



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

November 9, 1982

Honorable Nunzio J. Palladino
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON THE NRC SYSTEMATIC EVALUATION PROGRAM REVIEW OF THE
OYSTER CREEK NUCLEAR GENERATING STATION

During its 271st meeting, November 4-5, 1982, the ACRS reviewed the results of the Systematic Evaluation Program (SEP), Phase II, as it has been applied to the Oyster Creek Nuclear Generating Station. These matters were discussed also during a Subcommittee meeting in Washington, D.C. on October 26, 1982. During our review, we had the benefit of discussions with representatives of the General Public Utilities Nuclear Corporation, the Jersey Central Power & Light Company (Licensee), and the NRC Staff. We also had the benefit of the documents listed below.

This is our third review of the application of Phase II of the SEP. We reported to you on our reviews of the Palisades and R. E. Ginna plants in letters dated May 11, 1982 and August 18, 1982, respectively. The first report included comments also on the objectives of the SEP and the extent to which they have been achieved. Our review of the SEP in relation to the Oyster Creek plant has led to no changes in our previous findings regarding the program as reported in our letter on the Palisades plant.

The remainder of this letter relates specifically to the SEP review of the Oyster Creek plant.

Although the Oyster Creek plant is the first boiling water reactor (BWR) to be reviewed under the SEP, the findings by the NRC Staff regarding the number and nature of topics for which the plant did not meet current criteria were not markedly different from those for the Palisades and Ginna plants. A large number of these topics related to the adequacy of the design to resist extreme external phenomena (flooding, tornado, earthquake), and most of the remaining topics related to balance-of-plant items, or items of a generic nature not specific to BWRs.

Of the 137 topics to be addressed by the SEP, 30 were not applicable to the Oyster Creek plant, and 24 were deleted because they were being reviewed generically under either the Unresolved Safety Issues (USI) program or the TMI Action Plan. Of the 83 topics addressed in the Oyster Creek review, 38

were found to meet current NRC criteria, and 5 were found to be acceptable on another defined basis. We have reviewed the assessments and conclusions of the NRC Staff relating to these topics and have found them appropriate.

For all or parts of the remaining 38 SEP topics, the Oyster Creek plant was found not to meet current criteria. These topics were addressed by the Integrated Plant Safety Assessment, and various resolutions have been proposed.

The Integrated Assessment has not yet been completed for all or parts of 13 topics, for which the Licensee has agreed to provide the results of studies, analyses, and evaluations needed by the NRC Staff for its assessments and decisions. All of these topics are of such a nature that hardware backfits may be required by the NRC Staff for their resolution. The Staff's assessments will be provided in a supplemental report that will be available for review in connection with the application for a full-term operating license (FTOL) for the Oyster Creek plant.

For all or parts of 10 topics included in the Integrated Assessment, the NRC Staff concluded that no backfit is required. We concur.

For the remaining topics for which the assessment has been completed, the NRC Staff requires the addition or modification of structures or equipment in about half of the cases, and the development or modification of procedures or Technical Specifications in the other half. The Licensee does not agree with the NRC Staff's requirements for three of the hardware backfits, two of which relate to leakage detection systems, and for five of the required procedural backfits, all of which relate to the Technical Specifications. Our comments on these areas of disagreement are given below.

In connection with Topic III-4.A, Tornado Missiles, the NRC Staff's concern is that all of the components that could be used for shutdown heat removal could be disabled by multiple missiles transported by a single tornado. The NRC Staff requirement is that at least one system capable of shutdown heat removal should be protected against tornado missiles. The Licensee believes that the total loss of shutdown heat removal capability as a result of multiple missile strikes is of such low probability that no protection is needed. We agree that this is a very low probability event, but we do not believe that the probability has been quantified with any significant degree of certainty. Further, we recognize the importance of having at least one shutdown heat removal system available following a tornado, or other extreme environmental event. We recommend therefore that one such system be protected against tornado missiles (and other possible effects of high winds, such as sandstorms) unless the cost of such protection clearly outweighs the reduction in risk.

For Topic III-5.B, Pipe Break Outside Containment, the NRC Staff requires an automatic local leakage detection system for the isolation condenser piping,

which is lagged and is outside of containment. The system should be capable of detecting leaks from stable cracks before they grow to be too large. The detectable leak rate is based on an analysis of tight cracks whose length is two to four times the wall thickness. The Licensee contends that the leak rate corresponding to such a crack will be large enough that it can be detected by visual inspection. If they can show this to the NRC Staff's satisfaction, we feel such an approach is simple and reliable. If they cannot, an automatic leak detection system would be a more delicate but acceptable approach.

Topic V-5, Reactor Coolant Pressure Boundary Leakage Detection, relates to the requirement for a reliable system to detect leakage inside the containment with a sensitivity adequate to provide early warning so that timely actions can be taken to preclude a pipe break. The Licensee believes that the existing system, utilizing the containment sump, is satisfactory. We believe that this matter should be resolved in a manner satisfactory to the NRC Staff.

In connection with Topics V-5, VI-7.A.3 and VI-10.A, the NRC Staff requires that certain limiting conditions of operation, and surveillance or test requirements, be added to the Technical Specifications for the Oyster Creek plant. We concur.

Topics XV-16 and XV-18 relate to the calculated radiological consequences for certain design basis accidents; thyroid doses calculated in accordance with current criteria are considerably in excess of the siting criteria. To correct this situation, the NRC Staff requires that the iodine concentration in the reactor coolant be limited by appropriate changes to the Technical Specifications. We believe that this proposal is acceptable.

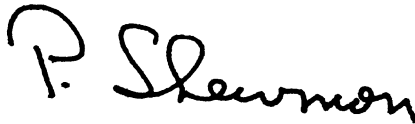
As was the case for the Palisades and Ginna plants, a plant-specific probabilistic risk assessment (PRA) was not available for the Oyster Creek plant. Because a plant-specific PRA was not available, the NRC Staff utilized in its Integrated Assessment the results of the Millstone Unit 1 PRA developed as part of the Interim Reliability Evaluation Program (IREP), suitably modified and interpreted to reflect the differences between the two plants. The PRA study for Oyster Creek addressed 20 of the topics included in the Integrated Assessment, a somewhat greater number than for either Palisades or Ginna. However, because the Millstone IREP did not include extreme external events, topics relating to design criteria for such events could not benefit from the use of PRA in the Integrated Assessment.

Our conclusions regarding the Oyster Creek SEP review are similar to those for the Palisades and Ginna plants:

1. The SEP has been carried out in such a manner that the stated objectives have been achieved for the most part for the Oyster Creek plant and should be achieved for the remaining plants in Phase II of the Program.

2. The actions taken thus far by the NRC Staff in its SEP assessment of the Oyster Creek plant are acceptable.
3. The ACRS will defer its review of the FTOL for the Oyster Creek Nuclear Generating Station until the NRC Staff has completed its actions on the remaining SEP topics and the USI and TMI Action Plan items.

Sincerely,

A handwritten signature in black ink that reads "P. Shewmon". The signature is written in a cursive style with a large, looped "P" and a clear "Shewmon".

P. Shewmon
Chairman

References:

1. U. S. Nuclear Regulatory Commission Draft Report, "Integrated Plant Safety Assessment, Systematic Evaluation Program, Oyster Creek Nuclear Generating Station," NUREG-0822, September 1982.
2. NRC Staff consultants' reviews of the Oyster Creek Integrated Plant Safety Assessment Report consisting of consultant reports from H. S. Isbin, Z. Zudans, J. M. Hendrie, and S. H. Bush, dated October 22, October 25, October 21, and October 20, 1982, respectively.
3. U.S. Nuclear Regulatory Commission Safety Evaluation Reports, Oyster Creek Systematic Evaluation Program Topics, Volumes 1 through 3, dated October 1982.