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

December 20, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: SUMMARY REPORT - THREE HUNDRED SIXTY EIGHTH MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, DECEMBER 6-8, 1990

During its 368th meeting, December 6-8, 1990, the Advisory Committee on Reactor Safeguards discussed several matters and completed the reports noted below. In addition, the Committee authorized Mr. Fraley to transmit the memoranda identified below.

REPORTS TO THE COMMISSION

- SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52" (Report to Chairman Carr, dated December 10, 1990.)

- Full-Term Operating License for the Dresden Nuclear Power Station, Unit 2 (Report to Chairman Carr, dated December 11, 1990.)

- Full-Term Operating License for the Palisades Nuclear Plant (Report to Chairman Carr, dated December 11, 1990.)

- Westinghouse's Application for Preliminary Design approval for the RESAR SP/90 Design (Report to Chairman Carr, dated December 12, 1990.)

MEMORANDA

- Press Announcement - ACRS Vacancy (Memorandum for John Kopeck, Office of Governmental and Public Affairs, from Mabel F. Lee, ACRS, dated December 11, 1990.)

  The Committee agreed to a revised version of the proposed press release to note a special interest in members have direct experience in construction, operation, and testing of nuclear power plants.

  A revised press release has been sent to the Office of Governmental and Public Affairs for publication in the news

media as well as in selected scientific and engineering magazines.

- Prescheduled ACRS Meetings with the Commissioners (Memorandum for Samuel J. Chilk, Secretary of the Commission, from R. F. Fraley, ACRS, dated December 14, 1990.)

  Mr. Fraley has informed Mr. Chilk that the Committee members have agreed to the following dates for prescheduled ACRS meetings with the Commissioners during CY 1991:

ACRS Meeting	Dates
370th	February 7 or 8, 1991
374th	June 6 or 7, 1991
378th	October 10 or 11, 1991

  Mr. Fraley requested that SECY confirm that these proposed dates are acceptable to the Commissioners.

HIGHLIGHTS OF CERTAIN MATTERS CONSIDERED BY THE COMMITTEE

- Level of Design Detail for Certification of Standardized Plant Designs

  The Committee heard presentations by and held discussions with representatives of the NRC staff and of the Nuclear Management and Resources Council (NUMARC) regarding SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52."

  The staff briefed the Committee with regard to:

  - Graded approach for defining the level of design detail required, and the proposed tiered approach.
  - Content of the application for design certification.
  - Flexibility for making changes to the technical information in the application following design certification.

  The staff stated that it plans to develop a regulatory guide (or guides), subject to Commission approval, to provide guidance to the applicants on this matter.

  Representatives of NUMARC expressed their initial reaction regarding several proposed staff positions in SECY-90-377 and expressed their belief that SECY-90-377 should not be approved as written. Further discussion with NUMARC representatives is planned when they have established a final position and specific recommendations regarding this matter.

The Committee provided a report to the Commission, including several comments and recommendations on this matter.

- Full-Term Operating License for Dresden Nuclear Power Station, Unit 2

The Committee heard presentations by and held discussions with representatives of the NRC staff and of the Commonwealth Edison Company (licensee) regarding the conversion of the Provisional Operating License (POL) for the Dresden Nuclear Power Station, Unit 2, to a Full-Term Operating License (FTOL).

The Committee was briefed on the improvements made to this plant and also on the status of implementation of the Systematic Evaluation Program (SEP) issues, TMI Action Plan items, and the Unresolved Safety Issues (USIs).

The Committee provided a report to the Commission, recommending issuance of an FTOL to Dresden, Unit 2.

- Full-Term Operating License for the Palisades Nuclear Plant

The Committee heard presentations by and held discussions with representatives of the NRC staff and of the Consumers Power Company (licensee) regarding the conversion of the POL for the Palisades Nuclear Plant to an FTOL.

The Committee was briefed on the improvements made to this plant and also on the status of implementation of the SEP issues, USIs, and TMI Action Plan items.

The Committee provided a report to the Commission, recommending issuance of an FTOL to the Palisades Nuclear Plant.

- Rethinking High-Level Radioactive Waste Disposal

Dr. Frank Parker, Professor, Department of Civil and Environmental Engineering, Vanderbilt University, and Chairman of the Board on Radioactive Waste Management, National Research Council, briefed the Committee regarding the findings and recommendations included in the report entitled, "Rethinking High-Level Radioactive Waste Disposal."

This was an information briefing - the Committee took no action.

- Nuclear Power Plant Operating Events

Representatives of the NRC staff briefed the Committee regarding the following nuclear plant operating events:

- Hydrogen gas buildup in the Charging System at Sequoyah, Units 1 and 2, August 22, 1990.

- Main Steam Isolation Valve closure at full power at Brunswick, Unit 2, August 14, 1990.

- Loss of offsite power at Brunswick, Unit 2, June 17, 1989.

- Feedwater System malfunction and the RCIC failure at Pilgrim, September 2, 1990.

This was an information briefing - the Committee took no action.

- New Standard Technical Specifications

Representatives of the NRC staff and of NUMARC briefed the Committee with regard to the program related to the development of new Standard Technical Specifications (STS). This program is a joint effort involving the NRC staff, NUMARC, and NSSS Owners Groups. The improvements in the new STS include:

- Focusing on operational safety.

- Streamlining of limiting conditions for operations and surveillance requirements.

- Achieving high degree of consistency within each and among all STS.

- Promoting better understanding of technical specifications.

- Allowing more efficient use of NRC and industry resources.

This was an information briefing - the Committee took no action.

- Severe Accident Scaling Methodology

The Committee heard presentations by and held discussions with representatives of the NRC research staff concerning:

- Description of the Severe Accident Scaling Methodology (SASM).

- Application of SASM to the direct containment heating (DCH) experiments.

- Application of SASM to the Severe Accident Research Program.

This methodology was developed by a Technical Program Group, consisting of representatives from industry, universities, consulting firms, and national laboratories.

This was an information briefing - the Committee took no action.

- Election of ACRS Officers for CY 1991

The Committee members elected the following Officers for CY 1991:

ACRS Chairman	- David A. Ward
ACRS Vice Chairman	- Paul G. Shewmon
Member-at-Large of the Planning and Procedures Subcommittee	- James C. Carroll

- Meeting with Japanese Representatives - (Hitachi, Toshiba, Tokyo Electric, MITTI, and Japanese Advisory Committee)

The Committee members considered the possibility and effectiveness of holding a meeting with Japanese representatives in the U.S. to discuss issues related to ABWRs and Advanced PWRs. Based on this discussion, they concluded that holding a meeting in Japan and limiting the discussions to ABWR issues would result in more effective discussions and exchange of technical information. In addition, the members decided it would be more effective to send a Subgroup of the Committee to meet with Japanese representatives to concentrate on issues related to ABWRs. This meeting is tentatively scheduled to be held in Japan during the end of CY 1991 or early part of CY 1992.

- Adopted Plants Activity

Dr. Lewis reported briefly on his successful visit to San Onofre Nuclear Plant, Units 1, 2, and 3 on November 16, 1990. He was accompanied by ACRS members Dr. Catton and Mr. Carroll. The licensee briefed the members regarding various aspects of plant operations. Also, the members toured various parts of Units 1, 2, and 3.

- Regulatory Impact Survey and Proposed Corrective Actions

With regard to a requirement in the November 6, 1990 Staff Requirements Memorandum related to SECY-90-347 that "The ACRS should review the survey results and proposed corrective

actions and provide comments to the Commission," the Committee agreed with a proposal by Dr. Lewis, Chairman of the Regulatory Policies and Practices Subcommittee, that the ACRS review this matter after the public comments on the proposed corrective actions have been received and addressed by the staff.

SUBCOMMITTEE MEETINGS

Since the last summary report of ACRS activities, the following Subcommittee meetings have been held:

- Improved Light Water Reactors, December 4, 1990

  The Subcommittee discussed SECY-90-377, "Requirements for Design Certification Under 10 CFR Part 52."

- Joint Containment Systems and Structural Engineering, December 5, 1990

  The Subcommittees discussed containment design criteria for future plants.

- FTOL Conversions, December 5, 1990

  The Subcommittee discussed the FTOL conversion for the Palisades Nuclear Power Plant.

- Thermal Hydraulic Phenomena, December 12, 1990

  The Subcommittee discussed the status of the NRC staff's program on Interfacing Systems Loss of Coolant Accident (ISLOCA).

ADOPTED PLANTS ACTIVITY

ACRS members H. W. Lewis, J. Carroll, and I. Catton visited the San Onofre Nuclear Plant, Units 1, 2, and 3 on November 16, 1990.

FUTURE ACTIVITIES

The Committee agreed to consider the following items during the 369th, January 10-12, 1991, ACRS meeting:

- Reactor Operating Experience - Briefing and discussion regarding lessons learned from nuclear power plant operating experience, including an event that occurred at Quad Cities Unit 2, on October 27, 1990, when the reactor scrammed automatically on "high-high" intermediate flux during the performance of a special test (turbine torsional resonance test).

- ACRS Bylaws - Discuss proposed revisions to the ACRS Bylaws.
- Final Rulemaking 10 CFR Part 55, Fitness for Duty Requirements for Licensed Operators - Review and report on the NRC staff's proposed final version of the Rule related to fitness for duty requirements for licensed operators.
- Proposed Resolution of Generic Safety Issue-29, Bolting Degradation or Failures in Nuclear Power Plants - Review and report on the NRC staff's proposed resolution of Generic Safety Issue-29, "Bolting Degradation or Failures in Nuclear Power Plants."
- Annual ACRS Report to the Congress on the NRC Safety Research Program - Discuss the proposed annual ACRS report to the Congress on the NRC Safety Research Program and budget.
- Containment Design Criteria - Discuss the proposed ACRS report to NRC on containment design criteria for future nuclear plants.
- Meeting with the Director of the Office of Nuclear Regulatory Research - Discuss matters of mutual interest with the Director of the Office of Nuclear Regulatory Research. Portions of this session will include discussion of potential elimination or curtailment of specific elements of the NRC research program.
- ACRS Subcommittee Activities - Hear and discuss report of assigned ACRS subcommittee activities, as appropriate.
- Revised 10 CFR Part 20 Rule (SECY-90-387) - Briefing by the NRC staff on the proposed final version of 10 CFR Part 20, Standards for Protection Against Radiation.
- Licensing and Radiation Safety Requirements for Large Irradiators - Briefing by the NRC staff regarding radiation safety and licensing requirements for the use of licensed radioactive materials in large irradiators.
- ACRS Management/Administration - Discuss anticipated subcommittee activities, items proposed for consideration by the full Committee, and qualifications of candidates for appointment to the Committee.
- Miscellaneous - Discuss matters that were not completed during previous meetings as time and availability of information permit.
- 10 CFR Part 52, Standardization of Nuclear Power Plants - The Committee has set aside time to hear and discuss the recommendations of NUMARC regarding SECY-90-377.

Sincerely,

Carlyle Michelson

Carlyle Michelson
Chairman

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

December 10, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: SECY-90-377, "REQUIREMENTS FOR DESIGN CERTIFICATION UNDER 10 CFR PART 52"

During the 368th meeting of the Advisory Committee on Reactor Safeguards, December 6-8, 1990, we reviewed the Commission Policy Issue Paper SECY-90-377 related to the requirements for design certification under 10 CFR Part 52. Our Subcommittee on Improved Light Water Reactors also reviewed this matter during a meeting on December 4, 1990. During these reviews, we had the benefit of discussions with representatives of the NRC staff and of NUMARC. We also had the benefit of the document referenced.

We commend the staff for its accomplishment in producing SECY-90-377 on a complex subject and in a relatively short time. In general, we concur with the staff's approach to design certification. We agree that the scope and level of detail should be similar to that required for a final safety analysis report (FSAR) at the operating license (OL) stage for a recently licensed plant (1985-90), without site-specific and as-built information. We concur with the graded approach of defining the level of design required, and the tiered approach proposed. However, we do not agree that the vast amount of information and level of detail that is proposed to be included with the application is needed for a safety determination. Therefore, we recommend that SECY-90-377 not be implemented as presently written.

SECY-90-377 appears to be driven by requirements for both standardization and safety. We recommend that the staff focus the scope on that needed for its safety determinations. In this regard, we propose that Tier 1 and Tier 2 information be limited to that required for the safety determination.

In general, we agree with the flexibility for making changes to the technical information. However, we believe that greater flexibility should be permitted for making changes to Tier 2 information following design certification. This flexibility would allow the necessary design refinements that are inevitable. We note that in

SECY-90-377 the staff proposes to provide for a process similar to that of 10 CFR 50.59 for making changes to Tier 2 information between Combined Operating License (COL) issuance and operation. We recommend that the same change process be permitted for the period beginning after design certification.

We recommend that the Commission instruct the staff to proceed with preparation of the proposed regulatory guide. The focus of the regulatory guide should be on that information required for the staff's safety determination.

We recommend that the Commission instruct the staff to update the Standard Review Plan so that it can support design certification reviews.

Sincerely,

Carlyle Michelson

Carlyle Michelson
Chairman

Reference:
SECY-90-377 dated November 8, 1990 from James M. Taylor, Executive Director for Operations, to NRC Commissioners, Subject: "Requirements for Design Certification Under 10 CFR Part 52"

UNITED STATES
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WASHINGTON, D. C. 20555

December 11, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: FULL-TERM OPERATING LICENSE FOR THE DRESDEN NUCLEAR POWER STATION, UNIT 2

During the 368th meeting of the Advisory Committee on Reactor Safeguards, December 6-8, 1990, we completed our review of the application by the Commonwealth Edison Company (licensee) for conversion of the provisional operating license (POL) for the Dresden Nuclear Power Station, Unit 2, to a full-term operating license (FTOL). During our review, we had the benefit of discussions with representatives of the licensee and the NRC staff. We also had the benefit of the documents referenced. The Committee most recently discussed and reported on this plant in a letter dated December 13, 1982, relating to the Systematic Evaluation Program (SEP) review of Dresden, Unit 2.

Dresden, Unit 2, received a POL in December 1969 and began commercial operation in July 1970. The licensee applied for an FTOL in November 1972, but review of this application was deferred by the NRC staff in 1975, along with several other FTOL reviews. In 1978, Dresden, Unit 2, was included in Phase II of the SEP because much of the review needed for the FTOL was similar in scope to that for the SEP. We call attention to the fact that Dresden, Unit 3, was given an FTOL in January 1971, after a rule change had eliminated the POL as an option. Units 2 and 3 are essentially identical.

The Committee, in its December 13, 1982 letter reporting on the results of the SEP as applied to Dresden, Unit 2, indicated that its review of the FTOL would be deferred until the NRC staff had completed its actions on the SEP issues that were still pending, and on the Unresolved Safety Issues (USIs) and TMI Action Plan items. All but three of the SEP issues were resolved to the satisfaction of the NRC staff in the manner reported in Supplement 1 to the Integrated Plant Safety Assessment Report for Dresden, Unit 2. The status of these three issues and of the USI and TMI Action Plan items has been discussed by the staff in its Safety Evaluation Report related to the FTOL for Dresden, Unit 2. We believe that the procedures and schedules that have been agreed to

for the resolution of these items are satisfactory, and that the remaining actions to resolve these items would not be accelerated by withholding an FTOL.

We believe that there is reasonable assurance that the Dresden Nuclear Power Station, Unit 2, can continue to be operated at power levels up to 2527 MWt under a full-term operating license without undue risk to the health and safety of the public.

Sincerely,

Carlyle Michelson

Carlyle Michelson
Chairman

References:

1. U. S. Nuclear Regulatory Commission, NUREG-1403, "Safety Evaluation Report Related to the Full-Term Operating License for Dresden Nuclear Power Station, Unit 2," dated October 1990
2. U. S. Nuclear Regulatory Commission, NUREG-0823, Supplement No. 1, "Integrated Plant Safety Assessment, Systematic Evaluation Program, Dresden Nuclear Power Station, Unit 2, dated Octoner 1989

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December 11, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: FULL-TERM OPERATING LICENSE FOR THE PALISADES NUCLEAR PLANT

During the 368th meeting of the Advisory Committee on Reactor Safeguards, December 6-8, 1990, we completed our review of the application by the Consumers Power Company (licensee) for conversion of the provisional operating license (POL) for the Palisades Nuclear Plant to a full-term operating license (FTOL). Our Subcommittee on FTOL Conversions also discussed this matter during a meeting on December 5, 1990. During our review, we had the benefit of discussions with representatives of the licensee and the NRC staff. We also had the benefit of the documents referenced. The Committee most recently discussed and reported on this plant in a letter dated May 11, 1982, relating to the Systematic Evaluation Program (SEP) review of Palisades.

The Palisades Nuclear Plant received a POL in December 1969 and began commercial operation in March 1971. The licensee applied for an FTOL in January 1974, but review of this application was deferred by the NRC staff in 1975, along with several other FTOL reviews. In 1978, Palisades was included in Phase II of the SEP because much of the review needed for the FTOL was similar in scope to that for the SEP.

The Committee, in its May 11, 1982 letter reporting on the results of the SEP as applied to Palisades, indicated that its review of the FTOL would be deferred until the NRC staff had completed its actions on the SEP issues that were still pending, and on the Unresolved Safety Issues (USIs) and TMI Action Plan items. All but three of the SEP issues were resolved to the satisfaction of the NRC staff, as reported in Supplement 1 to the Integrated Plant Safety Assessment Report for Palisades. The status of these three issues and of the USIs and TMI Action Plan items has been discussed by the staff in its Safety Evaluation Report related to the FTOL for Palisades. We believe that the procedures and schedules that

have been agreed to for the resolution of these items are satisfactory, and that the remaining actions to resolve these items would not be accelerated by withholding an FTOL at this time.

We believe that there is reasonable assurance that the Palisades Nuclear Plant can continue to be operated at power levels up to 2530 MWt under a full-term operating license without undue risk to the health and safety of the public.

Sincerely,

Carlyle Michelson

Carlyle Michelson
Chairman

References:

1. U.S. Nuclear Regulatory Commission, NUREG-1424, "Safety Evaluation Report Related to the Full-Term Operating License for Palisades Nuclear Plant," dated November 1990
2. U.S. Nuclear Regulatory Commission, NUREG-0820, "Integrated Plant Safety Assessment, Systematic Evaluation Program - Palisades," dated October 1982

UNITED STATES
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December 12, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: WESTINGHOUSE'S APPLICATION FOR PRELIMINARY DESIGN APPROVAL FOR THE RESAR SP/90 DESIGN

During the 367th meeting of the Advisory Committee on Reactor Safeguards, November 8-10, 1990, we completed our review of Westinghouse's application for Preliminary Design Approval (PDA) for the Westinghouse Reference Safety Analysis Report (RESAR SP/90) nuclear power block (NPB). We heard presentations from the NRC staff and the applicant concerning the staff's draft Safety Evaluation Report (SER) (NUREG-1413) for this PDA during our meeting. Representatives of the staff and of the Office of the General Counsel (OGC) discussed the related draft PDA document. Our Subcommittee on the Advanced Pressurized Water Reactors has held a series of meetings with the staff and representatives of the applicant regarding this matter over the past two and a half years. We also had the benefit of the documents referenced.

1.0 Scope and History of RESAR SP/90 Application

The RESAR SP/90 is an evolutionary (as contrasted with passive) Advanced Light-Water Reactor (ALWR) design for a single-unit NPB, rated at a reactor power of 3800 MWt. Although many basic design decisions were made by Westinghouse prior to completion of the EPRI ALWR Utility Requirements Document, the design of this four-loop pressurized water reactor generally conforms to the EPRI requirements for such designs.

RESAR SP/90 NPB contains preliminary design information for the portion of the design that encompasses NPB buildings, structures, systems, and components. Specifically excluded from the scope are the turbine building, the waste disposal building, the service building, the administration building, the service water/cooling water structure, and the ultimate heat sink. These features will be the design responsibility of an applicant proposing to build a facility referencing the RESAR SP/90 design. Interface information addressing the pertinent safety-related design requirements necessary to ensure the compatibility of the referenced system with

the plant-specific portion of the facility has been included in the RESAR SP/90 application.

On October 24, 1983, Westinghouse submitted an application for a PDA for RESAR SP/90 NPB design in accordance with 10 CFR Part 50, Appendix O, "Standardization of Design: Staff Review of Standard Designs," which was the then existing regulatory basis for this type of application. The application was docketed on November 30, 1983 (Docket No. 50-601). The RESAR SP/90 application describing the design of the NPB was submitted in modular form during the period from October 23, 1983 to March 9, 1987. In addition, the information in RESAR SP/90 has been supplemented by 47 amendments to these modules.

2.0 Regulatory Background

Before the promulgation of 10 CFR Part 52 in May of 1989, the review of RESAR SP/90 had been performed by the staff pursuant to Appendix O to 10 CFR Part 50, using a procedure similar to that used for custom plant reviews for which guidance to staff reviewers is provided in the Standard Review Plan. This evaluation was analogous to a construction permit (CP) licensing review for a specific facility and conducted with the intent that, following satisfactory completion of the reviews performed by the staff and the ACRS, a PDA could be issued by the staff. The promulgation of 10 CFR Part 52 resulted in the transfer of Appendix O to 10 CFR Part 52; hence a PDA can now be issued for this application pursuant to 10 CFR Part 52. A PDA is optional for a Final Design Approval (FDA) and/or Design Certification under the provisions of 10 CFR Part 52.

3.0 The Staff's SER and the PDA

The SER and PDA represent the first stage of the staff's review of the design, construction, and operation of the RESAR SP/90 design. During our meetings, we learned that there is no prospective CP applicant nor does Westinghouse intend to apply for an FDA and/or Design Certification of the RESAR SP/90 design until there is a proven interest on the part of a domestic or foreign utility. The staff's SER summarizes the results of the staff's radiological safety review of the RESAR SP/90 NPB design and delineates the scope of the technical details considered in evaluating the proposed design. This review took place over the period of October 1983 to October 1989 (the date on which the staff decided to close its review). Environmental aspects were not considered in the staff review of RESAR SP/90, but would be addressed in a utility's plant-specific application.

3.1 Comments on the Staff's SER

There are 170 open items that will require resolution during the review of a plant-specific application for an Operating License (OL). Most of these appear to be the kind of open issues expected at this stage of the design. Of the 170 open items, 17 are site specific, 110 involve information in the scope of an OL or FDA and/or Design Certification application, and 43 had not been resolved by the staff when it closed its review in October 1989. (Westinghouse submittals on many of these 43 open items, including its proposed resolution of Generic Safety Issues, Unresolved Safety Issues, post-TMI regulatory requirements, and outstanding PRA issues are yet to be reviewed by the staff.) In view of these open items and our concerns regarding the SER and the many unresolved severe accident issues, we indicated to the staff that its conclusions on page 25-1 of the draft SER were stated too strongly. The staff agreed to revise this language.

The Committee is not of one mind regarding the issuance of a PDA for the RESAR SP/90. On the one hand, there is merit to the argument that Westinghouse's application for the RESAR SP/90 PDA was made in good faith in 1983 under a different set of regulations and that it is now appropriate to document the reviews that have taken place to date and issue the PDA for potential future use as a reference design for an individual plant CP application or as the starting point for an FDA and/or Design Certification application. Both Westinghouse and the staff advocate this approach; neither believes that it can devote further resources to this effort.

On the other hand, we view the RESAR SP/90 SER as a mixed bag of staff evaluations that were performed over the seven-year period since the application was filed. Some are current and well done; others are poorly done and/or were performed years ago and do not meet the standards that we believe should be applied to a current SER. A major contributor to this problem appears to be the staff's reliance on the July 1981 Standard Review Plan (SRP) (NUREG-0800) in performing this review. This SRP needs updating to reflect the current situation for the licensing of ALWRs.

Some examples of our concerns with the staff's SER are:

3.1.1 SER Chapter 7, Instrumentation and Controls, references a staff review that was performed in 1979 for the Westinghouse RESAR 414 design. The staff concluded that the computer based integrated reactor protection system design for RESAR SP/90 is acceptable for a PDA on the basis of the "similarity" of the RESAR 414 design to that proposed for RESAR SP/90. It is our view that the staff should have developed improved standards for the review of such systems during this 11-year period. We are

particularly concerned about the verification and validation of the software employed with computer based reactor protection systems. It appears that there is a need to augment existing staff resources with expertise in the computer science area so that appropriate standards can be developed for the review of computer based reactor protection systems. Al of the proposed evolutionary and passive ALWRs employ such systems.

3.1.2 For materials used in the fabrication of pressure boundary components, Westinghouse has committed to follow applicable codes, standards, and regulatory guides. Many of these are not representative of current industry practice for such materials. We learned that Westinghouse has developed internal specifications for pressure boundary materials that presumably do reflect current industry practice. These were not submitted for the staff's review.

3.1.3 The proposed design employs water displacer control rods and associated control rod drive mechanisms, which is a new feature for Westinghouse plants. The SER describes the function of and strategy for use of these control rods. The SER, however, does not discuss the pressure boundary integrity of these new control rod drive mechanisms or the potential for reactivity insertion accidents that could result from misoperation of these control rods. Although Westinghouse submitted information on these subjects, the staff has not completed its review of this information. In general, we believe that new features of this kind should be thoroughly reviewed at an early stage of review.

3.1.4 Our review, which represents only a sampling effort, revealed a number of factual errors and inconsistencies in the SER; the staff has agreed to correct these errors. We believe that a review of the draft SER by Westinghouse, which has not yet had access to this predecisional document, would reveal additional errors that should be corrected. We recommend that this be done.

3.2 Comments on the PDA Document

The PDA states that the preliminary design information contained in RESAR SP/90 "complies with the requirements of 10 CFR Part 52, Appendix O . . . and is acceptable for incorporation by reference in applications for individual construction permits . . . ." The PDA does not describe how this preliminary design information would be used in a future FDA and/or Design Certification application.

We were told by OGC that this results from the fact that Westinghouse has not made an application under 10 CFR Part 52.

Given the quality of the SER for this PDA, we are concerned with the language of the PDA that requires the staff and ACRS to utilize and rely on the "approved preliminary design" in their reviews of any individual facility construction permit application " . . . unless significant information which substantially affects the determination set forth in this PDA, or other good cause, is present." OGC advised us that this requirement would apply only to the staff and ACRS reviews of a CP application and that both entities would be able to revisit any issue in their review of any type of application that would lead to an OL. This is satisfactory to us but could present problems for the staff in dealing with a contested CP application.

4.0 Comments on the SP/90 Design

We have two concerns regarding SP/90 design features:

4.1 Our review of the NPB layout indicates that Westinghouse has provided many desirable features from the standpoint of separation of equipment trains for protection against fires and industrial sabotage. However, we are concerned about the location of the emergency diesel generators (EDGs) on the same floor and corridor from the control room. We believe that another location for the EDG room should be specified in view of the potential for fire and/or explosions associated with the operation of large diesel generators.

4.2 The proposed RESAR SP/90 design employs a spherical containment. To deal with core/concrete interaction, the layout of the containment employs a cavity floor area beneath the reactor vessel that is based on the EPRI requirement of 0.02 m^2 per MWt. If a larger area is required, major changes to the containment sizing and layout may be needed. Timely development of a Commission position on this issue is important not only to this design but also to the design of all of the ALWRs.

5.0 ACRS Recommendations on the Issuance of a PDA

We believe, subject to the above comments, that the proposed design of the RESAR SP/90 NPB can be successfully completed and used in an application for an individual plant CP. Accordingly, we recommend that a PDA be issued for the proposed Westinghouse RESAR SP/90 NPB.

6.0 Concluding Remarks

Finally, we wish to commend the Westinghouse Electric Corporation, the Japanese APWR program participants, the EPRI ALWR Utility Steering Committee, and the EPRI staff for the effort they have expended in the development of this evolutionary design. The RESAR SP/90 design represents an important step forward in providing improved LWR designs that incorporate many of the lessons related to safety, performance, and reliability that have been learned by the nuclear power industry over the past 30 years.

Sincerely,

Carlyle Michelson

Carlyle Michelson
Chairman

References:

1. U.S. Nuclear Regulatory Commission, Draft NUREG-1413, "Safety Evaluation Report Related to the Preliminary Design of the Standard Nuclear Steam Supply Reference System, RESAR SP/90" (Predecisional)
2. Draft Westinghouse Electric Corporation, Docket No. 50-601, Reference Safety Analysis Report (RESAR SP/90 Nuclear Power Block Standard Design), Preliminary Design Approval (PDA) (Predecisional) (Discussed during the November 8-10, 1990 ACRS full Committee meeting)
3. Letter NS-EPR-2675 dated November 1, 1982 from E. P. Rahe, Jr., Westinghouse Electric Corporation, to F. Miraglia, U.S. Nuclear Regulatory Commission, Subject: Westinghouse Advanced Pressurized Water Reactor Licensing Control Document