

(* All information is taken from the Seabrook IPE and has not been validated by the NRC staff. The external event portion of the licensee's IPE has not been reviewed by the staff.)

Based on the staff's review of the IPE submittal, the licensee's involvement in PRA activities, implementation of safety enhancements and continued employment of their PRA to enhance safety at Seabrook, the staff concluded that the licensee has met the intent of GL 88-20.

Enclosure 2

THE STAFF'S REVIEW PROCESS FOR INDIVIDUAL PLANT EXAMINATION REPORTS

The staff established a two-step review process in February 1990 to review the Individual Plant Examination (IPE) reports submitted to the NRC in response to Generic Letter 88-20, Supplement 1. Using this approach, the staff will perform a relatively short Step 1 review of each IPE submitted to (1) determine whether or not the licensee's IPE process met the intent of Generic Letter 88-20, and (2) store important IPE insights and findings in a database for future use. The staff will perform a more detailed Step 2 review on only selected IPE submittals. The IPEs selected for a Step 2 review are normally those for (1) plants with Step 1 review findings that appear inconsistent with the staff's Probabilistic Risk Assessment (PRA) experiences or expectations suggesting weaknesses in the applied methodology or the plant's operational characteristics, or (2) plants with unique characteristics that are not well understood.

The staff will perform a "scrutability check" on each IPE submittal from licensees that have a PRA and submitted it for NRC review. This check would include the formulation of written questions (or requests for additional information) to be sent to and answered by the licensee. The staff normally meets at least once with these licensees to discuss the responses to the questions, their approach to the IPE process, and any actual or potential outliers identified in the process. The Step 1 review, because it is short and does not delve into many details, is intended to determine whether or not the licensee's IPE process was capable of identifying significant core damage vulnerabilities. The staff will conduct the medium scope Step 2 review, when warranted, to examine the methodology, assumptions, and database used by the licensee and to reach a more substantive conclusion about the licensee's IPE process. A Step 2 review includes a site visit by the team to discuss the IPE with the licensee, review tier 2 documents, and conduct walkdown inspections as appropriate. In cases where licensees choose to use their IPE in support of proposed future actions or changes to their licensing basis (e.g., in connection with Technical Specification changes, integrated safety assessments, license renewal programs, etc.), the staff may find it necessary to reach beyond the depth of the Step 2 level of review. However, this is a case-by-case judgement that would need to be determined at the time such licensee proposals are made.

To date, the only plant selected for a Step 2 review has been the Turkey Point Station. The staff performed a more detailed review of Turkey Point because the licensee had not previously performed a PRA for the plant. In November 1991, five NRC personnel and three consultants conducted a site visit. The staff expects to complete the review of Turkey Point in April 1992.

The staff is also reviewing IPEs for Millstone 3, Oconee, FitzPatrick, Surry, McGuire, and Susquehanna and expects to receive a majority of the IPE submittals in FY 1992 (See Enclosure 3 projections).

IPE STATUS AS OF 2/14/92

IPE Submittals By Month