have committed to perform a seismic probabilistic risk assessment and have performed that assessment.

Description of Circumstances

In 1994, based on a re-elicitation of LLNL ground-motion and seismicity experts, the staff published revised seismic hazard results in NUREG-1488 (Reference 5). The new LLNL mean hazard estimates are lower than the 1989 LLNL results but higher than the EPRI estimates. The Nuclear Energy Institute (NEI), based on these revised hazard estimates, advocated that most focused-scope plants should instead perform reduced-scope studies as part of the seismic IPEEE (Reference 6). NEI also stated that each licensee is responsible for proposing the most costeffective program to satisfy the seismic IPEEE request consistent with the level of seismic hazard at the specific site. Seven licensees have already informed NRC of their intent to revise their IPEEE commitments.

These developments prompted NRC to revisit systematically the seismic IPEEE program rather than dealing with each licensee individually. The staff stated its intent, to review LLNL's revised seismic hazard estimates and to determine if it is appropriate to revise the seismic IPEEE scope, in Information Notice 94–32, "Revised Seismic Hazard Estimate," (Reference 7). The staff also stated in Reference 7 that licensees who have not completed the seismic portion of the IPEEE may continue with their program and submit their completed IPEEE based on References 1 and 2.

NRC contracted Energy Research, Inc. (ERI) to do the seismic revisit study to determine whether consideration of the new LLNL seismic hazard estimates (1) would significantly change the original binning results, and (2) warranted adjusting the seismic scope and guidelines of the seismic IPEEE review. The latter effort would also require a determination of how the scope should be modified and the technical justification for such modifications. ERI completed the study and submitted two reports in September 1994 (References 8 and 9). The staff held a public workshop on October 21 to discuss these reports, present a peer review group's comments, determine issues to be addressed, and solicit public input for developing the staff position on the seismic scope modification. The transcript of the workshop is available in Reference 10.

Discussion

The staff evaluated the ERI reassessment reports, the peer review group's comments, the NEI white paper

(Reference 6), and comments received at and after the workshop. The staff concludes that the scope of the seismic IPEEE can be modified for all focusedscope and full-scope plants, by eliminating the need to calculate the capacity of certain generally rugged components or certain site effects that would not be significant sources or contributors to seismic severe-accident risk or would not result in costbeneficial improvements. The justification for this reduction in the seismic review scope is that the perceived seismic hazard estimates and associated risks have decreased. However, the examination process for the modified seismic IPEEE remains the same process described in Supplement 4 to Generic Letter 88–20 and NUREG-1407. The most significant comments and concerns with respect to reducing the scope of the IPEEE seismic review which were raised at and after the workshop and the associated resolutions are summarized in Attachment 1.

However, certain utilities represented at the public workshop expressed concern that GL 88-20, Supplement 4, and guidance in NUREG-1407 could be interpreted as precluding the use of the expert judgement or the use of the most efficient approach to do the seismic portion of IPEEE. For instance, certain utilities interpreted NUREG-1407 to require a minimum number of margin capacity calculations (i.e., high confidence of low probability of failure). The NRC staff wants to reemphasize that the guidance in the generic letter or NUREG-1407 does not preclude the use of well-based expert judgement and efficient approaches to minimize the effort to do an IPEEE. In GL 88–20, the staff stated:

"The application of the above approaches involves considerable judgment with regards to the requested scope and depth of the study, level of analytical sophistication, and level of effort to be expended."

The detailed guidelines presented in NUREG–1407 do not preclude use of this type of judgment. The use of judgment is further recognized in NUREG–1407 in connection with the importance of the peer review. Discussions at the workshop indicated that some utilities did use such judgment, within the framework of the current guidance as discussed, to reduce the cost of an IPEEE.

Modified Scope of Seismic Examination

The methods originally described and guidelines described in NUREG–1407 fulfill Supplement 4 to GL 88–20. However, the results of the revised LLNL seismic estimates, indicate that the perceived seismic risk has been reduced for most plant sites in the central and eastern U.S. Accordingly, NRC proposed reducing the scope of the seismic IPEEE programs for licensees of the focused-scope and full-scope plants. The proposed scope change follows.

(1) Focused-Scope Plants

The seismic capacities for reactor internals and soil-related failures need not be evaluated for the seismic IPEEE (Attachment 1). Modifying the seismic IPEEE for focused-scope plants in this manner will make these evaluations equivalent to those for the reducedscope plants, with additional evaluations of a few known weaker, but critical, components or items.

(2) Full-Scope Plants

The seismic IPEEE need not include an evaluation of seismic capacities for reactor internals. Soil-related failures should still be evaluated, but only for safety-related supporting systems and equipment that are founded on soil such that their function might be affected by liquefaction or general instability of the soil. The licensee may also need to evaluate the potential for such postulated soil failures or the consequences resulting from them. Reference 11 contains guidance for such evaluations; a review of appropriate design and construction records is adequate.

The staff is aware of recent observations of cracks associated with reactor internals at some plants. The issue is not yet resolved and is being evaluated separately both as an operating issue (i.e., within design basis) (Ref. 12) and with respect to severe accident implications (i.e., beyond design basis) (Ref. 13), therefore, eliminating this item will not detract from the IPEEE. The remaining scope is the same as that outlined in Supplement 4 to GL 88-20 and NUREG-1407. The staff reviewed discussions at the workshop and other information and has taken the position that using appropriate judgment as allowed in the generic letter and NUREG-1407 and eliminating detailed evaluations for soilrelated failures and reactor internals that may not lead to cost beneficial improvements will maintain the integrity of the IPEEE process while reducing cost. However, a careful and thorough seismic walkdown remains the key element to examining seismic vulnerability regardless of the category assigned the plant.

Requested Information

Licensees of focused-scope and fullscope plants who voluntarily choose to