



**NUCLEAR MANAGEMENT AND RESOURCES COUNCIL**

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August 31, 1990

Mr. Samuel J. Chilk, Secretary  
Office of the Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

**ATTENTION:** Docketing and Service Branch

**SUBJECT:** SECY 90-241, Level of Detail Required for Design  
Certification under Part 52; Response to Commission  
Request for Comments.

Dear Mr. Chilk:

On July 16, 1990, NUMARC briefed the Commission on the issue of level of design detail required to support design certifications and on associated issues involved in implementing Part 52. A Commission briefing on these matters by the NRC Staff, with SECY 90-241 as the focus, followed on July 18. In the course of those briefings, the Commission asked specific questions and requested follow-up information. Subsequent to the briefings the Commission made available SECY 90-241 for the purpose of receiving public comments prior to further Commission guidance to the Staff. This letter and its enclosure are the nuclear power industry's comments on the issues raised in the two briefings and in SECY 90-241.

NUMARC is the organization of the nuclear power industry that is responsible for coordinating the combined efforts of all utilities licensed by the NRC to construct or operate nuclear power plants, and of other nuclear industry organizations, in all matters involving generic regulatory issues affecting the nuclear power industry. Every utility responsible for constructing or operating a commercial nuclear power plant in the United States is a member of NUMARC. In addition, NUMARC's members include major architect-engineering firms and all of the major nuclear steam supply system vendors.

NUMARC and its member organizations are committed to pursuing nuclear power plant standardization. The industry welcomed the Commission's Part 52 initiative and it will continue to give full support to the NRC's standardization and licensing reform efforts. Practical implementation of Part 52

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standardization and licensing reform is essential if additional nuclear power plants are to be built in the United States. If effectively implemented, industry believes that Part 52 can contribute substantially to restoring the confidence of utilities, the financial community and the nation at large in the future of nuclear power. Timely implementation of Part 52 is, however, essential if industry is to achieve its objective to have the next generation of nuclear power plants on line by the turn of the century.

The consistent view of the nuclear power industry has been that Part 52, in its current form, can be implemented in a manner which assures not only protection of the public health and safety, but also meaningful nuclear power plant design standardization. The industry believes that its proposed two-tier approach and its position on level of design detail are faithful to the letter and spirit of Part 52, while providing a sound basis for practical implementation of the new regulations. The practical implementation will provide for a safety determination for resolving all safety matters before the approval of a design certification. The site specific portions of a Combined License (COL) application will be resolved during the licensing process. Thus, the resultant plant configuration and design will take full advantage of the safety benefits of standardization as anticipated in Part 52.

After the recent dialogue with the NRC Staff and the ACRS, and based on discussions at the two Commission meetings and the contents of SECY 90-241, we believe that four basic points, developed more fully in the Enclosure, warrant particular emphasis:

1. The Commission should adopt what has come to be called the two-tier approach. Industry believes that a two-tier structure for design certification rules and for referencing combined licenses is a necessary consequence of the provisions of Part 52. The industry's expression of this approach faithfully implements Part 52, the Commission explanations in the accompanying Statements of Consideration and the regulatory context within which Part 52 was developed. Moreover, the two-tier structure with a flexibility provision for the second tier is the only viable approach that has been suggested.

Industry believes that the Section 50.59 flexibility provision for second-tier design changes -- which Part 52 currently prescribes -- can be implemented in the form which NUMARC presented at the July 16 briefing without erosion of legitimate standardization objectives. Part 52 has built-in disincentives to changes from Tier 2 and the design

certification rule itself can only be changed by rulemaking amendment.

The Commission has expressed a concern that additional assurances might need to be provided to maintain standardization during the life of the certification as well as the life of the plants built under that certification. NUMARC maintains that the main driving force for standardization in other countries, notably France and Canada, is economics. NUMARC agrees with the Commission that a product of standardization is a general improvement in the facilitation of reliability and hence, an overall improvement in the safety climate for nuclear power plants will be attained through standardization. Other factors, such as construction schedules, general economics and the need to reduce Operation and Maintenance (O&M) costs will result in the adoption of standardization practices, which will address the concerns over the need for additional controls to ensure the maintenance of standardization and the prevention of the gradual erosion of safety benefits from standardization. In addition, in recent years there has been an increased interest by the state commissions during the rate assessments associated with the financial aspects of nuclear power plants, which becomes an added incentive to sustain the standardization working practices and designs during the life of the plant. If additional assurances are still deemed necessary, it is more appropriate for the industry to develop the additional philosophies, practices and procedures, since the maintenance of standardization is predominantly an economic issue with safety implications. It is also vital that the controls can be applied in a manner that will accommodate the practical needs of construction and operation of nuclear facilities.

NUMARC is committed to developing methodologies and guidelines to assure that the benefits of standardization are not eroded during the life of the certification or the life of the plant. These processes will include change control mechanisms which will build on established and proven practices. NUMARC intends to keep the NRC fully apprised of the progress on this issue and is interested in maintaining a positive and open dialogue that will provide the additional assurances that the industry is addressing the concerns of the Commission over standardization as well as meeting its commitment to implementing the intent of Part 52.

2. A major objective of Part 52 is to identify and resolve issues as early as possible in the regulatory process precluding the re-review and re-litigation of issues that have been resolved in a design certification rulemaking. Issue finality is a key implementation feature of Part 52. Such issue finality is not only sound regulatory policy, it is essential for industry commitment of the enormous technical and financial resources necessary to develop, obtain certification of and implement standardized nuclear power plant designs.
  
3. Industry believes that design certification applications should contain, at a minimum, a level of design detail for safety systems and components at what the Staff has characterized in SECY 90-241 as being equivalent to the Standard Review Plan; i.e. Final FSAR, less as-procured, as-built and site-specific details. To ensure standardization is maintained at a level commensurate with the aims and intent of Part 52 the industry accepts that the amount of information provided at the design certification stage will be significantly greater than that provided under the current system (Part 50) at the construction permit application. The level of detail will be that which is required for the NRC Staff to make safety determinations. The level of detail will vary from system to system, dependent on the safety significance, with the level of detail ranging from Level 3, as depicted in SECY 90-241 to something in excess of Level 2. In general, the greater the safety significance the greater is the level of detail. This approach is not only consistent with existing regulatory practices, but also assures the attainment and maintenance of standardization safety benefits.
  
4. With regard to proprietary information, industry believes that the process utilized for Part 50 licensing proceedings, and adopted in Part 52, is adequate to protect proprietary information in design certification proceedings. Industry further believes that, under a properly constituted two-tier structure, the information submitted will be sufficient to enable the NRC to make the necessary safety determinations without compromising proprietary information contained in an application for a design certification.

For the reasons summarized above and explained more fully in

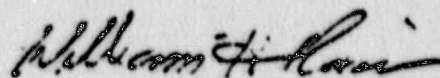
the enclosure, NUMARC respectfully requests that the Commission provide early guidance to the Staff stating:

1. Endorsement of the two-tier approach described in the industry presentations and summarized in the enclosure and including the provisions assuring issue finality for matters considered and resolved at the design certification stage.
2. Acknowledgement of the need for a flexibility mechanism in Tier 2 during the implementation of Part 52 that accommodates both NRC standardization interests and the practical implementation considerations associated with the design, construction and operation of new nuclear power plants over the life of the design certification and the life of the plant referencing that certification.
3. Issuance of general policy guidance on the level of design detail required for design certification in accordance with the concepts and process described in the Enclosure.

The industry reiterates the statements made during the recent discussions and presentations in regard to approval dates for the design certifications. These are, 1991/92 for the Evolutionary plants and 1994/95 for the Passive plants. Until design certifications are obtained, the financial risk to any prospective owner or finance group will be too great to make a commitment for purchase of a plant. NUMARC will send a separate letter to the Commission on the subject of costs, estimates on the percentage of design work completed at various stages of the Part 52 process and suggestions as to possible improvements to the existing review process that will assist in the attainment of the industry's schedules.

NUMARC will continue to work with the Commission and the Staff to resolve issues involved in the implementation of Part 52. The industry appreciates the opportunity to comment on these matters, which are of vital importance to the future of commercial nuclear power and to the energy future of the country.

Sincerely,



William H. Rasin  
Director, Technical Division

## ENCLOSURE

### DETAILED INDUSTRY COMMENTS ON ISSUES RAISED IN JULY 16 & 18, 1990 COMMISSION MEETINGS AND SECY-90-241

#### 1. The Two-Tier Structure

##### A. Basis and General Description.

NUMARC's two-tier structure for a design certification rule, and for a referencing combined license, is a faithful as well as practical implementation of Part 52. Moreover, the two-tier structure constitutes the best format to document the results of a design certification rulemaking. There must be a well-documented exposition of "those matters resolved in connection with the issuance ... of a design certification" (Section 52.63(a)(4)), in order to specify (i) the issues resolved and thus precluded from re-review and re-litigation in later licensing proceedings, (ii) the obligations assumed by referencing COL applicants/holders and (iii) the bases for NRC backfit constraints. Industry believes that the most effective way to accomplish such documentation is through a rule with a two-tier structure -- Tier 1 describing the certified portion of the design and Tier 2 identifying that portion which was not certified but which was, nonetheless, reviewed and about which issues were resolved as a result of the design certification rulemaking.

Part 52 states the Commission's expectation that there will be less detail in a certification than in an application for certification, and that a rule certifying a design is likely to encompass roughly the same features that Section 50.59 prohibits changing without NRC approval. Further, Part 52 provides that facility-specific changes can be made from design information submitted in the application but not certified if such changes meet Section 50.59 requirements. The two-tier structure which industry recommends is simply a means for giving concrete application to the foregoing in formatting and documenting the results of a design certification proceeding.

The first tier would contain a self-standing description of the design bases and design features of structures, systems and components based on the scope and organization of the SSAR Section 1.2. The detail would be further amplified to a level that equates to the detail in current Safety Evaluation Reports (SER). Thus, the critical plant design features affecting the safety systems and consequently the safe operation of the plant would be documented, reviewed and approved at the design certification. The first tier would also contain the corresponding array of inspections, tests, analyses and

acceptance criteria (ITAAC) which Part 52 requires.

The second tier would reference the entire SSAR. The SSAR is the primary technical document of the design certification application and will be the basis for the NRC's final design approval and design certification reviews. By referencing the SSAR in the design certification rule's second tier, the NRC would document the features and commitments that were the basis for NRC approval (beyond those certified in the first tier) and document the "matters ... resolved in connection with the issuance ... of a design certification" (per Section 52.53(a)(4)). The second tier would also contain the "validation attributes," which the NUMARC ITAAC report proposes as a bridge to demonstrating compliance with those first-tier acceptance criteria that are not readily measurable or otherwise verifiable by direct field inspection or test.

The design certification rulemaking would consider and resolve all safety issues covered by both tiers -- including the design detail to be included in each tier and the related change mechanisms -- for purposes of later COL and pre-operational proceedings (per Section 52.63(a)(4)). This resolution of issues will be binding on later COL applicants and licensees, the NRC and any intervenors in subsequent COL and pre-operational proceedings.

COL applicants and licensees will be obligated to comply with all provisions in both tiers, absent an exemption, amendment or other permitted change. Matters covered by the first tier could only be changed by a COL applicant/holder through an NRC-approved exemption or amendment preceded by a hearing opportunity (per Sections 52.63(b)(1) and 52.97(b)). Second tier matters could be changed by a COL holder without NRC approval only if a change met the requirements of Section 50.59 (per Section 52.63(b)(2)).

NRC backfits involving matters described in the first tier would be governed by the provisions of Section 52.63, whereas Section 50.109 would govern backfitting as respects the second tier.

## **B. Flexibility**

The need for a reasonable degree of flexibility to accommodate practical problems resulting from procurement, as-built considerations, start-up issues, obsolescence and equipment improvements for non-safety significant systems and structures, was recognized by all participants during the July presentations to the Commission.

Part 52 describes the control process for implementation. NUMARC believes that the process described in Part 52 adequately

addresses the Commission's concerns in regard to the reduction in the safety associated with changes to the design or the facility through the use of the 50.59 process. In keeping with the specific language of Part 52, NUMARC has proposed to the Commission a flexibility provision within the two-tier approach paralleled to Section 50.59. In substance, a COL holder could make changes from the design content of the second tier only if they did not involve changes from the first tier design description or ITAAC or raise an unreviewed safety question. While faithful to Part 52, this initial proposal raised a Commission concern as to whether, over time, the benefits of standardization might be eroded resulting in the reduction of some of the safety benefits.

NUMARC understands the Commission's concern that flexibility not result in an erosion of the safety benefits of standardization. In the industry's view, this need not be the case. In recognition of this concern NUMARC is committed to developing and implementing a process to maintain standardization beyond the requirements of Design Certification dictated by Part 52. In addition, as a parallel activity NUMARC will assess the alternatives for developing a change control process and philosophy to address changes during construction, operation and the life span of certified designs and power plants to address the standardization concerns. At present it is envisaged that, as a starting point, the processes and procedures would be modelled after the existing and proven practices. NUMARC will keep the NRC Staff fully apprised of this process to assure that the issues are being addressed.

There are multiple economic as well as regulatory incentives for industry to maximize standardization. Accordingly, NUMARC believes that Section 50.59 flexibility for facility-specific changes from tier 2 criteria remains a reasonable and acceptable Part 52 approach. As stated above, the industry is committed to developing a provision to address these additional concerns that are considered to be primarily economic issues with safety overtones. These provisions would need to accommodate the ability of a COL holder or applicant to deal effectively with the practical problems of plant construction, operation and maintenance as well as the Commission's desire to maintain the safety benefits of standardization.

Flexibility is a major issue for any company undergoing the later use of a certified design; accordingly a practical accommodation of these matters is essential. NUMARC considers that these additional features to address the Commission's concern should be developed as a parallel program with the evaluation of the designs presented for certification to date. The industry does not foresee flexibility impacting policy guidance associated with the level of detail issues.



### C. Application of Section 50.59.

The industry interpretation of Part 52 is that Section 50.59 may be utilized only after a combined license is issued, and then only by the licensee to make changes from the non-certified portions of the design (NUMARC's second tier) on a facility-specific basis (See Section 52.63(b)(2)). Under Section 52.63(b)(2), a COL applicant referencing a design certification rule may not use Section 50.59 to make changes from the design covered by the second tier of the rule but must seek an exemption from the Commission.

We understand the Staff is investigating the potential use of 50.59 for COL applicants. We think this makes functional sense and encourage the Staff to pursue this latitude for COL applicants within the confines of Part 52. Finally, it is our understanding that Section 50.59 does not permit anyone to make changes in the design certification rule itself, irrespective of tier.

### 2. Issue Finality.

NUMARC believes that the matter of issue finality under the two-tier approach also calls for clarification in light of the questions raised during the July 16 and 18 briefings and certain statements contained in SECY 90-241. Part 52 embodies the objective that issues should be resolved at the earliest feasible decisional point and that, once resolved, they should not be subject to further licensing review or hearing consideration. Thus, all matters resolved in a design certification proceeding should be precluded from consideration in subsequent COL proceedings involving that certified design. NUMARC believes such preclusion is mandated by Section 52.63(a)(4), which specifies that "in making the findings required for issuance of a combined license, or for any hearing under Section 52.103, the Commission shall treat as resolved those matters resolved in connection with the issuance . . . of a design certification."

Applying these provisions to the two-tier rule means issue preclusion would apply to every matter covered in either tier. All such matters -- including the determination of what should properly be placed in each tier of the design certification rule and the change mechanisms applicable thereto -- would have been reviewed by the NRC and have been subject to hearing consideration in the design certification proceeding.

It bears emphasis that a design certification rule structured on a two-tier basis results in more than just issue finality for both tiers in later COL and Section 52.103 proceedings. In addition to Issue Finality, COL applicants and

holders referencing a design certification rule must comply with both tiers of the rule, absent an exemption, amendment or other permitted change, as appropriate. While the COL holder would be authorized to make Section 50.59 changes from the second tier of a design certification rule, this latitude is specifically sanctioned by Section 52.63(b)(2). Moreover, as pointed out above, all parties in design certification proceedings, including the NRC Staff and intervenors, will have had the opportunity to review and be heard on the appropriateness of placing matters in the first or second tier, and such opportunity would occur in advance of the certification rule.

Section 50.59 changes could be subject to challenge in a pre-operational hearing, as noted in SECY 90-241 and pointed out in the July 16 NUMARC briefing. In order to qualify as a hearing issue, a challenger would need to show non-compliance with the application of Section 50.59 criteria and/or process (as embodied in the design certification rule) and that this results in non-compliance with one or more of the acceptance criteria (the touchstone for Section 52.103 pre-operational hearings and findings). This potential for future challenge is, as noted in SECY 90-241, a practical disincentive to COL holders for making Section 50.59 changes. In this regard, the benefits of design certification to the holder of, or applicant for, a COL utilizing a certified design are in direct proportion to the lack of change from that design during the licensing and construction processes. Similarly, vendors have a strong incentive to assure that the level of detail supporting a design certification application provides assurance that changes from the certified design will not be necessary during the performance of the implementation phase of the detailed design work. This implementation phase, as acknowledged during the presentations to the Commission in July, would be performed following the receipt of an order, after design certification.

There is much common ground with the Staff in our respective understandings of Part 52 and the two-tier approach. NUMARC, would like to offer our understanding regarding certain statements in SECY 90-241 about issue preclusion. The Staff, in assessing the consequences of what it characterizes as a Level 3 approach to design detail, observed that a substantial amount of design engineering will need to be completed after certification and concluded that:

"[t]his information may be subject to adjudication at some later time as part of a combined license proceeding or later prior to operation" (SECY 90-241, p. 11).

Our understanding is that the only time such information is subject to adjudication is in the event that such additional engineering requires modification to information considered and resolved in the design certification rulemaking.

What the Staff, in SECY 90-241, calls Level 3 design detail (Final FSAR, less site-specific, as-procured and as-built information plus ITAAC) is sufficient to enable the NRC to resolve all design safety issues, review and approve proposed ITAAC and make the findings for design certification required by Part 52. The Staff recognized this to be the case in the course of questions from the Commissioners during the July 18, 1990 briefing. The fact that further engineering detail will be developed and, which can be considered to be in two categories, (1) site specific design activities, and (2) construction details necessary to implement the design described in the DC or COL. The first will be subject to the scrutiny of the COL proceedings; the second will be strictly governed by the NRC approved ITAAC. This additional detail will be developed no matter what the level of detail in the design certification and in no way compromises the quality of the findings for design certification nor undermines their efficacy and their preclusive effect in later licensing proceedings.

It is well established that the Commission has the authority to determine what issues are relevant for consideration in making its licensing determinations, when those issues should be considered in the sequence of licensing actions and the amount of information necessary for the Commission to make its licensing determinations. Part 52 is structured on the premise that, if the requirements of Section 52.47 are satisfied, enough information will be available to make the requisite design certification findings. Part 52 further presupposes that complete engineering detail will not be available at the design certification stage. Indeed, Part 52 expressly contemplates that the available-for-audit information will be greater than that in the design certification application but that the result, nonetheless, will be issue-preclusive pursuant to Section 52.63(a)(4). In short, engineering design detail to implement a certified design cannot be the basis for subsequent hearing consideration unless there are proposed changes from the design encompassed in the design certification rule (Tier 1). If this were not the case, there would be no issue finality value to obtaining a design certification -- contrary to the express intent of Part 52.

### 3. Level of Detail

The level of detail for the Design Certification process will vary from system to system and that although a degree of general guidance can be given regarding the level of detail, the specific level of detail for each system can best be practically determined during the review process of each design certification application, as envisioned in Part 52. Under the proposed industry approach, various systems and components would be

described to a varying level of detail, dependent on their safety significance. This appears to be consistent with what the NRC Staff suggests in SECY 90-241 and with what the Staff and the Commissioners implied in their discussions during the presentations of the July 28, 1990 meeting.

We agree with the Staff's characterization in SECY 90-241 that the depth of design detail submitted by an applicant for design certification will be similar to that of a final safety analysis report ("FSAR") at the operating license ("OL") stage for a recently licensed plant minus site-specific, as-built and as-procured information, plus XTAAAC. The applicant must provide design criteria and bases, system descriptions, performance requirements, and component descriptions and characteristics in enough detail for the NRC to make its final conclusions on all safety questions and to enable procurement specifications and construction and installation specifications to be developed. In terms of typical engineering design documentation, this would include system performance requirements, plant general arrangement and layout drawings, P&IDs, process flow diagrams and one-line electrical drawings. Also, included would be general equipment locations, major pipe, duct and cable routing, QA program description, test and acceptance requirements, as well as pertinent design bases and analytical results and summaries. The level of design detail would be related to the safety significance of the particular structure, system or component; in general, the greater the safety significance, the greater the level of design detail.

In this regard, the review process conducted by the Staff in accordance with the Standard Review Plan ("SRP") and the guidelines developed for review of new plant designs for the purpose of issuing Final Design Approvals ("FDAs") is relevant. Information is submitted consistent with the level of detail appropriate for the review contemplated by the SRP and relevant guidance and supplemented as needed by the question and answer process that has been successfully utilized by the Staff in the licensing of over 100 nuclear power plants. Thus, the Staff will be able to make their safety determinations associated with the approval of a design certification application. Following this approach results in the general specification of individual components and corresponding systems and/or structures to varying degrees dependent on their safety significance, based on an accumulation of industry and regulatory experience with respect to the particular structure, system and component and its specific application. Similarly the level of detail would vary from system to system. Expressed in terms of the options characterized by the Staff in SECY 90-241, the level of detail would range from Level 3, as a minimum, to in excess of Level 2. As suggested in SECY 90-241, the difference in the varying levels of detail among systems would mainly be found in the specific descriptions of the physical attributes of individual system

components. Whether or not such information was included, and to what degree, would depend on the safety significance of that given component to both the system and the plant as a whole, as discussed above.

It should be noted that for Part 52 applications, reflecting current and future ALWR designs and the prerequisites of the ALWR Requirements Documents the Part 52 process is already resulting in a substantial increase in the level of detail being submitted to the NRC compared to what has historically been provided at the pre-construction stage under Part 50. In addition, the format, content and demands of the ALWR Requirements Documents will require applicants to address USIs/GSIs, conduct a PRA, adhere to the resulting maintenance and reliability requirements, provide uncertainty analyses, and to develop ITAAC documents. The above factors together with the standard NRC safety review practices, augmented by specific guidance for ALWRs and combined with industry initiatives will result in a level of detail consistent with Part 52 standardization objectives. To demand an even greater level of detail at the design certification stage would result in nugatory work, increased financial risk and an increase in the review cycle which would significantly reduce the probability of any new nuclear plant orders in the near term.

#### 4. Proprietary Information

NUMARC believes that the provisions respecting proprietary information contained in Section 52.51(c) provide means that are adequate to protect proprietary information submitted in a design certification application. NUMARC further believes that, with a properly constituted two-tier structure, proprietary information will not be part of the design description in the first tier of a design certification rule.

As noted by NUMARC during the course of the Commission briefing on July 16, Part 52 provides that proprietary information in design certification proceedings will be protected in the same manner and to the same extent as proprietary information submitted in Part 50 license proceedings (Section 52.52(e)). This provision was included in Part 52 in response to a NUMARC rulemaking comment. The effect was to eliminate for design certifications the following disparity in Section 2.790 between protection of proprietary information in rulemaking and in licensing proceedings:

"[proprietary] information submitted in a rulemaking proceeding which subsequently forms the basis for the final rule will not be withheld from public disclosure by the Commission and will not be returned to the applicant after denial of any application for withholding submitted in connection with that information." 10 CFR Section 2.790(c).

While eliminating the above disparity, Section 52.51(c) specifies that "the design certification shall be published in Chapter 1 of this Title". NUMARC believes that a "design certification" can be published which describes the certified design in an appropriately informative but non-proprietary manner. However, the greater the level of detail "certified" the greater the likelihood of encountering propriety obstacles in the published description; and publication would entail significant disclosure of proprietary information if the level of detail contained in the certification were to be that which SECY 90-241 characterizes as Level 1.

In the foregoing context, therefore, NUMARC agrees with the Staff observation in SECY 90-241 that, "decisions about level of detail and the certification itself could have important consequences for the commercial value of vendor design information" -- and, we would add, for the viability of the Part 52 design certification process. The practical -- and appropriate -- answer we believe is a properly constituted two-tier structure, as recommended by the industry.