March 9, 1984

Docket No. 50-237 LS05-84-03-010

> Mr. Dennis L. Farrar Director of Nuclear Licensing Commonwealth Edison Company Post Office Box 767 Chicago, Illinois 60690

Dear Mr. Farrar:

SUBJECT: INTEGRATED PLANT SAFETY ASSESSMENT REPORT (IPSAR) SECTION 4.10, DESIGN CODES, DESIGN CRITERIA AND LOAD COMBINATIONS FOR DRESDEN 2

In the Integrated Plant Safety Assessment Report (IPSAR) for Dresden 2 (NUREG-0823), Section 4.10, structures were identified that may not meet the current design codes, design criteria, or load combinations. To resolve this issue, you proposed to review the applicability of the identified deviations and perform calculations, as needed, to assess the level of design conservatisms that exist. You responded to the staff by letter dated August 2, 1982.

Based on your evaluation, the affected structures and structural elements at Dresden 2 were found to have an adequate margin of safety, such that no plant modifications have been deemed necessary; however, the staff's review of the information submitted has concluded that some issues require additional information to support the conclusions you have drawn. This additional information is described in the enclosure. Because this reporting requirement affects fewer than ten respondents, an OMB clearance is not required under P.L. 96-511.

We believe that a meeting to discuss this topic, as well as the status of the other outstanding SEP items would be useful to expeditiously complete the SEP review for your facility.

Sincerely,

Original signed by/

Dennis M. Crutchfield, Chief Operating Reactors Branch #5 Division of Licensing

Enclosure: As stated

ADOCK

PDR

cc w/enclosure: See next page *SEE PREVIOUS TISSUE FOR CONCURRENCES. SEPB:DL* SEPB:DL SEPB:DL DPersinko:dk DChery CGrimes 2/24/84 3/8 /84 3/8 /84

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Based on your evaluation, the affected structures and structural elements at Dresden 2 were found to have an adequate margin of safety, such that no plant modifications have been deemed necessary; however, the staff's review of the information submitted concluded that some issues require additional information to support the conclusions drawn in the submittals. This additional information is described in the enclosure. Because this reporting requirement affects fewer than ten respondents, an OMB clearance is not required under P.L. 96-511.

We believe that a March méeting between your staff and ours to discuss this topic as well as all outstanding SEP items would be beneficial in order to schedule publication of/the Dresden 2 IPSAR supplement.

Sincerely,

Dennis M. Crutchfield, Chief Operating Reactors Branch #5 Division of Licensing

Enclosure: As stated

cc w/enclosure: See next page

SEPB: DL DF	SEPB:DL	SEPB:DL	ORB#5:PM	ORB#5:BC
DPersinko:dk	DChery	CGrimes	RGilbert	DCrutchfield
2/24/84	2/8/84	2/ /84	· 2/ /84	2/ /84

Mr. Dennis L. Farrar

cc Isham, Lincoln & Beale Counselors at Law One First National Plaza, 42nd Floor Chicago, Illinois 60603

Mr. Doug Scott Plant Superintendent Rural Route #1 Morris, Illinois 60450

U. S. Nuclear Regulatory Commission Resident Inspectors Office Dresden Station RR #1 Morris, Illinois 60450

Chairman Board of Supervisors of Grundy County Grundy County Courthouse Morris, Illinois 60450

U. S. Environmental Protection Agency Federal Activities Branch Region V Office ATTN: Regional Radiation Representative 230 South Dearborn Street Chicago, Illinois 60604

James G. Keppler, Regional Administrator Nuclear Regulatory Commission, Region III 799 Roosevelt Road Glen Ellyn, Illinois 60137

Mr. Gary N. Wright, Manager Nuclear Facility Safety Illinois Department of Nuclear Safety 1035 Outer Park Drive, 5th Floor Springfield, Illinois 62704

DRESDEN 2 JPSAR SECTION 4.10 DESIGN CODES, DESIGN CRITERIA AND LOAD COMBINATIONS STAFF COMMENTS TO CECO RESPONSE

INTRODUCTION

Ι.

The final Integrated Assessment Report (IPSAR) for Dresden 2 (NUREG-0823) (Ref. 1) concluded that code, load and load combination changes had occurred since the time of construction and that some of these changes have the potential to significantly reduce code margins at the Dresden 2 facility. The licensee responded to Section 4.10 of the IPSAR by letter dated August 2, 1982 (Ref. 2). Other inputs to the IPSAR were forwarded to the licensee by letters dated May 20, 1982 (Ref. 3) and June 4, 1982 (Ref. 4). Staff comments to Reference 2 is given below.

II. DISCUSSION

A detailed review of the licensee's response is provided in the attached Technical Evaluation Report (TER) prepared by the Franklin Research Center. A summary of this TER giving the present status of the issue identified in the staff's May 20, 1982 SER is given in Tables 1 and 2.

The licensee has presented analyses and qualitative arguments on this subject and concluded that structures at Dresden 2 have adequate margins of safety to accommodate the identified differences. This information, in many cases, has been sufficient to resolve a number of the issues; however, other identified differences require additional information or clarification of the information submitted in order to arrive at similar conclusions. The status of the code differences including further action if necessary is given in Section 4 of the attached TER.

With respect to load and load combinations, a detailed evaluation of the information provided by the licensee is given in Section 5 of the attached TER. The original staff SER identified load combinations judged to be governing with respect to accident/extreme environmental loadings and thus important to safety. The intent of this selection was to decrease the number of load combinations that should be considered and still maintain those thought to be governing. The SER then requested the licensee to determine if these load combinations were met, and if not, what are the consequences. Some loads in these combinations have been reviewed in other SEP topics, but often not in the code or SRP specified combinations. By analyzing the loads in this manner, a general conclusion could be reached regarding structural adequacy; however, in accordance with current criteria, the loads need to be considered in combination with other loads. In many cases, these additional loads are local and may not affect overall structural integrity; however, consequences of possible local failure should be considered. The response provided by the licensee did not adequately address loads which have increased in magnitude and have not been evaluated elsewhere (e.g., snow) or the ability of structures to resist loads in the specified combinations.

The following comments are provided to address specific information supplied by the licensee and to clarify points made in the attached TER:

- 1. In Reference 2, it was stated that, based on judgment, Ta, Pa, Ra are not concurrent or negligible in the loading combinations. This is a broad statement. It would be more appropriate to determine where these loads are located, their magnitude, the ability of structures to resist these loads in specified combinations if loads in the combination affecting particular structural elements are large or if the consequences of failure are severe.
- 2. ACI 349-80, Appendix A, addresses two aspects of temperature loading: a) the reduction in concrete strength for concrete experiencing temperatures greater than 150°F and b) forces generated by thermal gradients. Appendix A also specifies methods of analyzing structures experiencing thermal loads. Both of the above aspects need to be considered with regard to structures affected (e.g., reactor support structure, spent fuel pool, exterior walls, etc.), original design, and differences between original design and Appendix A.
- 3. The items cited under Item 3 on page 28 of the TER are intended only as examples to support the discussion in Item 3. It is not the intent of this topic to re-review the acceptance criteria used in other SEP topics to evaluate individual loads (e.g., pipe break). However, the combination of those results with other loads is to be considered.
- 4. SEP Topic II-2.A, Severe Weather Phenomena, specified an appropriate extreme environmental snow load of 95 psf. This load increase was noted in Section 10.3 of the TER sent to the licensee by letter dated May 20, 1982.
- 5. Appendix A of the TER sent to the licensee by letter dated May 20, 1982, should be verified for accuracy by licensee; it appears that this has not been done.
- 6. To address safety margins, both new loads in the correct combination and code changes need to be considered simultaneously.

Some of the above comments have already been forwarded to licensee in a cursory staff review dated September 21, 1982 (Ref. 5).

The staff concludes that the licensee has adequately addressed some of the issues identified in Section 4.10 of the Integrated Plant Safety Assessment Report (NUREG-0823), while the remainder require further evaluation or clarification to justify the conclusion that margins of safety are adequate. Thus far, no differences identified have required plant modifications at Dresden 2. The staff will present the results of all information submitted by the licensee in response to IPSAR Section 4.10 (Topic III-7.B) in a Safety Evaluation Report.

	Scale A Code Changes		
			ASME B&PV Code
	AISC 1963	ACI 318-63	Subsect. B 1964
Issues	AISC 1980	180 ACI 349-76	Subsect. NE 1980
Raised by TER-C5257-321	7	8	11
Resolved	3	2	9
Resolved in accordance			
with findings of other SEP	ч.		
topics	0	1	0
Innesolved	4	5	2

· · · ·	TABLE 2	
•	CODE CHANGES	
· ·	Resolved	Unresolved
AISC 1980	1.11.4 1.11.5 2.9	1.9.1.2 and Appendix C 1.14.2.2 1.5.1.2.2 1.15.5.2 thru 1.15.5.4
ACI 349-76	11.13 11.16.1 thru 11.16.6	11.16.7 11.15 Appendix A 7.10.3 Appendix B
ASME BPV Section III Division 1 1980 Subsection NE	NE 3112.4 3131 3131.5(a) 3131.5(b) 3324.11 3327.1 3327.4 3334.1 3334.2	NE 3331(b) 3365.2
TOTAL	14	11

III. REFERENCES

- Final Integrated Plant Safety Assessment Report (IPSAR) for Dresden 2 (NUREG-0823), February 1983.
- Letter from T. J. Rausch (CECo) to P. W. O'Connor (NRC) dated August 2, 1982.
- 3. Letter from P. W. O'Connor (NRC) to L. DelGeorge (CECo) dated May 20, 1982.
- 4. Letter from P. W. O'Connor (NRC) to L. DelGeorge (CECo) dated June 4, 1982.
- 5. Letter from P. W. O'Connor (NRC) to L. DelGeorge (CECo) dated September 21, 1982.