NORTHEAST UTILITIES
THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06101
(203) 666-6911

July 30, 1982

Docket Nos. 50-213
50-245
A02644

Director of Nuclear Reactor Regulation
Attn: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: (1) D. M. Crutchfield letter to W. G. Counsil dated July 14, 1982.

Gentlemen:

Haddam Neck Plant
Millstone Nuclear Power Station, Unit No. 1
Comments on the Systematic Evaluation Program

To assist in the development of a proposed program for Phase III of the Systematic Evaluation Program (SEP), the Staff in Reference (1) requested selected Licensees of SEP Phase II plants to provide comments on the value of the program based on Phase II experience. In response to this request, Connecticut Yankee Atomic Power Company (CYAPCO), licensee for the Haddam Neck Plant, and Northeast Nuclear Energy Company (NNECO) are providing the following comments on the experience of these two plants during the SEP Phase II. Although Reference (1) did not specially invite CYAPCO to offer its observations, we are basing our comments on the experience gained at both facilities. Our comments which follow are structured into the following format:

I. Introduction and Background of the SEP
II. Has the SEP Satisfied Its Original Objectives
III. General Comments on the SEP
IV. Need for SEP Phase III.

I. Introduction and Background of the SEP

At the outset, it is emphasized that these observations are somewhat preliminary due to the fact that the most important step in the Phase II process, the Integrated Plant Safety Assessment, has not yet been completed on either plant. Thus the extent of any backfitting required and flexibility to integrate any required backfitting with other related issues has yet to be established. Since the two most important elements of the program revolve around exercising judgment in potential backfitting decisions and implementation of the term "integrated", our viewpoint is far from finalized. Nonetheless, our comments below do reflect our experience to date in these areas. We note also that the nature of the program, especially in the area of licensee participation, has changed

A035

significantly since its inception. Since the majority of the progress achieved to date has occurred since the "redirection" in the fall of 1981, our comments generally reflect our experience with this format.

Although the program was originally intended to be conducted by the NRC, with some level of input from licensees, it later evolved into a redirected program in which the licensees would provide initial assessments for individual topics. This redirection greatly increased the degree of licensee involvement. For a number of reasons, initial progress on the Phase II program was slow, however, there is a direct relationship between degree of licensee involvement and progress toward program completion. It is CYAPCO's and NNECO's opinion that this increased licensee involvement was the key factor in the substantial progress made toward completion since the redirection. It is also our opinion that since it is the licensee who is most familiar with a specific plant, this degree of licensee participation is an essential element of any future phase of SEP, if it is to be efficient and successful.

II. Has the SEP Satisfied Its Original Objectives

To address the specific objectives of the SEP, as stated in Reference (1), the following discussion is provided.

Objective 1

The program should establish documentation that shows how the criteria for each operating plant reviewed compared with current criteria on significant safety issues, and should provide a rationale for acceptable departures from these criteria.

Comments

For the most part, this objective has been satisfied. Most Safety Evaluation Reports (SERs) for individual topics clearly state the degree of compliance with current criteria, and specify where current criteria are not met. In some instances, however, one must consider numerous pieces of correspondence on a specific issue in order to reach an understanding on final resolution of that topic. It is CYAPCO's and NNECO's opinion that the final SER on each topic must incorporate not only all supporting documentation (e.g. - contractor reports), but should also specifically address licensee comments on the draft SER. In some instances, this information is not even included by reference. Since SERs occasionally provide rationale for the acceptability of deviations, it is important that all pertinent information be readily available to support those determinations.

Objective 2

The program should provide the capability to make integrated and balanced backfitting decisions with respect to any required backfitting.

Comments

The key to this objective is the word "integrated". Although it is too early in the program to determine if this objective will be met for Haddam Neck and Millstone Unit 1, from a review of the Integrated Plant Safety Assessment Reports on Palisades and Ginna, and our own experience to date, it appears as though the Staff has used commendable judgment in this respect. For example, the structural upgrade program for Ginna proposed by Rochester Gas and Electric is an excellent example of integration of a number of issues in order to most effectively utilize resources and minimize duplication. The concept of integration is one that is severely lacking in other regulatory requirements promulgated by the Commission.

There is one aspect of this objective, however, that warrants additional consideration. In order to make a balanced decision on backfitting, it must be recognized that some Standard Review Plan criteria are overly restrictive when applied to older plants. Since the Standard Review Plan is a document intended for use by the Staff to evaluate new plants, and has never been subject to public comment, it must be recognized that, while it is feasible to design and construct a new plant to meet SRP criteria, there are some areas in which SRP criteria are not practical nor feasible for backfitting on an existing facility. For example, current criteria for predicting certain natural phenomena, such as floods, cannot be backfitted to existing plants without major resource expenditures. However, the Staff has, to date, been reluctant to accept a lower level of protection from this specific event than would be required by current criteria. To be more specific, protecting Haddam Neck to the effects of the Probable Maximum Flood would require extraordinary expenditures, if it could be done at all. Expenditures of tens of millions of dollars are hardly justified for protection against effects of an event which has, by definition, a probability of occurrence of essentially zero. It should be noted that this item is the exception to the rule; Staff judgment on other issues has, for the most part, satisfied this objective. In our future interactions with the Staff, we intend to ensure that deviations from current criteria are evaluated against two standards for backfitting decisions. To qualify for backfitting, such deviations will be evaluated against both standards. These are:

- The change is necessary to keep plant operation within an acceptable level of overall plant safety.

- The proposed backfit is a sufficiently significant improvement in plant safety such that it is justified from a cost-benefit or value-impact perspective.

Objective 3

The program should be structured for early identification and resolution of any significant deficiencies.

Comments

Experience on a number of SEP issues which have resulted in plant modifications is indication that this objective has been met, although the rationale for requiring immediate action on some issues is open to debate. Early on in the program, a number of issues such as seismic anchorage and environmental qualification were deemed significant enough to warrant near-term action. In these instances, licensees were denied the opportunity to integrate required fixes with other issues. More recently, the Staff has exercised its judgment in determining safety significance rather than focusing on deterministic criteria and shown considerable restraint on recently identified issues. An example of this is the handling of tornado missile protection at both Haddam Neck and Millstone 1. By affording CYAPCO and NNECO additional opportunity to comment on this issue and demonstrate compensating measures of which the Staff had not previously been made aware, interim resolution of this issue was reached in a manner superior to the way in which some earlier issues were handled. These examples stress the importance of:

- Making judgments based upon authentic nuclear safety considerations, and not just the Standard Review Plan criteria.
- Considering plant-unique features which can dramatically affect safety significance.
- Providing licensees an opportunity to utilize its knowledge of the plant and its resources in implementing the concept of integration.

Objective 4

The program should assess the safety adequacy of the design and operation of currently licensed nuclear power plants.

Comments

At this time, it is somewhat premature to comment on whether this objective will be met. CYAPCO's and NNECO's preliminary impression is that this objective may be only partially satisfied. The SEP only addresses the adequacy of design and operation for those issues which were selected for review. In order to assess the safety of currently licensed power plants, it would be necessary for the Staff to extrapolate the results of the SEP review to address overall safety, on the basis that all issues of safety significance are included in the SEP review. At this time, it appears as though the Staff will not make this judgment. Thus, the SEP will not assess overall plant safety but only address safety in relation to those issues specifically reviewed. Recognizing that the 137 topics were selected some four years ago and that our collective knowledge of nuclear safety has improved considerably during this period, this result is not surprising.

The goal of assessing the safety of currently licensed plants will be greatly facilitated by the availability of SEP results. Combining the SEP results with results from other regulatory actions such as the TMI Action Plan and IREP would provide the basis for licensees and the NRC to confirm overall plant safety.

Objective 5

The program should effectively use available resources and minimize requirements for additional resources by NRC or industry.

Comments

It is CYAPCO's and NNECO's opinion that Phase II of the SEP has not made efficient use of licensee and NRC resources, thus this objective has not been met. For example, the duration of the program is indicative of the effort devoted to it over the past four to five years. The Phase II program was originally intended to last three years; it now appears that several plants will not be completed until five years after the program's inception. There are several reasons for this, some of which were beyond the control of the Commission. The accident at Three Mile Island caused a delay of approximately a year. Also, every original member of the SEP Branch subsequently left the Branch, resulting in additional inconsistencies and impediments to program progress. These factors all contributed to the need to revise the program through the "redirection". There are a number of additional illustrations which support our conclusion that the program has not made efficient use of resources, such as:

- CYAPCO or NNECO would provide answers to questions from an NRC reviewer, only to have the reviewer and/or review branch change mid-stream. The second reviewer then starts over with what he or she considers to be the "real" questions.

- At the request of NRC, NNECO arranged a second site visit, identical to one conducted six weeks earlier, in order to resolve open issues from the first visit. The issues were considered resolved after the second visit, however, when the SER was issued, these items remained open with no acknowledgement of the second site visit.

- At the request of NRC, CYAPCO arranged a second site visit at Haddam Neck to review flood protection already being fabricated and installed. Subsequent to this visit, several areas where mutual agreement had been reached became open issues.

- On September 22, 1981, NNECO received a telecopied request for information from an NRC consultant consisting of five typed pages of questions of considerable detail. It was requested that NNECO respond promptly since the contract for this work expired on September 30, 1981. The SER on this topic was issued on February 1, 1982.

- As part of the Section XV Design Basis Events review, NNECO provided calculations of radiological consequences for a number of events. The NRC ignored these analyses and recalculated doses using grossly conservative and, in fact, physically impossible assumptions. As a result, the NRC concluded that tighter Technical Specification limits were required, when there was actually no safety concern.

- On several occasions, CYAPCO and NNECO were characterized in docketed correspondence as being uncooperative or non-responsive on the SEP when, in fact, our overall commitments had been either met or exceeded in a timely manner. We refer to our letters of July 29, 1981 and January 5, 1982 for additional details.

- In discussions with the Staff, we indicated that developing positions on differences for Integrated Assessment would require approximately 6 months, in order that the concept of "integration" could be best utilized. The Staff stated that schedules would allow only about 3 months; however, NNECO was required to begin the Integrated Assessment on Millstone 1 before several topic SERs had even been received.

- At the start of the SEP, the Staff indicated that licensees were to be shielded from other regulatory actions or backfits for the duration of the program so that these requirements could be effectively integrated with SEP results. Experience has shown this not to be the case.

CYAPCO and NNECO have expended significant resources on the SEP. Current manpower loading, including consultants, is approximately 14 professional individuals full-time. To date, CYAPCO and NNECO have expended approximately $3.5 million on SEP for in-house manpower and consulting costs. Costs for backfits already implemented have exceeded $2 million. It is important to note, however, that this does not include costs associated with any modifications which will be required as a result of Integrated Assessment. It is expected that total costs, after modifications are completed, will exceed $10 million. At this time, since details on required modifications have not been finalized, it is difficult to quantify the expected increase in overall safety that will result from SEP. Therefore, we cannot yet determine whether the total program costs are justified.

II. General Comments on the SEP

It is interesting to note that the older plants in SEP Phase II compare quite favorably to current criteria for most issues. These plants are generally of lower power levels and are located in low population areas, resulting in greater safety margins. Based on the results from these older plants, the Staff could significantly reduce the number of safety issues to be included in any subsequent phases of SEP without any impact on plant safety. For example, the Design Basis Events reviews have generally shown older codes to be overly conservative.

The use of Probabilistic Risk Assessment in the Integrated Assessment phase of the SEP has been useful in determining relative risk of certain issues. While it is difficult to exactly quantify the decrease in risk associated with implementation of any proposed backfits, the PRA is extremely useful in determining relative risk. Millstone 1, for example, was a participant in the Interim Reliability Evaluation Program (IREP).

The IREP produced a great deal of system reliability information, including dominant failure modes, which is directly applicable to certain SEP issues. This information will be direct input in making decisions on the need for backfitting. While PRA should not be the sole consideration in backfit determinations, it is a valuable input to the process for any future phase of the SEP.

One of the most significant benefits from the SEP has been the concept of the "Integrated Assessment". This process enables both the Staff and licensee to evaluate a list of differences from current criteria in order to differentiate those items which are important to safety from those which are essentially meaningless in terms of relative risk. This allows resources to be directed to addressing those issues which have a direct effect on public health and safety. The ability of the NRC Staff to distinguish deviations from current criteria which are essentially meaningless from a safety perspective from those which are relevant is, in our view, generally superior to that of other Branches of the agency responsible for making such judgements.

Another benefit from the Integrated Assessment process is that issues often require the Staff reviewer to visit the site to view the licensees alternate means for achieving a desired goal. This gives the reviewer a first-hand look at the plant to see that certain plant-specific considerations can make it unnecessary to meet deterministic criteria in order to achieve the same level of safety. This is one aspect of the process which is lacking in other regulatory interactions.

IV. Need for SEP Phase III

The need for future phases of the SEP is questionable. While there are some issues which are of safety significance, experience in Phase II has shown that even the oldest plants compare well to current criteria. Considering just the plants currently being reviewed in Phase II, it is readily seen that the newest of the Phase II plants stand up even better to current criteria. This is not surprising in that the newer plants were required to meet more current licensing criteria at the time of construction than were the older plants. The number of issues which would need to be reviewed on a specific plant decreases as newer plants are selected. Since the net gain in safety resulting from the reviews of the Phase II plants may not justify the resources expended, it is necessary that any future phases of the SEP be limited to those issues which could have a real impact on plant safety.

With respect to the positive aspects of the program described previously, we note that their applicability need not be limited to SEP applications. Phase III of SEP need not be initiated in order to apply the lessons learned from their process.

Should the Staff continue the SEP reviews on other plants, it is recommended that the list of issues to be examined be reduced to the twenty-odd issues which directly relate to safety and which were shown in Phase II to be the most significant of the original list of 137 issues. Additionally, in order to make the most efficient use of resources, the Licensees should draft initial topic assessments, as was done during the Phase II "redirection", which the Staff would then review and evaluate in terms of backfitting. However, in this respect, the Staff should publish format and content guidance for the preparation of these assessments so as to ensure that the issue can be resolved with minimal back-and-forth dialogue between the NRC and Licensees.

Finally, the concept of an "integrated" assessment must be retained. It is impossible at this time to definitely state whether or not there is a need to continue the SEP beyond Phase II. Should the program continue, it is imperative that the number of issues be reduced to include only those which were shown to be problem areas for most Phase II plants and, most importantly, those which have a clear and significant impact on plant safety. Our experience has shown that the external phenomena are the issues which warrant the most consideration for older facilities. Consideration of these above factors in planning for a continuation of the SEP beyond Phase II may well result in a program which is more efficient, less time consuming, and more in line with the original objectives of the program. However, as any extension of the program proceeds, it will be necessary to reevaluate the merits of continuing to review newer plants to determine whether or not it is beneficial to the health and safety of the public.

CYAPCO and NNECO appreciate the opportunity to provide these comments and observations on the SEP program. We hope that through this type of interaction, the Staff will be better able to utilize both its own and licensee resources to achieve our common goal of safe nuclear plant operation.

Very truly yours,

CONNNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil

W. G. Counsil
Senior Vice President

cc: R. C. Haynes