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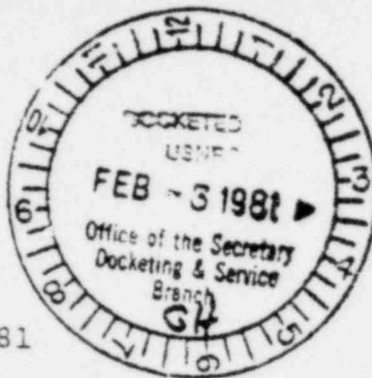

February 3, 1981

DR DONALD F. KNUTH
President

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

Dear Mr. Chilk:

KMC, Inc. is pleased to respond to the NRC's request for comments on its Advance Notice of Proposed Rulemaking relating to Design and Other Changes in Nuclear Power Plant Facilities After Issuance of Construction Permit (45 FR 81602 dated December 11, 1980). As a consultant to the electric utility industry, specializing in nuclear licensing matters, KMC is particularly sensitive to and very concerned by the course this proposed rulemaking is taking. Fundamentally, it is our view that the proposed rule is progressing down a path that would provide almost insurmountable obstacles to the licensing and construction of new nuclear power plants. It would demand that the final design of a plant be available for construction permit review, and would preclude, as a practical matter, the development of improved systems or components during construction of a facility. Recognizing how long and laborious the present licensing process is, the process resulting from the implementation of the views expressed in the Advance Notice could be expected to add several more years to the total licensing process, and at the same time decrease the confidence an applicant could have on getting a facility constructed and licensed. In this kind of licensing world, with such an increase in uncertainty, no one would dare apply for licenses to construct and operate nuclear plants.

Secondly, regardless of its merits, the issue embodied by this Advance Notice is extremely complex. It flies in the face of Congressional and previous Commission attitudes that developed and sustained the concept of two stage licensing, wherein an applicant could receive a license to construct a nuclear plant based on preliminary design information, thereby permitting the detailed final design to be dictated at least in part by the experience of construction. The consideration of this question deserves more than cursory citation of previous Commission staff attempts to

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define construction permit license requirements. It deserves detailed study of the technical aspects of such a new set of requirements, a reasoned consideration of the drastic change of policy that would be reflected by such a rule, and a comprehensive cost-benefit analysis to aid in determining whether such a rule is at all in the public interest. Perhaps it could be hoped that some of these things would fall from the response to the Advance Notice. Comments on the Advance Notice may be of some help, but these questions will have to be faced through the required staff work. The evidence of the Advance Notice and its supporting documentation is that such work is yet to be done. To help lay part of the foundation for that needed effort we offer comments along the following specific lines on the Advance Notice:

1. Obstacles to the licensing process
2. Requirement for final design details
3. Adverse impact on safety
4. Cost-benefit analysis
5. Effect on new plant orders
6. Backfitting considerations
7. Previous Commission consideration of concept
8. Need for considerable further study
9. Impact of no rule change

Obstacles to the licensing process

This is somewhat of an overall comment that is treated in more detail in many of the following comments. In short, it is our view that the proposed rule would increase the specificity required for construction permit reviews, would correspondingly take more NRC time and critical resources to complete the CP reviews, and not materially effect the subsequent OL reviews. Accordingly, the present lengthy and cumbersome licensing process would become even more so. The impact would be felt directly for any new applications and indirectly through the commitment of resources for all plants in the review process. There would be no natural end target dates for completing new CP reviews, either by the NRC staff or the Atomic Safety and Licensing Boards, corresponding to that represented by completion of construction for OL reviews. As a consequence, the overall effect would be to create more scheduling uncertainty and to implant even more obstacles in the path of the NRC's stated goal for effective and efficient licensing.

Requirement for final design details

The proposed rule would, in effect, result in the requiring of final design details on construction at the CP stage. This undesirable and unnecessary act should not be confused with the present thinking that suggests it would be desirable if the rules of licensing permitted one stage reviews with the final design at the CP stage. It is one thing to make such an option available; it is quite another to make it mandatory.

The proposed rule would, on two counts, make such action effectively mandatory. First, in order for the NRC staff to be able to complete a review and specify all those features that could not be changed without prior NRC approval, it would need to have available for review a complete design. A complete design is effectively a final design. Secondly, in order for a utility applicant to even begin to formulate a construction schedule, and thus to be able to estimate the cost of a facility, it would need some idea of what it would face in maintaining approval for construction, once construction had begun. The only way to do this, under the aegis of the proposed rule, would be to have a design, not expected to be changed, "approved" at the onset. Since it is not possible to foresee all problems of construction even with the expected final design in hand, some significant amount of licensing uncertainty would invariably be present that would be sufficient to impact the already difficult scheduling and cost problems associated with the construction of a nuclear plant. Looking at this from another point of view, one should envision the normal problems licensees would have in going from final design to actual construction drawings. Each construction drawing would be suspect of changing the licensing requirements previously approved by the NRC. In this situation constant rereview and approval of changes by the NRC would be required.

Adverse impact on safety

In the regime of the proposed rule, a situation will develop where design changes that could improve the safety of nuclear reactors will not evolve owing to the burden placed on CP licensees to get prior approval of such changes. In the present system, many such changes, as they are developed, are routinely incorporated into the plant design, and are in turn routinely reported in the FSAR and routinely reviewed by the NRC staff at the OL stage. While this may not be true for all changes, it is certainly true for the vast majority of them. However, if all such changes required prior NRC approval before being released for construction,

it would be a disincentive for developing such design improvements. In this argument a distinction must be drawn between those changes necessary for safety and those changes that merely improve safety. It is clearly the latter class that would disappear. This would be regrettable because safety is not a quantifiable item; it's just that every little bit helps.

Where this concern becomes truly significant is in its cumulative effect. By the time the proposed rule has been in effect for several years design improvements during construction will stop altogether, with the result that new plants would go on line, several years later, that were based on by-then outmoded design concepts. It would probably not even be practical to reserve design changes until after the FSAR is filed because this would tend to destabilize that part of the licensing process.

Cost-benefit analysis

Before such a proposed rule is further considered by the Commission, a comprehensive cost-benefit analysis should be performed. Such an analysis should consider the costs and benefits both to the NRC (the givers of the licenses) and the utilities (the receivers of the licenses). The background information provided in the Advance Notice, as well as its supporting documents, provides some implications of the thinking that would go into such an analysis, but nothing of critical moment. The costs are easy to imagine; the benefits, from our viewpoint, are hard to see, or at the very least, appear lopsided.

For example, the Advance Notice enumerates many perceived problems, particularly for I&E inspectors, with the present rules. There is no information with which to judge whether these problems are real, or if they are, whether the general changes proposed would cure the problems or otherwise create a new set of problems. All in all, the information presented for analysis is too one-sided to permit an objective treatment of the issue by the Commission. The question really left unanswered is whether this proposed rule change is really necessary, and if it is believed to be necessary, what are the true costs and the true benefits?

Effect on new plant orders

Among the reasons often cited for the present dearth of new plant orders are the existing economic situation (also tied to need for power and availability of capital) and the monumental uncertainties in the licensing process. At the time in the future

when the economy has again stabilized it will be necessary for an also-stabilized nuclear licensing process to be in place to stimulate new plant orders. This proposed rule, as discussed in these comments, will lead to a less stabilized licensing process and thus will have the direct effect of limiting new plant orders. At a time when the country again needs substantial growth in the electric power industry, which some analysts relate directly to economic growth, the nuclear option with its licensing burden (made needlessly onerous by the proposed rule) may not be able to rise to the occasion. This consideration should be examined by the NRC on its own merits, as well as being introduced as a factor in the needed cost-benefit analysis, especially for long term considerations. We believe it may be true in the long term that this cost consideration alone may far outweigh the combined benefits of the proposed rule.

Backfitting considerations

A completely separate issue in this proposed rulemaking action is consideration of the extent the rule should be backfitted to existing holders of construction permits. It is our strongly-held contention that there should be no consideration of backfitting at all in the development of such a rule. Plants under construction, and most plants undergoing CP review, at the time such a rule would be implemented, would have been reviewed by the NRC staff on a basis quite different from that which would be required of new CP applications. The two bases for review might be sufficiently different with regard to evolution of plant design and planned construction sequences that it might not be possible to reconcile the requirements of the new rule to a plant already under construction in a reasonable fashion. We believe it would be difficult enough for both the staff and utility industry to reconcile the proposed rule in the first place, without having the additional burdens of trying to backfit such a rule to then-existing licensing situations.

Previous Commission consideration of concept

As the background documentation points out, the issue of CP license requirements has surfaced off and on over the last twelve or so years without any significant resolution. Actually, the issue was formally considered but once, by the AEC, in 1969-1970. The issue was the identification of the "essential elements of design" and the "essential elements of the quality assurance program," which was also tied to the elimination of provisional operating licenses and the development of a backfit rule (10 CFR 50.109). Since the Commission could not agree on what constituted these essential elements, that part of the rule was dropped.

The point of this comment is that the background information in the Advance Notice paints a picture of the handling of an evolving problem over the years that is culminating now in the precepts of the Advance Notice. Actually, this is not the case. The formulation of a proposed rule on this subject would not benefit significantly by relying on the previous work. Therefore, the Commission's presently preferred Alternative 3 should not be viewed as indicated in 45 FR 81602, i.e., "in effect reviving the 1969 rulemaking on the subject." These may be lessons to learn from studying that record, but in general they will not be too helpful in trying to determine what if any specificity to require for Construction Permit requirements, and thus to determine to what extent the two stage licensing process should be destroyed. It is our point that the two stage process should be preserved as a licensing option.

Need for considerable further study

All of the above comments point to the view that the Commission and its staff must devote considerable study to this major policy issue before deciding to go forward with any proposed rule change. The matters at stake are much more complex than the considerations outlined in the Advance Notice imply. This is true for consideration of Alternative 3, and is even more important for Alternative 5, which the Commission has indicated it might adopt by June 1, 1983.

Alternate 5 deserves special comment. It calls for a restructuring of the licensing process that would, in fact, be a review and licensing of the final design at the CP stage. Then, concludes the Advance Notice, "staff review at the OL stage would then be primarily a matter of confirming that the 'as built' plant conformed to the CP stage safety analysis." The staff should give extra special attention to trying to determine if such a practice would even be implementable. It would certainly not be unless the complete OL rules, including hearings, were rewritten to force such a practice. This goes far beyond the previous concepts of "restructuring of the licensing process." Such a regime might be useful as an option, but may not be workable as the sole alternative. In any event, it should be handled in a fashion somewhat different from the usual NRC practice. For this case, the staff should first formulate the rule, then formulate, in detail, the implementation that would be required to at least test its workability before the rule is adopted. This issue is too important for the usual after the fact approach to rule implementation.

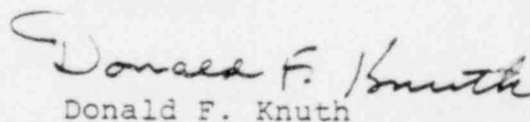
Impact of no rule change

In struggling with the elements of the decision implicit in the Advance Notice some thought should be given to the impact on licensing and NRC activities of no change in the rules. If there were no rule change, there would be no impact in the short term because there are no new CP applications in the short term. In the long term, presumably defined by the Commission as subsequent to June 1, 1983, the impacts can at least be estimated. Some time after that date some few CP applications can be anticipated, but a long review process can be anticipated owing to the backlog of pending OL reviews. Use of the revised Standard Review Plan for CP reviews can be expected. Therefore, the CP SER's will specifically document the bases upon which construction approval is to be based. Resident inspectors, who will by then have had the opportunity to participate in the CP reviews, should be in place at each of the few new sites. As construction progresses, changes identified as necessary or useful can be identified and discussed with the resident inspector, I&E regional office or headquarters personnel. NRR personnel can be consulted if necessary. Decisions can be made as to which changes require amendment to the CP or other licensing action. In short, the improved basis for CP licensing and the improved regulatory organizational capability should more than offset any perceived shortcomings in the present licensing system. It is perceived that there would be no adverse impact from not changing the present rules. In fact, the solution to the perceived dilemma appears to lie in measures already underway, but not yet in place. They would appear to be a reasonable alternative to the rule change envisioned by the Advance Notice.

As a final point of administrative clarification, the Federal Register notes that February 9, 1981 is the closing date of the 60 day comment period. However, it also notes that comments received after February 1, 1981 may not be considered. We assume that the February 1 date is a printing error, and that all dates should be February 9, 1981. In any event, we implore the NRC to take the comments offered herein into account in its deliberations on the Advance Notice.

KMC appreciates the opportunity to comment on this Advance Notice of Proposed Rulemaking.

Sincerely,



Donald F. Knuth