

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

5/29/80

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
COMMONWEALTH EDISON COMPANY) Docket Nos. 50-454
(Byron Station, Units 1 and 2)) 50-455

NRC STAFF ANSWER TO SUPPLEMENTED STATEMENT
OF CONTENTIONS OF DeKALB AREA ALLIANCE FOR
RESPONSIBLE ENERGY AND THE SINNISSIPPI
ALLIANCE FOR THE ENVIRONMENT

On May 9, 1980 the DeKalb Area Alliance for Responsible Energy (DAARE) and the Sinnissippi Alliance for the Environment (SAFE) filed a supplemented statement of contentions in this proceeding.

INTRODUCTION

The Application of Commonwealth Edison Company (Applicant) for an operating license was published in the Federal Register (43 Fed. Reg. 53659) on December 15, 1978. DAARE/SAFE filed a timely petition for leave to intervene which the Staff agreed had demonstrated standing within the purview of 10 C.F.R. § 2.714 and agency decisions. The Staff, Applicant and representatives of DAARE/SAFE met on several occasions to discuss the submission of contentions. DAARE/SAFE was not represented by counsel at that time, nor at any time prior to the submission of the May 9, 1980 filing. At the Special Prehearing Conference held in Rockford, Illinois in August 1979, the Board ruled that DAARE/SAFE had standing as an intervenor, and that further meetings should be held between Applicant, Staff and DAARE/SAFE to refine proper contentions for the proceeding. Additional meetings were held and informal contentions were

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served by DAARE/SAFE, to which informal comments were made by the Applicant and Staff. A Notice of Appearance of Mr. Kenneth Levin was filed shortly before the filing of the revised contentions.

To be admissible as a contention in a Commission licensing proceeding, such contention must fall within the scope of issues set forth in the Federal Register Notice of Hearing (Notice of Hearing) in that proceeding and comply with the requirements of 10 C.F.R. § 2.714(b) and applicable Commission case law. See, e.g., Northern States Power Co. (Prairie Island, Units Nos. 1 and 2), ALAB-197, 6 AEC 188, 194 (1973); Duquesne Light Co. (Beaver Valley, Unit No. 1), ALAB-109, 6 AEC 242, 245 (1973); Philadelphia Electric Co. (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20, 21 (1974).

10 C.F.R. § 2.714(b) requires that a list of contentions which intervenors seek to have litigated be filed along with the bases for those contentions set forth with reasonable specificity. A contention must be rejected where:

- (a) it constitutes an attack on applicable statutory requirements;
- (b) it challenges the basic structure of the Commission's regulatory process or is an attack on the regulations;
- (c) it is nothing more than a generalization regarding the intervenor's views of what applicable policies ought to be;
- (d) it seeks to raise an issue which is not proper for adjudication in the proceeding or does not apply to the facility in question; or
- (e) it seeks to raise an issue which is not concrete or litigable.

Philadelphia Electric Co. (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20-21 (1974).

The purpose of the basis requirements of 10 C.F.R. § 2.714 is to assure that the contention in question does not suffer from any of the infirmities listed above, to establish sufficient foundation for the contention to warrant further inquiry of the subject matter in the proceeding, and to put the other parties sufficiently on notice "so that they will know at least generally what they will have to defend against or oppose." Peach Bottom, supra at 20.

From the standpoint of basis, it is unnecessary for the petition "to detail the evidence which will be offered in support of each contention." Mississippi Power and Light Co. (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973). Furthermore, in examining the contentions and the bases therefor, a licensing board is not to reach the merits of the contentions. Duke Power Co. (Amendment to Materials License SNM-1773 - Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146, 151 (1979); Peach Bottom, supra at 20; Grand Gulf, supra at 426.

Nonetheless, it is incumbent upon the Intervenors to set forth contentions which are sufficiently detailed and specific to demonstrate that the issues raised are admissible and that further inquiry is warranted, and to put the other parties on notice as to what they will have to defend against or oppose. This is particularly true at the operating license stage, as here, where a hearing is not mandatory, in order to assure that an asserted contention raises an issue clearly open to adjudication. Cincinnati Gas and Electric Co. (William H. Zimmer Nuclear Power Station), ALAB-305, 3 NRC 8, 12 (1976); Gulf States Utilities Co. (River Bend Station, Units 1 and 2), ALAB-183, 7 AEC 222, 226 (1974). ALAB-444, 6 NRC 760, 768-69 (1977). Houston

Lighting & Power Co. (Allens Creek Nuclear Generating Station, Units 1 and 2), ALAB-590 (April 22, 1980). It is to be noted that where the Staff stipulates to the admissibility of a contention that is not an indication with respect to the validity of the contention but merely that it is capable of being litigated in this proceeding.

CONTENTIONS

Contention 1

Intervenors contend that the record of noncompliance with Nuclear Regulatory Commission regulations by the Applicant in its other nuclear stations demonstrates its inability, unwillingness, or lack of technical qualifications to operate the Byron station within NRC regulations and to protect the public health and safety as required under 10 C.F.R. 50.57(a)(1), (2), (3), (4), and (6), and that therefore the Applicant should not be granted an operating license unless it demonstrates that improvements in management, operations, and procedures will ensure its willingness, ability and technical qualifications to operate within NRC rules' that these improvements will be enforced; and that the Applicant is financially capable of supporting these improvements.

The Staff will stipulate to the admissibility of Contention 1 as worded, although we are of the opinion that the word "enforced" relating to certain improvements should be changed to "implemented."

Contention 2

Intervenors contend that since residents of the DeKalb-Sycamore and Rockford areas, the zones of interest of DAARE and SAFE, are surrounded by 11 other nuclear generating units in operation or under construction (at Dresden, Quad-Cities, LaSalle, Zion and Braidwood) in addition to the two units at Byron, that the Applicant should re-evaluate the dose impacts of projected routine releases of radioactive materials (Chapter 11, FSAR) to determine the cumulative effects to residents from the addition of Byron releases to releases from the other 11 units. This re-evaluation is especially critical in light of Applicant's record of incidents at its other plants, since the

granting of the Byron Construction License. This re-evaluation should be performed to ensure that applicable NRC (10 C.F.R. Part 20 and 10 C.F.R. Part 50, Appendix I) and EPA (40 C.F.R. 190) limits for radionuclide releases and exposures are not exceeded in practice for DeKalb-Sycamore and Rockford area residents due to the addition of the Byron units to other units in operation or under construction, and should focus upon both the projected and potential aggregate dose levels to these residents, and upon the known and potential effects of such projected and potential cumulative dose levels.

The Staff will not stipulate to the admissibility of this contention in its present form. We will, however, stipulate to its admissibility if two changes are made. The first change required is that reference to NRC regulations be deleted, as it is the Staff's position that the governing regulations for cumulative releases is 40 C.F.R. Part 190. The second change required is that the word "effects" in the first sentence be changed to "doses." See Philadelphia Electric Company (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 24 (1974).

Contention 2a

Due to the concentration of nuclear power plants already in Northern Illinois; the Applicant's record of incidents and violations in existing plants which have emerged since the granting of a Construction License for Byron; and the credibility which must now be given to large scale accident scenarios since TMI, Intervenors contend that the addition of Byron Station operations places an undue and unfair burden of risk from exposure to radioactive materials from accidental releases on DeKalb-Sycamore and Rockford area residents. With the addition of two more nuclear power units in operation at Byron, the potential for cumulative dose effects from discrete accident events at plants in Northern Illinois under unfavorable meteorological conditions poses an unreasonable level of risk to the health and safety of DeKalb-Sycamore and Rockford area residents.

The Commission has issued an interim policy statement with respect to Class 9 events. At this time, the Staff has not had sufficient time to evaluate how such statement would affect the Staff position to a contention such as 2a. The Staff recommends that the Board defer ruling on this contention at this time.

Contention 3

Intervenors contend that the FSAR does not adequately describe the elements set forth in 10 C.F.R. Part 50, Appendix E, IV, D as required by 10 C.F.R. Part 50, Appendix E, III, nor is the actual emergency plan presently planned to be used by Applicant in compliance with said criteria, so as to demonstrate that the Applicant's emergency plans for the Byron Station provide reasonable assurance that appropriate measures can and will be taken in the event of an emergency to protect public health and safety and prevent damage to property. Intervenors further contend that Applicant's emergency plan for Byron is inadequate in that it fails to take into account any of the following factors, each of which must be factored into emergency plans for them to be meaningful and adequate.

To this contention the Intervenors have added five factors which they feel should be factored into the emergency plan.

The thrust of this contention is that the Applicant has not complied with the provisions of 10 C.F.R. Part 50, Appendix E, relative to Emergency Planning. In view of the Commission's active interest in emergency planning and rule-making procedure being followed, the Staff recommends that the Board defer ruling on this contention at this time. Based on the projected schedule for the issuance of Staff documents (SER 6/81 and FES 2/81) we feel there will be sufficient time for the Commission to have acted on any new emergency planning rules prior to the hearing in the Byron proceeding.

Contention 4

Intervenors contend that the Applicant's Final Safety Analysis Report (FSAR) does not comply with 10 C.F.R. Part 50.34(b)(4) in that the FSAR and Applicant fail to take into account all "pertinent information developed since the submittal of the preliminary safety analysis report" as required by 10 C.F.R. Part 50.34(b)(4). Specifically,

Intervenors contend that the FSAR does not analyze the risks to the public health and safety from the potential of accidents resulting from multiple, mutually independent failures as opposed to a "single failure," as defined in 10 C.F.R. Part 50, Appendix A. Applicant's Chapter 15 FSAR examines a set of single failure scenarios. The potential of multiple failure accidents has become more apparent since March and April of 1979 at which time the nuclear generating plant at Three Mile Island near Harrisburg, Pennsylvania, experienced an accident resulting from multiple, mutually independent failures, that is, failures which occurred in proximate time to one another without actually being caused by one another. In 10 C.F.R. Part 50, Appendix A, Introduction, it is noted that even though no specific design criteria for a problem has been defined, Applicant is not relieved from the obligation to consider new important safety matters, in this case, in its analysis of accident risk and prevention under the requirements of 10 C.F.R. 50.34(a)(4)(i) and (ii), and 10 C.F.R. 50.34(b)(4).

The Commission has under consideration Staff action plan recommendations relative to multiple failures. The Staff recommends that the Board defer ruling on this contention.

Contention 5

Intervenors contend that Applicant's power demand models in the Environmental Report-Operating License (EROL) no longer demonstrates that there exists, or will exist in the reasonably foreseeable future, a need for the level of generating capacity which the addition of the Byron units would provide. Such a need must be shown in order to establish that the units produce a level of benefit which will balance the costs of the project under 10 C.F.R. Part 51.21 and 51.20(b). Intervenors further contend that new conditions and trends have emerged, some of which are described below, and that in consequence the Applicant should reassess its demand projections taking these new facts into account, to determine when and if the generating capacity of the Byron units would be needed to obtain their

14% reserve generating target. Intervenors contend that such a reassessment is necessary in order to fulfill the NRC's obligation under NEPA to determine if there exists an alternative, environmentally superior means to meet the real need for power. Such alternatives may include no action.

- a. The addition of the Byron station units contributes to a generating reserve of 38 percent, substantially above the 14 percent level of reserve deemed adequate by Applicant. The excess reserve capacity projected by Applicant does not take into account decreasing rates of growth in projected demand due to price and other factors set out below, so that real overcapacity for generating electricity may be, and has been projected by other sources to be, substantially above 38 percent. Even though the value of electricity to fulfill basic needs is "priceless," the value of an excess reserve capacity for generating electricity does not constitute a similarly high level of benefit.
- b. Applicant purports to show in EROL, Chapter 1, that demand for power responds to several conditions, including price. New price increases initiated by Applicant, including those in response to rapid increases in factor costs of operations and maintenance, such as fuel costs; storage and disposal costs on and off site of low, intermediate and high level waste; and in wages, and including costs from Applicant's construction program, will all ensure continued price increases and, therefore, according to Applicant's models, a drop in the rate of growth in demand.
- c. There is considerable discrepancy between the projections of average annual rate of growth in peak load Applicant has made in the EROL and those it has recently made in testimony before other state regulatory bodies, such that the growth rate now being projected may be only one-third (.329) the size stated in the EROL.
- d. Applicant corrected its original demand projections made for construction licensing downward in the EROL to account for the effects of the 1973-4 round of oil price increases. The effects of current and expected oil price increases should, if Applicant's EROL models are correct, further reduce demand. The effects of rapid inflation and the tightened loan market on construction and investments in high energy use appliances should also be considered by Applicant in recalculating saturation indices used in making projections.

All of these factors have emerged since the construction hearings and are significant enough to require re-evaluation at the operating stage hearings.

The Staff opposes the admissibility of this need for power contention based upon the rationale expressed by the Commission in Carolina Power and Light Company (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), CLI-79-5, and other cases cited therein. 9 NRC 607 (1979).

Contention 6

The Intervenors contend that the FSAR provides insufficient assurance of containment of radioactive materials in light of, among other factors, the risks of use of zirconium cladding alloys resulting in a breach of the integrity of both internal and external systems. Our evidence for the unacceptability of zirconium cladding includes the matter contained in a letter to the Bulletin of Atomic Scientists by former Westinghouse nuclear engineer, Earl A. Gulbransen, published on page 5 of the June, 1975 issue of that journal. Quoting Dr. Gulbransen from that letter: "At the operating temperature of nuclear power reactors zirconium cladding alloys react with oxygen in water to form an oxide layer which partially dissolves in the metal, embrittling and weakening the metal tubing. Part of the hydrogen formed in the zirconium-water reaction dissolves in the metal and may precipitate as a hydride phase also embrittling and weakening the metal tubing." Further evidence of risk of using zirconium alloys occurs a bit later in the same letter: "At temperatures above 1100° Celsius zirconium reacts rapidly with steam with a large evolution of heat and the formation of free hydrogen, with most metals to form intermetallic compounds and with other metallic oxides to form its own oxide. Once zirconium is heated to 1100° Celsius, which could occur in loss of coolant accidents, it is difficult to prevent further reaction, failure of the tubing and of the reactor."

Thus the conclusion is reached by Dr. Gulbransen that: "The use of zirconium alloys as a cladding material for the hot uranium oxide fuel pellets is a very hazardous design concept since zirconium is one of our most reactive metals chemically."

Additionally, Applicant has not demonstrated the adequacy of its internal and external safety systems as impacted by a zirconium cladding failure. In the event of a loss of integrity of zirconium cladding, radiation levels exceeding those of the design environment of the internal and external safety equipment and systems would occur. As the design basis for these systems and equipment does not include an integrity assurance in the event of a zirconium cladding failure by failing to consider such potential radiation levels in the design environment of the internal and external safety systems, Intervenor contends that the proposed use of zirconium cladding, and the impact on the internal and external safety systems and equipment in the event of a zirconium cladding failure, require further examination.

The Staff agrees that this contention is capable of being litigated in this proceeding. However, we feel that the words "among other factors" in the first sentence should be deleted because of their vagueness and lack of specificity.

Contention 7

The Intervenor contends that the FSAR and Applicant offer insufficient safeguards against hydrogen explosions, such as are alleged to have occurred at Three Mile Island Reactor 2. There is no evidence that the recombiners for taking up hydrogen would be adequate if circumstances similar to those at TMI 2 should occur at Byron.

The Staff feels that this contention should be allowed for litigation in this proceeding only to the extent described in the Commission's Memorandum and Order CLI-80-16, May 16, 1980, in the TMI-1 Restart proceeding.

Contention 8

Intervenors contend that Applicant does not meet the requirements of 10 C.F.R. Part 51.21 and 51.20(a), (1 and 2); (b), (c) because no consideration is given the environmental impact of primary coolant system chemical decontamination and steam generator chemical cleaning which the Department of Energy has determined will occur twice during the lifetime of a nuclear power plant. Recent data raise the possibility

of serious adverse consequences of the decontamination process. Chelating agents, intended for the removal of highly radioactive corrosion products adherent to the coolant system surfaces, sharply increase the rate of migration of these same radioactive products through the environment and into the food chain. No analysis or discussion is given possible biological consequences to the accidental spillage during decontamination, waste storage, transportation or disposal (on or off-site).

The Staff will agree to the admission of this contention for purposes of discovery, subject to being dismissed if no basis exists. The Staff wishes to amend its response to Contention 114 of the League of Women Voters of Rockford to agree with the position taken by the Staff with respect to this contention.

Contention 9

Intervenors contend that there are many unresolved safety problems with clear health and safety implications and which are demonstrably applicable to the Byron Station design, but are not dealt with adequately in the FSAR. These issues include but are not limited to:

- a. Serious water hammer problems. We understand that a water hammer caused by rapid condensation of steam in feedwater lines of a PWR constitutes the most serious of this sort of event. Damage to pipes and valves are some potential hazards. Ultimately, under the most serious circumstances successive water hammer incidents might lead to a loss of coolant accident. Applicant has already had water hammer problems in its Zion plant in 1977, and a plant shutdown was required to repair the damage. The similarity of plant equipment, management, and operator training programs between the Zion and Byron stations raises serious questions about the Applicant's ability to operate the Byron plant safely, with respect to water hammer phenomenon. Evidence with respect to demonstrated efficacy of new nozzle designs to be used at Byron to mitigate water hammers is not presented at FSAR 10.4.7.3.

- b. Asymmetric blowdown loads of reactor primary coolant system. This problem may develop from a reactor coolant pipe rupture at the vessel nozzle. The result, after a LOCA incident, could be to place a significant load on the reactor vessel supports, which, in the extreme, could cause their failure. This, in turn, might damage the ECCS lines and/or prevent proper functioning of the control rods. This problem is particularly severe in PWRs. Applicant's response to this problem, a computer model of stresses at FSAR 3.9.1.4.6, is insufficient, and a full scale mechanical test is necessary, especially given the complexity of the reactor vessel geometry.
- c. Steam generator tube integrity. In PWRs steam generator tube integrity is subject to diminution by corrosion, cracking, denting and fatigue cracks. This constitutes a hazard both during normal operation and under accident conditions. Primary loop stress corrosion cracks will, of course, lead to radioactivity leaks into the secondary loop and thereby out of the containment. A possible solution to this problem could involve redesign of the steam generator, but at FSAR, Section 10.3.5.3 the Applicant notes its intent to deal with this as a maintenance problem, which may not be an adequate response given the instances noted in Contention 1, above.
- d. Fracture toughness of steam generators and reactor coolant pump supports. The steel used as steam generator and reactor coolant pump support materials may be subject to cracks in the material near a weld under lower-than-normal temperature conditions. For this reason, under certain circumstances, auxiliary electric heating should, according to NRC generic problem analyses, be provided to keep the temperatures of these structural elements high enough to avoid brittle fracture. The problem may become severe under a LOCA condition. Auxiliary heating is not provided for in the Byron design, as indicated at FSAR 5.2.3.3 or 3.9.3.4.
- e. The process of chemical decontamination may exacerbate safety problems through a degradation of the integrity of the primary coolant system boundary. Such degradation may occur during the process of decontamination or during subsequent operation of the reactor. Also, chemical solution decontamination may add to the deposition of radioactive corrosive products, according to an NRC official. Decontamination is not discussed in Applicant's FSAR or EROL.

For a fuller statement of the unresolved problems applicable to Byron see the ACRS letters issued herein; the ACRS generic letters,

including the letter dated November 15, 1977, NUREG-0410; Testimony, Aycok, Crocker and Thomas, presented in Public Serv. Co. of Okla. (Black Fox Station, Units 1 and 2); the Regulatory Staff's "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations," NUREG-0578; and ACRS' Reports to Congress, January, 1978 and 1979, all of which are incorporated herein by reference as if specifically set forth.

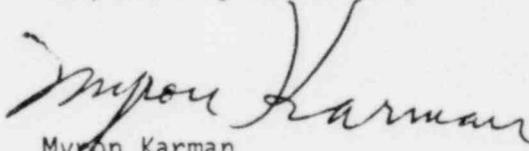
The Staff is opposed to this contention on the basis that it constitutes a mere recitation of unresolved safety issues or generic items, without attempting to demonstrate any nexus between the issue and particular deficiencies in the facility license application. A mere "laundry list" of task action plans or TSAR items is not sufficient to raise an issue for litigation. Gulf States Utilities Co. (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1976). The Intervenor has not attempted to satisfy the basis requirement of 10 C.F.R. § 2.714 as interpreted in ALAB-444. This is true notwithstanding detailed communications between Applicant, Staff and Intervenors with regard to requirements imposed upon someone seeking to litigate an unresolved generic technical safety item in individual licensing proceedings. While it is true that an appropriate remedial action must be taken in the individual case and received and accepted by the NRC licensing staff, this in itself does not entitle Intervenors to demand a hearing on these issues absent the filing of a contention meeting the tests set forth in River Bend.

CONCLUSION

The Staff recommends that the Board accept the following contentions as issues in the Byron proceeding:

- The Staff rewrite of Contention 1;
- The Staff rewrite of Contention 2;
- Deferral of a ruling on Contention 2a;
- Deferral of a ruling on Contention 3;
- Deferral of a ruling on Contention 4;
- The Staff rewrite of Contention 6;
- Contention 7;
- Contention 8;
- Contentions 5 and 9 should be dismissed.

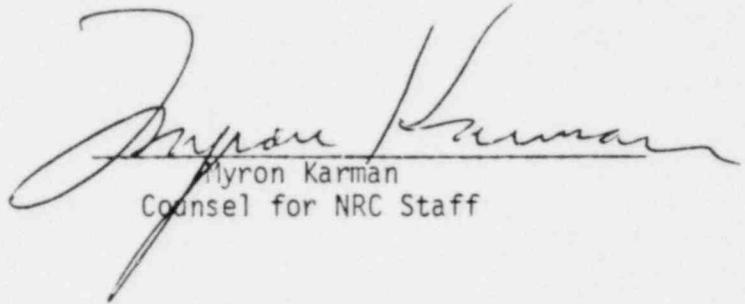
Respectfully submitted,



Myron Karman
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Dated at Bethesda, Maryland
this 29th day of May, 1980

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