

July 26, 2001

APPLICANT: Southern Nuclear Operating Company, Inc.

SUBJECT: Edwin I. Hatch, Units 1 and 2, License Renewal Application-Meeting Summary

On June 6, 2001, representatives from Southern Nuclear Operating Company, Inc. (the applicant) met with the NRC staff to appeal four open items associated with the staff's review of the Plant Hatch license renewal application. Attachment 1 to this meeting summary provides a list of the meeting attendees. Attachment 2 contains meeting handouts.

The first open item involves the applicant's decision to include within the scope of license renewal the supports for all piping classified as "seismic II-over-I," but not the piping itself. The staff stated that non-safety-related piping systems are categorized as seismic II-over-I if their failure could have an adverse impact on the ability of safety-related structures, systems, and components (SSCs) to perform their safety functions and, on the basis of this definition, seismic II-over-I piping systems, including both the piping segments and their pipe supports, should be within the scope of license renewal.

The applicant stated that design features have been provided at Plant Hatch which protect safety-related SSCs from the hazards associated with seismic II-over-I pipe failures. These design features include, for example, safety related cabinets mounted on raised pads and equipped with seals and spray shields to preclude water intrusion, and seismic II-over-I pipe supports designed to prevent falling of the Category II piping system due to the Hatch Design Basis Earthquake. The only reason to include any other Category II piping in scope would be due to a double-ended failure of pipe segments between seismic supports that would allow the pipe segment to fall and potentially impact safety related equipment, which the applicant considers to be a hypothetical failure based on their CLB and plant and industry experience, as defined by the Statement of Considerations to 10 CFR Part 54.

The applicant, at several points during the meeting, restated that the item being appealed was the hypothetical falling of a section of pipe, not projectiles resulting from aging degradation. The applicant has asserted that those considerations were evaluated and appropriate mitigation devices brought in scope, such that the net result is that piping systems capable of producing projectiles that can adversely impact safety related components have already been brought in scope. Regarding the issue of pipes falling, the applicant stated that there is no operating experience of pipes, even heavily degraded pipes, falling due to a seismic event, and that the operating experience being cited by the NRC is not germane to the issue of pipes falling.

The staff disagrees with the applicant's assertion that safety-related SSCs have been adequately protected from the consequences of seismic II/I pipe failures at Plant Hatch. The staff pointed out that the applicant has not yet provided the details of the specific features provided in the design basis to mitigate the effects of Category II pipe failures which have been included within the scope of license renewal. The staff must clearly understand the extent to which failures of Category II piping have been included in the scope of the renewal review. The staff's specific concern is that seismic II-over-I piping systems would be subject to the same plausible aging effects as seismic Category I piping systems. Those aging effects, if not

properly managed, could result in aging-related failures, including falling of a section or piece of piping that may or may not be precipitated by a seismic event, and adversely impact the safety functions of seismic Category I SSCs. The staff concluded that there is sufficient operating experience, as described during the meeting, to believe that there may be credible failures of the Category II piping other than the hypothetical failure mode described by the applicant. Based on industry-wide operating experience, aging-related pipe failures ranged from significant wall thinning (to less than the minimum wall thickness required by the Code), to pipe leaks, cracks, and catastrophic pipe failures. These failures occurred in both large and small pipes.

The applicant, however, pointed out that the only issue being appealed was a requirement to assume that the not-in-scope seismic category II piping supported with seismic category I supports (which are in scope) fail. The applicant presented information in the meeting attesting to the hypothetical nature of such a consideration. The applicant was not appealing issues related to adequately demonstrating that other potential failure modes have been properly addressed in scoping.

The staff restated that, based on industry operating experience, pipe failure due to aging-related degradation is not hypothetical. If there exists a plausible aging effect and the aging effect is not properly managed by an aging management program, a piping system, though seismically supported, could still degrade and fail. The failure could occur during normal plant operation, as well as during a seismic event. The staff also pointed out that the current Plant Hatch CLB pipe break/crack analyses mainly postulated pipe failures at specific locations (e.g., at terminal ends and high stress points), while aging-related degradation relates to piping material, geometrical, configuration, and operating conditions such as water chemistry, temperature and pressure, and external environment. Further, the mitigative features for which the applicant wants to take credit as the basis for excluding seismic II/I piping from scope, assume pipe failures in locations based on the CLB pipe break/crack analyses. These locations may differ from the potential pipe failure locations due to aging-related degradation. Therefore, the staff disagrees that safety-related SSCs have been adequately protected from the consequences of seismic II/I pipe failures due to potential aging-related degradation. The staff indicated that seismic II/I piping systems, including piping segments and their supports, should be included within the scope of license renewal. For these seismic II/I piping systems, the applicant should perform an aging management review to determine if there is any plausible aging effect, and identify appropriate aging management programs.

The managers concluded that the staff position appears appropriate; the scope should include Category II pipe whose failure could prevent specified safety functions. The applicant stated that it agrees with this conclusion and again asserts that this is the criterion used in evaluating the subject piping during plant scoping.

The second open item involves issues related to small-bore piping. The staff stated that volumetric examinations of small-bore piping should be performed if (1) thermal fatigue can occur due to thermal stratification or turbulent penetration, or (2) the pipe locations inspected as part of the Boiling Water Reactor Vessel Internals Project (BWRVIP)-75 report are less susceptible to intergranular stress corrosion cracking (IGSCC) than small-bore stainless steel piping, or (3) hydrogen water chemistry, per BWRVIP-75, is not used. During the meeting, the applicant provided justification for why thermal fatigue due to thermal stratification or turbulent penetration is not a plausible aging mechanism. The staff will review the applicant's evaluation.

The applicant pointed out that issues 2 and 3 are not related to the open item, and thus, are not a proper subject for discussion in the context of closing the open item.

The third open item involves environmentally-assisted fatigue. The applicant stated that two generic EPRI studies demonstrate sufficient conservatism in the design transients to account for environmental effects, and that a specific evaluation of the six locations is not necessary. The staff stated that only one of the generic EPRI studies referenced by the applicant is applicable to a BWR/4 plant such as Hatch. The applicant responded that while only one of the generic studies was for a BWR, the other study provided a wealth of parametric data supporting the industry and applicant position that design transient severity overwhelmed actual transient severity, even when NRC environmental factors are imposed.

The staff stated that the remaining EPRI study addresses only one of the six locations (the feedwater nozzle), and the applicability of the EPRI study to Plant Hatch has not been proved. The applicant noted that all six locations, plus additional locations, are in the proposed fatigue monitoring program. The applicant also provided a comparison between actual fatigue usage, including environmental effects, and design transient calculations for the most limiting transient in a BWR. The applicant stated that this supported their contention. The staff considered the applicant's position and concluded that the applicant should either provide plant-specific thermal fatigue information for the six NUREG/CR-6260 locations, or provide additional information showing that the generic data bounds the six locations at Plant Hatch.

The fourth open item involves whether postulated pipe break location evaluations based on fatigue cumulative usage factor (CUF) should be considered a time-limited aging analysis (TLAA). During the meeting, the staff stated that pipe break location evaluations based on CUF are identified as a TLAA in the regulatory documents, including the statements of consideration accompanying the license renewal rule and the standard review plan for license renewal. In addition, the staff stated that the pipe break postulation meets the criteria in 10 CFR 54.3, which define a TLAA. The applicant contends that the criteria do not meet the time-limited or aging criteria for a TLAA. Thus, the applicant's position was that this 0.1 CUF pipe break criterion applies only to the initial screening of postulated break locations in order to select a bounding set of break locations for the initial design. The staff was not persuaded by the applicant's argument and requested that the applicant address break locations based on CUF using the methods described in 10 CFR 54.21(c)(1).

/RA/

William F. Burton, Senior Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Attachments: As stated

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JUNE 6, 2001

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MEETING WITH SOUTHERN NUCLEAR OPERATING COMPANY
TO RESOLVE OPEN ITEMS ASSOCIATED WITH THE PLANT HATCH
LICENSE RENEWAL REVIEW

June 6, 2001

ROOM O9-B4

-AGENDA-

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|------|----------------------------------|----------------|-------------------------------|
| I | Opening Remarks | C. Grimes | 11:00 a.m. - 11:05 a.m. |
| II | Treatment of Category 2 Piping | | |
| | A. Staff presentation | Staff | 11:05 a.m. - 11:20 a.m. |
| | B. SNC presentation | SNC | 11:20 a.m. - 11:35 a.m. |
| | C. Discussion | | 11:35 a.m. - 12:00 p.m. |
| | | -BREAK- | 12:00 p.m. - 3:30 p.m. |
| III | Small-Bore Piping | | |
| | A. Staff presentation | Staff | 3:30 p.m. - 3:45 p.m. |
| | SNC presentation | SNC | 3:45 p.m. - 4:00 p.m. |
| | B. Discussion | | 4:00 p.m. - 4:15 p.m. |
| IV | Environmentally-Assisted Fatigue | | |
| | A. Staff presentation | Staff | 4:15 p.m. - 4:30 p.m. |
| | B. SNC presentation | SNC | 4:30 p.m. - 4:45 p.m. |
| | C. Discussion | | 4:45 p.m. - 5:15 p.m. |
| V | Pipe Break Criteria as a TLAA | | |
| | A. Staff presentation | Staff | 5:15 p.m. - 5:30 p.m. |
| | B. SNC presentation | SNC | 5:30 p.m. - 5:45 p.m. |
| | C. Discussion | | 5:45 p.m. - 6:15 p.m. |
| VI | Closing Remarks | C. Grimes | 6:15 p.m. - 6:20 p.m. |
| VIII | Adjourn | | 6:20 p.m. |