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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BD 11/2/84

ATOMIC SAFETY AND LICENSING BOARD  
Before Administrative Judges:  
Ivan W. Smith, Chairman  
Dr. Dixon Callihan  
Dr. Richard F. Cole

'84 NOV -2 P2:21

OFFICE OF THE SECRETARY  
DOCKETS AND SERVICE  
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In the Matter of  
  
COMMONWEALTH EDISON COMPANY  
  
(Byron Nuclear Power Station,  
Units 1 and 2)

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Docket Nos. STN 50-454 OL  
STN 50-455 OL  
[ASLBP 79-411-04 OL]  
  
November 2, 1984

MEMORANDUM AND ORDER DENYING  
INTERVENORS' MOTION TO REOPEN THE RECORD

Introduction

The record in the remanded Byron licensing proceeding closed on August 24, 1984. On September 12, 1984, claiming possession of new evidence from Bechtel Power Corporation's recently completed Independent Design Review (IDR) of three systems at the Byron plant, Intervenor Rockford League of Women Voters and DAARE/SAFE filed a motion to reopen the record to litigate the design of Byron. The Intervenor claim that the findings in the IDR demonstrate "a likelihood that design deficiencies of safety significance exist throughout the Byron Station." Motion at 1. The particular issue the Intervenor seek to have determined in a reopened hearing is whether "a complete and comprehensive independent design review . . . should be conducted prior to an issuance of an operating license for Byron." Id. at 1-2.

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At the time the motion was filed, it was not clear that we had jurisdiction over it. Our jurisdiction had been limited by the Appeal Board's remand order to questions related to "whether, notwithstanding quality assurance issues, reasonable assurance exists that the Byron facility has been properly constructed." See ALAB-770, 19 N.R.C. 1163, 1182 n.72 (1984). In a September 19, 1984 order, the Appeal Board, noting that it treated design quality assurance issues as distinct from construction quality assurance issues (Order at 2 n.1), expressed considerable doubt that the motion fell within the scope of the remand. The Appeal Board nonetheless authorized us to consider the motion in the first instance. Id. at 2.

On October 2, 1984, the Applicant filed an answer in opposition to the Intervenors' motion; on October 11, the NRC Staff did the same. Together the Applicant and the Staff filed along with their answers 13 affidavits or joint statements from persons with supervisory responsibilities relating to the design reviews of various Byron systems, the readiness of the plant for fuel loading, or cost accounting.

We deny the motion. It falls far short of meeting the strict standards for reopening the record or admitting late-filed contentions. Its principal shortcoming is that it raises no significant safety issue and thus cannot justify renewed litigation so near the close of the licensing review of the Byron plant.

Background on Reviews of the Byron Design

Bechtel's IDR was the second review done on aspects of the Byron design. The first was the Staff's Integrated Design Inspection (IDI), performed in mid-1983. The IDI was a "vertical slice" of the design process at Byron. By inspecting each phase of the design process for a single system at the plant (in this case, the auxiliary feedwater system (AFW)), the reviewers aimed to determine the adequacy of the design process for the plant in general. Milhoan Affidavit at 3-4. After a significant design problem was found at the Diablo Canyon plant, such reviews, initiated either by the Staff or an Applicant, have been a matter of course for plants undergoing review for licensing. Staff Response at 7.

The Staff's IDI team discovered three potential problem areas. Two of the three for the most part involved only documentation of bases and calculations to support the current design of the AFW. But the third area -- "deficiencies in the analyses related to postulated cracks in high-energy and moderate-energy lines and internal flooding" -- entailed the possibility of a significant problem with the design itself, since it appeared that analyses of postulated failures in these lines had not been complete enough to ensure that the design of the lines was adequate. Milhoan Affidavit at 5. However, most of these problem areas have been resolved to the Staff's satisfaction, without any design changes needed; and even in the few matters still under some Staff review -- matters having to do with high- and moderate-energy lines and internal flooding -- the Staff does not foresee the need for any design changes. Id. at 10, 17-18. Thus the Staff is requiring only that the

items still under review be resolved before operation above 5 percent of rated power, since low-power operation involves no significant risks to the public and does not preclude corrective action. Id. at 10.

In requesting the Applicant to respond to the IDI findings, the Staff also requested the Applicant to determine whether it thought more design reviews ought to be done at Byron. Id. at 6. In response, the Applicant initiated the second design review at Byron, Bechtel's IDR, the occasion of the Intervenor's motion. Its purpose was to provide assurance that the design process for plant systems other than the AFW (the one that the Staff's IDI team inspected) did not involve significant safety problems. The IDR examined the design work on three plant systems according to a plan approved by the Staff. Id. at 11.

The IDR team asked Sargent and Lundy, Byron's architect-engineer, to respond to 35 of the team's observations. Dick and Hughes Joint Statement at 5-6. Sargent and Lundy's responses included information on the basis of which Bechtel decided that 12 of the 35 observations had not involved deficiencies. Id. Sargent and Lundy resolved the issues raised by another 21 of the 35 observations by correcting, or agreeing to correct, inconsistencies in documents, by modifying procedures, or by confirming the adequacy of certain design features arrived at by exercises of engineering judgment. Id. Only very few of the 35 observations led to design changes, and it was the IDR team's judgment, discussed in more detail below, that these design changes were made out of conservatism, not in order to correct safety-significant conditions. Id.

In order to determine whether the IDR team's 35 observations indicated trends which would raise questions about unreviewed safety-related areas, the IDR team analyzed, by trending, the root causes of the deficiencies it had observed. Id. at 11. Four trends were found. Three of the trends had to do with control of the design process, not the adequacy of the design itself. The fourth was that certain aspects of some of the designs reviewed did not strictly comply with certain detailed code requirements. Id. at 12-14. However, the IDR team concluded that every system, structure, or component whose design did not fully comply with all applicable codes was nonetheless able to perform its intended safety function. Id. at 15. On the basis of this trend analysis, the IDR team concluded that any further design reviews were likely to find that the unreviewed designs were adequate. Id. at 16-17.

The Staff has asked the Applicant to document the corrective actions it is taking on the four trends the IDR team's trend analysis uncovered. Milhoan Affidavit at 20. The Applicant has replied and Staff review continues. Id. Nonetheless, the Staff does not believe that the trend analysis indicates either any inadequacies in design, or a pervasive breakdown in control of the design. Id. Thus, again, as with the issues raised by the IDI, the Staff would require only that the issues raised by the IDR be resolved before the Byron plant operates above 5 percent of rated power. Id. at 24-25. Moreover, the Staff sees no technical reason to require further comprehensive design reviews at Byron. Id.

The Intervenors' Argument

The Intervenors are not persuaded that further comprehensive design reviews are not called for. Their argument is straightforward: the number of serious deficiencies uncovered by the IDI and the IDR is too great in relation to the limited scope of the review not to conclude that, in unreviewed systems, there may exist design deficiencies which, taken either singly or together, have safety significance. Moreover, the disproportion between the number of deficiencies uncovered and the limited scope of the reviews is very likely greater than Bechtel represents it to be, since the definition of "safety significance" Bechtel used in the IDR sets too high a threshold for a finding of safety significance. Motion at 1-4, 15.

The Standards to be Applied to the Motion

In deciding whether the Intervenors' motion justifies reopening the record, we must apply not only the familiar standards for reopening the record (see, e.g., Pacific Gas and Electric Co. (Diablo Canyon, Units 1 and 2), ALAB-775, 19 N.R.C. 1361, 1365-66 (1984)), but also the criteria in 10 C.F.R. Section 2.714(a)(1) for admission of late-filed contentions, since adequacy of the design of Byron has been almost an uncontested matter in the Byron hearings. See Pacific Gas and Electric Co. (Diablo Canyon, Units 1 and 2), CLI-82-39, 16 N.R.C. 1712, 1714-15 (1982). The two sets of standards naturally overlap, since both sets were fashioned in consideration of the lateness of the stage of

licensing review at which the motion is made. Thus both sets must take into consideration how promptly the movant acted given the circumstances, the significance of the issues raised, and the usefulness of litigation -- inseparable from the significance of the issues raised -- for resolving them. As we consider each of the standards below, it will be clear the standards are not easy to meet. They thus ensure that any intervention permitted so late will be highly responsible, and continued litigation worth any delay it might cause to the proceeding, or, as might happen in the case of Byron, to the operation of the plant under review.

#### Promptness

In order for the record to be reopened, the movant must show that it could not have raised earlier the issue it seeks to raise (Diablo Canyon, ALAB-775, 19 N.R.C. at 1366), and for a late-filed contention to be admitted, the contention must be filed promptly after the document on which it depends -- and must wholly depend -- becomes available (Duke Power Co. (Catawba, Units 1 and 2), ALAB-687, 16 N.R.C. 460, 469 (1982)).

It is certainly arguable -- and the Staff and the Applicant do argue -- that the Intervenor's motion does not meet these two standards of promptness. The Intervenor perhaps acted promptly enough after the IDR report was made available, filing their motion within 15 working days -- some of them spent in hearing -- of receipt of the four-volume Bechtel report. But the motion's copious quotations from the Staff's

IDI, now a year old, and the Intervenor's talk in the motion of the negative implications of the "picture" which emerges from the IDI and the IDR taken together (see Motion at 15), arguably demonstrate that the Intervenor could have raised the design issue, at least in part, soon after the Staff's IDI report became available.

On the other hand, the Intervenor is especially concerned about matters revealed for the first time by the IDR: the negative trends uncovered by the IDR analysis the design changes which were made as a result of IDR inspections, and the IDR definition of "safety significance." Motion at 1-4. Thus, it could be argued, although the issue of design adequacy was first raised by the IDI, information suggesting the need for a complete design review did not come until the IDR report. In this argument, the motion could not have been filed earlier because it was "wholly dependent" on the IDR in the sense that the IDR was necessary to the discovery that the design issue was significant.

We do not find that the Intervenor has failed to conform to the standards of promptness. The IDR could well have resolved their concerns. Thus their waiting to file until after the IDR report was issued, while repeatedly putting us on notice that they might file, was responsible litigation behavior which should not be discouraged by a finding that they were not prompt. But the motion fails to meet the more crucial standards which have to do with the significance of the issue the motion raises.



### Safety Significance

The difficulty of meeting the standards for reopening is clearest in the case of the standard on safety significance. To be granted, a motion to reopen the record must raise a significant safety or environmental issue. Diablo Canyon, supra, ALAB-775, 19 N.R.C. at 1365. That is, the motion must, by relevant and probative facts, establish either that "uncorrected [design] errors endanger safe plant operation, or that there has been a breakdown of the [design] quality assurance program sufficient to raise legitimate doubt as to the plant's capability of being operated safely . . . ." Id. at 1366, 1367 n.18.

The standards for admissibility of late-filed contentions address the matter of safety significance indirectly. In deciding whether to admit the contention, we must consider "the extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record." 10 C.F.R. § 2.714(a)(1)(iii). A record on an insignificant issue is not a sound record. Long Island Lighting Co. (Shoreham, Unit 1), LBP-83-30, 17 N.R.C. 1132, 1143 (1983). Again, the burden on the petitioner is not light. The petitioner must exactly set out the issues to be litigated. Mississippi Power and Light Co. (Grand Gulf, Units 1 and 2), ALAB-704, 16 N.R.C. 1725, 1730 (1982). Also, in relation to late-filed contentions, we must consider the extent to which admission of the late-filed contention would broaden the issues or delay the proceeding. 10 C.F.R. § 2.714(a)(1)(v). Clearly, as Intervenors

point out, the weight of this consideration is determined by the importance of the issue. Shoreham, 17 N.R.C. at 1143.

Of course, granting the motion would greatly broaden the issues and delay the proceeding. Design adequacy has been an almost uncontested matter in this proceeding, and the reopening of a record is the clearest kind of delay of the close of it. Moreover, the Intervenors have been no more exact about the issues they want litigated than to say that the issue is whether every part of the design of Byron should be reviewed directly. At the eleventh hour of the licensing review, the Intervenors have sought, by means of laymen's arguments alone, to counter the technical judgment of both a third-party reviewer and the NRC Staff that there are no safety-significant deficiencies in the design of Byron. Such an attempt is a priori not likely to succeed, and an examination of the Intervenors' arguments shows that, in fact, the attempt does not succeed.

In trying to show safety significance -- that design errors endanger safe operation of the plant, or that a breakdown in design quality assurance raises doubts about whether the plant can be safely operated -- the Intervenors have one principal argument. As we noted above, they claim that the number of serious design deficiencies the IDR uncovered is disproportionately large in relation to the scope of the review, which the Intervenors call "very limited." Motion at 1. The Intervenors both underestimate the scope of the IDR and overestimate the seriousness of what the IDR team found.

As to the scope of the review, more than 25 persons from various engineering disciplines took direct part in the review. About 2,120 inspections were performed and more than 1,165 documents examined. The work required about 15,000 manhours. Dick and Hughes Joint Statement at 3. Even the more limited IDI entailed review of hundreds of items, and 7,000 inspector hours of work on the IDI and its follow-up. Milhoan Affidavit at 4. Moreover, although together the IDI and the IDR reviewed only four systems, the systems were chosen so that nearly every aspect of the design process, from formulation of the principal design to construction, was examined and evaluated. Id. at 3-4, 12.

As to the seriousness of the deficiencies found in the course of the two reviews, the Applicant made one design change to resolve an IDI finding, but pending completion of the Staff's review of the documentation on the change, the Staff is not certain that it was necessary. Id. at 17-18. The Applicant made two<sup>1</sup> design changes in response to observations by the IDR team. The IDR team didn't find either of the corrected deficiencies to be safety-significant, and the Staff reviewers concluded that neither of the changes had to be substantial. The Staff's affiant, Mr. Milhoan, who has reviewed many IDIs and applicant-initiated programs like the IDR, does not think that the number of deficiencies observed in the IDR is out of proportion to

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<sup>1</sup> Three, perhaps four, according to the Staff's affiant, as we read him. See Milhoan Affidavit at 15-16. Compare with Table 1 in the IDR report.

the effort and depth of the IDR, or inconsistent with past inspection report findings. Id. at 19.

The Intervenors' argument here is that the IDR's definition of safety significance is too restrictive and vague and is not used by the NRC, and that, whatever the definition, the IDR failed to "recognize problems of genuine safety significance." Motion at 15.

The Intervenors discuss only one such problem (id. at 5-6), one of the two IDR-observed problems which were resolved by design changes: Westinghouse had intended to design a certain portion of the component cooling water (CCW) system so that pressure in that portion of the system would not exceed 150 psig even in the event of a certain highly improbable scenario which could result in leakage of primary coolant into the CCW system. However, the actual design of that portion of the CCW system did not ensure that 150 psig would not be exceeded in the event of inleakage of primary coolant. According to the Staff, piping and valves in the CCW system probably could accommodate the overpressure, but there was no guarantee that pump seals or heat-exchanger valves and tubes would not fail. Milhoan Affidavit at 16. The IDR team concluded, and the Staff agrees, however, that this design deficiency was not safety-significant: any increase in pressure beyond 150 psig would be easily detectable, the inleakage of primary coolant isolable, and safe shutdown of the plant assured by redundancy of safety systems. Nonetheless, the Applicant implemented a design change to eliminate the possibility of excess pressure. Dick and Hughes Joint Statement at 9; Milhoan Affidavit at 16.

The Intervenor's do not argue that the overpressures would not be easily detectable or isolable, or that safe shutdown would not be assured in the event of inleakage of primary coolant. Since the Intervenor's are unable to show that the one example they chose to expound involves a problem of genuine safety significance, it does not seem likely the Intervenor's could demonstrate that we should infer from the IDR the existence of some other design deficiency of genuine safety significance.

In view of their failure to show that such a deficiency exists, the particulars of the IDR definition of safety significance are not especially relevant to our ruling here. But we note that Bechtel did not pull the definition out of a hat. As the Applicant points out (Response at 11 n.8), the IDR definition of "safety-significant condition"<sup>2</sup> is the NRC definition of "substantial safety hazard" set out in 10 C.F.R. § 21.3(k). Moreover, any claim that the definition was vague must take into account the standard used in applying the definition: "Whether the discrepancy noted in the Observation was a loss of safety function such that a safety-related system would have been unable to perform its intended safety function." Dick and Hughes Joint Statement at 4-5. The Applicant points out (Response at 11 n.9)

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<sup>2</sup> "[A] loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety." Dick and Hughes Joint Statement at 4-5.

that this standard appears in the definition of "single failure" in Appendix A to 10 C.F.R. Part 50.

As we noted above, part of the Intervenor's argument is that, even if single design deficiencies are not safety-significant, the cumulative effect of such deficiencies among the unreviewed systems at Byron might be safety-significant. Motion at 4. The Intervenor apparently imagine that the various degrees of significance of the discovered and undiscovered deficiencies can simply be summed to make one high degree of significance. More likely than summation is multiplication: the probability that any one of the design deficiencies at Byron could result in a malfunction is -- all the evidence says -- relatively remote; thus the probability that any two of the design deficiencies could result in simultaneous malfunctions is even more remote, since that probability is the product of the probabilities of the separate malfunctions.

Thus, in sum, the Intervenor have not met their burden of showing that they have raised a significant safety issue. They have not shown that there are uncorrected design errors at Byron which endanger safe plant operation, for they have not shown either that any of the errors found by the IDI or the IDR are safety-significant, or that there is any likelihood that there are any undiscovered design errors having safety significance. Nor have the Intervenor shown that there has been a breakdown of design quality assurance which raises a legitimate doubt about whether the plant can be operated safely. As we noted above, the IDR identified some negative trends in the design process, and the Staff

has not completed its review of the actions the Applicant has taken to correct these trends. However, "the Staff does not believe that these trends indicate an inadequacy in design or a pervasive breakdown in control of the design process." Milhoan Affidavit at 20. The Intervenor's have presented no evidence to the contrary.

#### Usefulness of Litigation

Given our ruling on the importance of the issue, we need not spend much time measuring the motion against the standards dealing with the usefulness of litigating the issue. In deciding whether to admit a late-filed contention, a board must also consider whether there are other means by which the petitioner's interest will be protected, or other parties in the proceeding who could protect that interest. Of course, no other party in this proceeding would have made this motion, and there is no other trial-type forum in which the Intervenor's could have made the motion. But, since the petitioners raise an issue of little importance, considerations of their options for pursuing the issue can weigh only little.

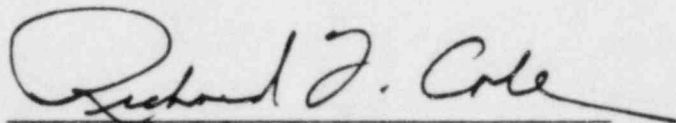
Finally, in order for the record to be reopened, the motion must show that we might have reached a different result in our supplemental initial decision (LBP-84-41, 20 N.R.C. \_\_\_\_ (October 16, 1984)) had we considered the material in support of the motion. Diablo Canyon, supra, ALAB-775, 19 N.R.C. at 1366. A different result would hardly seem to have been likely, since the Intervenor's have been unable to show that either uncorrected design errors or a pervasive breakdown in design

quality assurance raise a legitimate doubt about whether the plant can be safely operated.

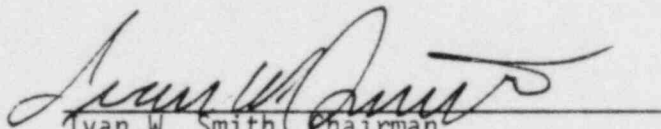
For the reasons given above, the Intervenor's motion to reopen the record to receive evidence on whether there should be a thorough review of the whole design of Byron is denied.

Dr. Callihan participated in the preparation of this order and concurs in it. He was not available to sign it.

THE ATOMIC SAFETY AND LICENSING BOARD



Richard F. Cole, Ph.D.  
ADMINISTRATIVE JUDGE



Ivan W. Smith, Chairman  
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland

November 2, 1984