

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
COMMONWEALTH EDISON COMPANY) Docket Nos. 50-237-SP
(Dresden Station, Units 2 & 3)) 50-249-SP
(Spent Fuel Pool
Modification)

APPLICANT'S BRIEF IN SUPPORT OF
MOTION TO STRIKE

I. Statement of Facts

Intervenor's contention 6 reads:

The application inadequately addresses the increased consequences of accidents considered in the FSAR, SER, and FES associated with the operating license review of Dresden Units 2 and 3 due to the increased number of spent fuel assemblies and additional amounts of defective fuel to be stored in the spent fuel pool as a result of the modification.

(emphasis added).

Applicant and the NRC submitted the prepared testimony of Terry Pickens and Millard L. Wohl, respectively, addressing contention 6. Intervenor submitted no testimony of its own.

In its opening statement, Intervenor argued:

[T]he existing accident analyses are based on the single failure criteria test for accident credibility. The evidence will show that this test is no longer sufficient to meet the requirements of an NRC licensing board.

TMI was a multiple-failure accident with both dependent and independent failures. The spent fuel pool overflow at Commonwealth Edison's plants has been a multiple failure. A single-failure criteria has been criticized by both the Kemeny Commission and the Rogovin Commission as well as by the NRC's own TMI Action Plan, Item 2C-3.

The testimony will show that multiple-failure accidents must be considered for Dresden 2 and 3. Single-failure analysis, which is the only kind that has been done, is not adequate. Failures, human errors and maintenance errors must be evaluated with fault trees and event trees in order to have the correct amount of assessment of the risk and consequences of potential accidents due to this spent fuel conversion.

(Tr. 87).

Accordingly, Intervenor's cross-examination of Applicant's witness, Mr. Pickens, was apparently directed to establishing that the accident analyses for the Dresden spent fuel pool modification were based on the single failure criterion and did not take into account the possibility of multiple failures. (Tr. 659, line 8, through Tr. 662, line 4). While the single-failure criterion is embodied in the Commission's regulations, see, e.g., 10 CFR Part 50 Appendix A, Applicant did not object to this cross-examination since merely establishing that multiple failures were not considered did not constitute an impermissible challenge to the Commission regulations, 10 CFR §2.758(a).

However, when Intervenor pursued at greater length the dichotomy between single failure analysis and multiple failure analysis in its cross-examination of the Staff's witness, Mr. Wohl, (Tr. 674-678), Applicant objected, citing 10 CFR §2.758. (Tr. 678-9). Counsel for Intervenor responded:

Mr. Chairman, this is not a challenge to the Regulations as it affects Applicant, and it's not a challenge to the Regulations in that the case law does require as the testimony will show that certain types or problems must be considered in the SER; and I'm trying to establish a foundation to show that certain types of problems that are required by the Commission and the case law of the Commission have not been included in the SER.

(Tr. 680).

Counsel for the NRC Staff and the Applicant then objected on the grounds of relevance, since Contention 6 does not call for analyses of new or different accidents from those considered in the FSAR, SER, and FES associated with the operating license review of Dresden 2 and 3. Instead, Contention 6 calls for a review of any increased consequences of the same accidents due to additional amounts of stored fuel. (Tr. 680-2).

The Board did not rule on the objections but instead allowed counsel for the State of Illinois to complete cross-examination of Mr. Wohl. That cross-examination seemed to focus on the lack of any "systems interactions accidents" (Tr. 682) and the characterization of "systems interactions"

as an "unresolved safety issue" by the NRC Staff.^{1/} (Tr. 683).

Upon the conclusion of Intervenor's cross-examination, Applicant and the NRC Staff again questioned the relevance of the testimony so elicited. Intervenor's counsel explained:

It's my understanding of the Gulf States Utilities Company (River Bend) case, ALAB 444, 6 NRC 760, specifically pages 767 and 8, which came out in 1977, that unresolved safety problems - such as those listed in NUREG 510 and NUREG 0660, which is the TMI action plan, and the revision of Reg Guide 1.97 - that according to the law of this Commission that all unresolved safety issues must be included in the SER. It's our interpretation that in relation to Contention 6, there should have been a reference to systems interaction in the accident analysis and in Contention 6.

(Tr. 684-5).

After further argument the Board asked for a written motion and briefs. (Tr. 687).

^{1/} According to the transcript Intervenor stated in the cross-examination that "unresolved safety issues" are listed in NUREG 6510. (Tr. 683, line 15). Applicant is unaware of that NUREG document. In January 1979 the NRC published NUREG 510, entitled "Identification of Unresolved Safety Issues Relating to Nuclear Power Plants: Report to Congress," which Intervenor may have intended to cite at Tr. 683, line 15 and Tr. 684, line 22. In addition, Unresolved Safety Issues, including systems interaction are listed in NUREG 0606 (Volume 2, No. 3, August 15, 1980) the so-called "Aqua Book," which is designed to provide the management of the NRC with a quarterly overview of generic talks addressing "Unresolved Safety Issues" reported to Congress pursuant to Section 210 of the Energy Reorganization Act of 1974 as amended.

II. Intervenor's Cross-Examination of Mr. Wohl should be struck.

Even after review of the transcripts, Applicant is still unsure of the purpose underlying Intervenor's cross-examination of Mr. Wohl. Three alternatives suggest themselves:

1. Intervenor may be intending to challenge the single failure criterion in this proceeding, notwithstanding its apparent disclaimer of any such intent (Compare Tr. 87 with Tr. 679-80). If so, Intervenor has not pursued this objective in accordance with 10 CFR §2.758, and accordingly Intervenor's cross-examination of Mr. Wohl should be struck.

2. Intervenor may be asserting that the Staff's SER and the testimony offered by the Applicant and the Staff in respect of Contention 6 are inadequate because they fail to take into account one particular "unresolved safety issue": "systems interaction." If so, Intervenor has failed to show the relevance of "systems interaction" to Contention 6 or to this license amendment proceeding.

In the first place, Contention 6 suggests only that the accident analyses may be inadequate "due to the increased number of spent fuel assemblies and additional amounts of defective fuel to be stored. . . ." Neither systems interaction nor any other unresolved safety issue is mentioned. re-writing the contention at this late stage is not an

appropriate suggestion (Tr. 686, lines 16-18); neither is it reasonable to argue that Applicant and the Staff could have predicted Intervenor's after-the-fact interpretation of Contention 6 through discovery. (Tr. 686, lines 9-12). Applicant and the Staff are entitled to take the words of Contention 6 at their face value.

Intervenor's cross-examination of Mr. Wohl not only fails to address a matter within the parameter of Contention 6, but also fails to establish how systems interaction is relevant to the subject matter of this proceeding. In Gulf States Utilities Company (River Bend Station, Units 1 and 2), ALAB 444, 6 NRC 760 (1977), the case cited by Intervenor in support of its position, the Appeal Board actually stated:

The mere identification of a generic technical matter which is under further study by the Staff (such as a TSAR^{2/} item or a Task Action Plan) does not fulfill this obligation [to supply a connecting link], even if the matter has some patent relationship to the category of reactor under review. For as we have seen, the generic study may have little bearing on safety - e.g. where it concerns the methodology of the Staff's review. To establish the requisite nexus between the permit license application and a TSAR item (or Task Action Plan), it must generally appear both (1) that the undertaken or contemplated project has safety significance insofar as the reactor under review is concerned; and (2) that the fashion in which the application deals with the matter in question

2/ (Applicant's footnote): TSAR stands for Technical Safety Activities Report, a predecessor of NUREG 0606, supra footnote 1.

is unsatisfactory, that because of the failure to consider a particular item there has been an insufficient assessment of a specified type of risk for the reactor, or that the short-term solution offered in application to a problem under Staff study is inadequate.

7 NRC 760, 773 (material in brackets added).

Intervenor's cross-examination of Mr. Wohl fails to establish either point (1) or point (2). Similarly, the discussion of systems interactions in NUREG 0606, Volume 2, No. 3 (Attachment 1) and NUREG 510 (Attachment 2), fail to disclose any connecting link between that subject and this spent fuel pool proceeding. At the most elementary level, for example, Applicant is completely in the dark as to which Dresden systems Intervenor thinks may interact and why such systems interactions would be any more or less a problem if the requested spent fuel pool license amendments are issued. As an Appeal Board has recently reaffirmed:

[A]dministrative proceedings should not be a game or a forum to engage in unjustified obstructionism by making cryptic and obscure reference to matters that "ought to be" considered and then, after failing to do more to bring the matter to the agency's attention, seeking to have that agency determination vacated on the ground that the agency failed to consider matters "forcefully presented."

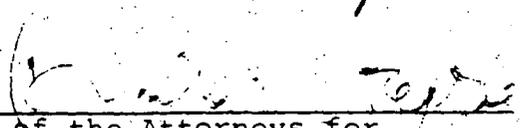
Commonwealth Edison Company (Zion Station, Units 1 and 2), ALAB 616, ___ NRC ___ (October 2, 1980), quoting Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553-554 (1978). Accordingly, Intervenor's cross-examination of Mr. Wohl should be struck.

3. Intervenor may be suggesting (Tr. 684, lines 17-25) that, independent of the matters properly placed in controversy by the Intervenor, the Staff's SER for this pool modification (and logically, therefore, all SER's in license amendment cases) should address all unresolved safety issues identified in NUREG 510, as well as all items listed in NUREG 0660 (which is the TMI Action Plan), and Reg. Guide 1.97. In the River Bend case, the Appeal Board noted that the failure of an Intervenor to assert the requisite nexus between the facility in question and generic technical issues did not obviate the need for the Licensing Board to review such generic technical issues prior to issuance of a construction permit. 6 NRC 760, 774-75. This holding was later extended to the operating license stage in Virginia Electric and Power Company, (North Anna Nuclear Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978). However, this is not a construction permit or operating license proceeding where the overall safety of the plant is being reviewed. Both the Staff's review and the Licensing Board's jurisdiction in this case are limited to the spent fuel storage expansion request. See, e.g. Commonwealth Edison Company (Zion Station, Units 1 and 2), ALAB 616, _____ NRC _____ (October 2, 1980). Moreover, the Commission itself submits status reports on unresolved safety issues annually to Congress pursuant to Section 210

of the Atomic Energy Act of 1954, as amended. See e.g.,
NUREG 0510, supra n.1; USNRC 1979 Annual Report pp. 65-86.
To require these generic subjects to be addressed in every
license amendment proceeding, regardless of any demonstration
of relevance to the particular jurisdiction granted to the
licensing boards, would waste Board time and Staff resources
and trespass upon the supervisory authority of the Commission
over the Staff's conduct of safety research.

For the reasons stated above, Intervenor's cross-
examination of Mr. Wohl (Tr. 674-684) should be struck.

Respectfully submitted,



One of the Attorneys for
Applicant

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SYSTEMS INTERACTIONS IN NUCLEAR POWER PLANTS (A-17)

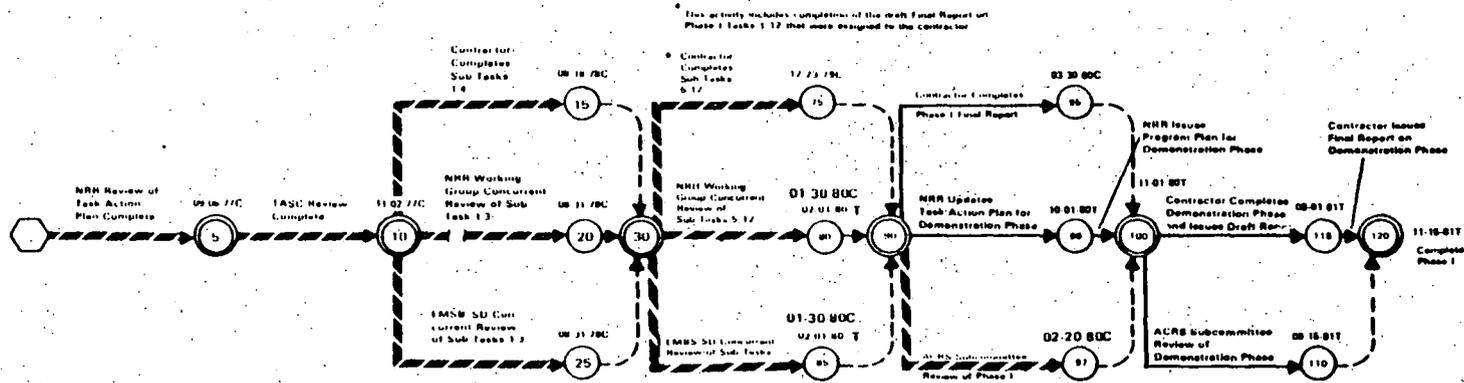
AS OF WEEK ENDING: AUGUST 16, 1980

<p>KEY PERSONNEL</p> <p>TASK MANAGER <u>J. ANGELO (GIB) X28392</u></p> <p>OMPA ANALYST <u>B. DULIN X27533</u></p> <p>TASK REVIEWERS</p> <table border="1"> <thead> <tr> <th>NAME</th> <th>BRANCH</th> </tr> </thead> <tbody> <tr> <td colspan="2">NO ASSIGNED REVIEWERS.</td> </tr> <tr><td> </td><td> </td></tr> </tbody> </table>	NAME	BRANCH	NO ASSIGNED REVIEWERS.																				<p> </p>	<p>TASK STATUS</p> <p>• PROBLEM DESCRIPTION</p> <p>The design of a nuclear power plant is accomplished by groups of engineers and scientists organized into engineering disciplines and into scientific disciplines. The reviews performed by the designers include interdisciplinary reviews to assure the functional compatibility of the plant structures, systems, and components. Safety reviews and accident analyses provide further assurance that system functional requirements will be met. These reviews include failure mode analyses.</p> <p>The NRC review and evaluation of safety systems is accomplished in accordance with the Standard Review Plan (SRP) which assigns primary and secondary review responsibilities to organizational units arranged by plant systems or by disciplines. Each element of the SRP is assigned to an organizational unit for primary responsibility and, where appropriate, to other units for secondary responsibilities.</p> <p>Thus, the design and analyses by the plant designers, and the subsequent review and evaluation by the NRC staff take into consideration the interdisciplinary areas of concern and account for systems interaction to a large extent. Furthermore, many of our regulatory criteria are aimed at controlling the risks from systems interactions. Examples include the single failure criterion and separation criteria.</p> <p>Nevertheless, there is some question regarding the interaction of various plant systems, both as to the supporting roles such systems play and as to the effect one system can have on other systems, particularly with regard to whether actions or consequences could adversely affect the presumed redundancy and independence of safety systems.</p> <p>The problem to be resolved by this task is to identify where the present design, analysis, and review procedures may not acceptably account for potentially adverse systems interaction and to recommend the regulatory action that should be taken to rectify deficiencies in the procedures.</p>
NAME	BRANCH																							
NO ASSIGNED REVIEWERS.																								
<p>TASK MANAGER <i>John Angelo</i> 8/29/80</p>	<p>SLIPPAGE ANALYSIS</p> <p>TASK END DATE</p> <p>1978 ANNUAL REPORT</p> <p>Phase I - 09-79 Phase II - 09-80</p> <p>CURRENT</p> <p>Phase I - 11-15-81 Phase II - NS</p>	<p>• TECHNICAL ASSISTANCE CONTRACT STATUS</p> <p># Phase I work was performed by Sandia National Laboratories under FIN # A-1113191 by NRR for \$219K and under FIN # A-1084181 by OSD for \$320K. Expenditures were \$197K for FIN # A-1113191 and \$320K for FIN # A-1084181.</p> <p>• ACRS INTERFACE INFORMATION</p> <p># The review is under the cognizance of the ACRS Subcommittee on Plant Arrangements. A meeting was held 02:20:80 in Washington, D.C. with the Subcommittee which recommended a demonstration of Phase I methodology before proceeding much further on Phase II.</p> <p>• STANDARDS INTERFACE INFORMATION</p> <p># OSD has agreed to 0.25 man years of effort per year for review of contractor assistance.</p> <p># INDICATES A CHANGE IN INFORMATION</p> <p>• RES INTERFACE INFORMATION</p> <p># The Probability Analysis Staff of the Office of Nuclear Regulatory Research has acted as consultant to the NRR staff in the development and execution of this plan. No agreements have been discussed on further assistance in Phase II.</p> <p>• POTENTIAL PROBLEMS</p> <p># A potential problem is determining the scope and extent of Phase II as well as the techniques for demonstrating the efficacy of Phase I methodology.</p> <p>• STATUS SUMMARY</p> <p># A final report on Phase I work by Sandia National Laboratories was issued in April 1980 as NUREG/CR 1321. A scope of work is currently under development for the demonstration of Phase I.</p>																						

ALL INFORMATION - NUREG 0000

SYSTEMS INTERACTIONS IN NUCLEAR POWER PLANTS (A-17)

PHASE I



Demonstration phase includes recommendations for Phase II

- (4) The existence of a flaw of such size that the stresses imparted during the initiating event could cause the flaw to rapidly propagate, resulting in brittle failure of the member(s).

The second potential concern, lamellar tearing*, may also be a problem in those support structures which are similar in design to those of the aforementioned PWR. However, continued operation of PWRs during the continuing generic review of this concern was judged acceptable, based on a review of approximately 400 relevant technical documents which revealed only one instance of known failure from lamellar tearing. This failure occurred in often-stressed truck brakes. In addition, the factors considered above for the fracture toughness concern—such as low stresses during normal operation and the low probability of an initiating event—apply equally to this concern.

The generic fracture toughness program is expected to be completed in August 1979. The lamellar tearing evaluation is a longer term effort and is expected to be completed in 1981.

*Lamellar tearing is a cracking phenomenon which occurs beneath welds and is principally found in rolled steel plate fabrications. The tearing always lies within the parent plate, often outside the transformed (visible) heat-affected zone (HAZ) and is generally parallel to the weld fusion boundary. Lamellar tearing occurs at certain critical joints usually within large welded structures involving a high degree of stiffness and restraint. Restraint may be defined as a restriction of the movement of the various joint components that would normally occur as a result of expansion and contraction of weld metal and adjacent regions during welding ("Lamellar Tearing in Welded Steel Fabrication," The Welding Institute).

Systems Interactions In Nuclear Power Plants

In November 1974, the Advisory Committee on Reactor Safeguards requested that the NRC staff give attention to the evaluation of safety systems from a multi-disciplinary point of view, in order to identify potentially undesirable interactions between plant systems. The concern arises because the design and analysis of systems is frequently assigned to teams with functional engineering specialties—such as civil, electrical, mechanical, or nuclear. The question is whether the work of these functional specialists is sufficiently integrated in their design and analysis activities to enable them to identify adverse in-

teractions between and among systems. Such adverse events might occur, for example, because designers did not assure that redundancy and independence of safety systems were provided under all conditions of operation required, which might happen if the functional teams were not adequately coordinated. Simply stated, the left hand may not know or understand what the right hand is doing in all cases where it is necessary for the hands to be coordinated.

The NRC staff believes that its current review procedures and safety criteria provide reasonable assurance that an acceptable level of redundancy and independence is provided for systems that are required for safety. Nonetheless, in mid-1977, this task (Task A-17) was initiated to confirm that present procedures adequately take into account the potential for undesirable interactions between and among systems.

The NRC staff's current review procedures assign primary responsibility for review of various technical areas and safety systems to specific organizational units and assign secondary responsibility to other units where there is a functional or interdisciplinary relationship. Designers follow somewhat similar procedures and provide for interdisciplinary reviews and analyses of systems. Task A-17 will provide an independent investigation of safety functions—and systems required to perform these functions—in order to assess the adequacy of current review procedures. This investigation will be conducted by Sandia Laboratories under contract assistance to the NRC staff.

The contract effort, Phase I of the task, began in May 1978 and is expected to be completed in September 1979. The Phase I investigation is structured to identify areas where interactions are possible between and among systems and have the potential of negating or seriously degrading the performance of safety functions. The investigation will then identify where NRC review procedures may not have properly accounted for these interactions. Finally, in a follow-on Phase II of the task, specific corrective measures will be taken in areas where the investigation shows a need.

As noted above, the NRC staff believes that its review procedures and acceptance criteria currently provide reasonable assurance that an acceptable level of system redundancy and independence is provided in plant designs and this

task is expected to confirm this belief. Nonetheless, because adverse systems interactions are potentially of large significance to plant safety, this issue has been identified as an "Unresolved Safety Issue." If no significant system interactions are identified in the Phase I investigation described above, as is expected, this issue will not be treated in subsequent reports as an "Unresolved Safety Issue."

Environmental Qualification of Safety-Related Electrical Equipment

In addition to the conservative design, construction and operating practices and quality assurance measures required for nuclear power plants, safety systems are installed at nuclear plants to mitigate the consequences of postulated accidents. Certain of these postulated accidents could create severe environmental conditions inside the containment. The most serious of these accidents would be a high energy pipe break in the reactor coolant system piping or in a main steam line. In either case, the release of hot pressurized water and steam to the containment would create a high temperature environment (250 to 400°F) at high humidity (including steam) and pressure (as high as c. 50 psig). For some applications, chemicals are added for fission product removal to the containment sprays that are used to reduce the pressure in the containment. Additionally, some electrical equipment is predicted to be submerged following a large pipe break. Thus, the safety equipment is exposed to such environmental conditions and needs to remain operable during this period, as well as for the long-term post-accident period.

In order to assure that electrical equipment in safety systems will perform its function under accident conditions, the NRC requires that such equipment—principally equipment associated with the emergency core cooling system and containment isolation and cleanup systems—be "environmentally qualified." Specific electrical equipment of concern during postulated accident conditions includes: (1) the instrumentation needed to initiate the safety systems and provide diagnostic information to the plant operators (e.g., electrical penetrations into containment, any electrical connectors to cabling which transmits signals, and the instruments

themselves); (2) control power to motor operators for certain valves (e.g., ECCS and containment isolation valves located inside containment), and (3) fan cooler motors for those plants that utilize fan coolers for containment heat removal.

The current NRC safety review process for nuclear power plants applies certain criteria for confirming the capability of electrical equipment important to safety to function in the environment that might result from various accident conditions. Although such criteria have been applied to varying degrees since the early days of commercial nuclear power, they have come to be defined in clearer detail over the years.

The process of clarifying the criteria has given rise to certain questions regarding: (1) the degree to which electrical equipment used in older plant designs (those now operating) is capable of withstanding the environmental conditions (pressure, temperature, humidity, steam, chemicals, vibration, and radiation) of various accident conditions under which it must be able to function (i.e., the "qualification of equipment" in these older plants), and (2) the adequacy of test or analyses conducted for electrical equipment in newer plants to "qualify" such equipment as capable of withstanding the conditions of the environment created by various accidents during which the equipment must function (i.e., the "adequacy" of qualification tests).

With regard to older plants, the following actions have taken place in recent months.

As a result of a Sandia testing program being conducted for the NRC Office of Nuclear Regulatory Research, a generic safety concern with the adequacy of environmental qualification of certain electrical equipment was identified. This issue was highlighted by a November 4, 1977 petition from the Union of Concerned Scientists which requested immediate action by the NRC regarding operating power reactors and licensing actions for other proposed plants. (See "Abnormal Occurrences—1978," in Chapter 7 for extended discussion of specific actions following the Sandia tests.) Subsequent NRC staff investigations in response to this issue led, as of June 30, 1978, to seven plant shutdowns for corrective action and extended outages for two other plants to make modifications. These actions were taken for the most part as a result of a lack of conclusive information regarding the qualification of certain safety equipment.

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Modification)

CERTIFICATE OF SERVICE

I hereby certify that I have this 1st day of
December, 1980, served copies of the foregoing MOTION
TO STRIKE and APPLICANT'S BRIEF IN SUPPORT OF MOTION TO
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postage prepaid, to the following:

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