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ComEd

May 30, 1996

JSPLTR 96-0082

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

SUBJECT: Dresden Nuclear Power Station Unit 3
Supplement to Request for License Amendment -
Low Pressure Coolant Injection/Core Spray
Corner Room Structural Steel
Facility Operating License DPR-25
NRC Docket 50-249

REFERENCE: J.S.Perry letter to U. S. Nuclear Regulatory Commission dated May 22, 1996
Transmitting Dresden Nuclear Power Station Unit 3 Request for License Amendment.

Per the referenced letter, pursuant to 10 C.F.R. 50.91(a)(5), ComEd requested an amendment to facility operating license DPR-25 for Dresden Unit 3. A meeting was held May 23, 1996 between ComEd and the NRC Staff which reviewed our technical basis for this license amendment. This letter supplements the referenced letter.

Subsequent to the May 23 meeting with the NRR Staff, ComEd has completed the calculations for the Dresden Unit 3 southwest corner room steel, which was concluded to be the bounding corner room steel for Dresden Unit 3.

The Unit 3 corner room steel framing analysis used the same methodology as discussed at the May 23 meeting. The technical differences and clarification in implementation of the methodology are tabulated in Attachment A. The engineering calculations demonstrate that the license amendment criteria described in Attachment B are met.

Based on the completed calculations, all conclusions stated in the referenced letter regarding no significant hazard considerations and the acceptance criteria described in Attachment B are confirmed to be valid for Dresden Unit 3 corner room steel.

These calculations will be available at Dresden Station for NRC review on May 31, 1996.

A001

To the best of my knowledge and belief, the statements contained above are true and correct. In some respect these statements are not based on my personal knowledge, but are obtained from information furnished by other ComEd employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

ComEd is notifying the State of Illinois of this supplement to the application for amendment by transmitting a copy of this letter and its attachment to the designated state official.

Please direct any questions you may have concerning this submittal to Frank Spangenberg, Regulatory Assurance Manager at (815) 942-2920, Extension 3800.

Very truly yours,

For Frank A. Spangenberg

J. S. Perry
Site Vice President
Dresden Station

Subscribed and Sworn to before me

on the 30th day of

May, 1996

Janice M. Tondini

Notary Public

"OFFICIAL SEAL"
JANICE M. TONDINI
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 2/21/97

Attachments:

A. Summary of Technical Differences
B. Marked Up Pages of UFSAR

cc: H. J. Miller, Regional Administrator - RIII
C. L. Vanderniet, Senior Resident Inspector -Dresden
J. F. Stang, Project Manager, NRR
Office of Nuclear Facility Safety - IDNS

ATTACHMENT A

TABLE 1 SUMMARY OF TECHNICAL DIFFERENCES/CLARIFICATIONS

Item No.	Information Based on Dresden Unit 2 Evaluation (Presented in the JSP LTR 96-0080 and During the 5/23/96 Meeting)	Implementation for Dresden Unit 3 Corner Room Steel License Amendment Evaluation
1	Use of the PIPSYS program.	The D3 License Amendment evaluation was performed using the SUPERPIPE program. Both the PIPSYS and SUPERPIPE computer codes are approved and validated for this application and use on Nuclear Safety-Related projects.
2	Concrete Expansion Anchors (CEA), use of the Safety Evaluation Report on Piping System Operability Criteria dated 9/27/91 for Expansion Anchors.	• Used same operability criteria for wedge anchors. • Used normal FSAR criteria for shell anchors with no reduction in the factor of safety.
3	Use of a coupled model consisting of piping and heat exchanger with structural steel modeled as springs.	• Same coupled analysis approach for all beams and all connections except connections B11L and B11R • Used coupled model including the steel framing for calculation of the support reactions for connections B11L and B11R.

ATTACHMENT A

TABLE 1 SUMMARY OF TECHNICAL DIFFERENCES/CLARIFICATIONS (CONTINUED)

Item No.	Information Based on Dresden Unit 2 Evaluation (Presented in the JSP LTR 96-0080 and During the 5/23/96 Meeting)	Implementation for Dresden Unit 3 Corner Room Steel License Amendment Evaluation
4	The input motion for this analysis is the response at elevation 503 feet. However, the response spectra for elevation 517 feet was conservatively used for the Dresden Unit 2 evaluation.	The input motion used for evaluation of the structure was based on a combined piping and heat exchanger model with the computed response spectra at elevation 510 feet which corresponds to our initial estimates for the center of mass (CM) of the combined piping and heat exchanger model. The final computed CM is at 508 feet 6 inches. The use of the response spectra corresponding to the CM for the piping analysis is in accordance with FSAR section 5.2.3.8.4.0 and table 5.2.3:6 Revision 8, June 1990 page 5.2.3-39 which states: Piping Analysis - Piping will be analyzed as follows: a) FSAR Dynamic methods, which are, briefly as follows: i) damping equal to 0.5% ii) modal combination by SRSS iii) direction combination is the largest horizontal response added absolutely with the vertical iv) dynamic analysis of all modes up to 33 Hz v) <u>spectrum used is that which envelopes the piping center of mass</u> vi) acceptance criteria is B31.1, 1967. The 7% damped response spectra at elevation 510 feet were computed by linearly interpolating the 5% damped spectra at the basemat (elevation 473' 6") and the available 7% damped spectra for the next higher elevation (elevation 517' 0" for the N-S direction and elevation 545' 6" for the E-W direction). The evaluation of the piping and pipe supports was based on 2% damped spectra at elevation 517 feet.

ATTACHMENT A

TABLE 1 SUMMARY OF TECHNICAL DIFFERENCES/CLARIFICATIONS (CONTINUED)

Item No.	Information Based on Dresden Unit 2 Evaluation (Presented in the JSP LTR 96-0080 and During the 5/23/96 Meeting)	Implementation for Dresden Unit 3 Corner Room Steel License Amendment Evaluation
5	In attachment E the maximum moment in the outstanding leg of the connection angle for connection B4L was computed using the 'Yield Line' theory. The computed moment was then used to compute the maximum strain using the beam theory 'plain sections remain plain'. The maximum strain for connection B4L was computed to be 1.26 times the yield strain. In addition, yield line theory was used to compute the capacity for connection B11R and web of beam B7. For connection B1R, 95% of the plastic moment capacity was used to compute the inelastic capacity.	The yield line theory was used to compute the inelastic capacity of connections B15R and B17R. For these connections, the inelastic strains at design loads were computed using ADINA large displacement elasto-plastic finite element analysis. No elements were found to yield at the computed connection loads. In addition, for connections B4L, B7L, B11L, and B11R, connection capacities corresponding to a maximum strain of 10 times the yield strain were computed using ADINA large displacement elasto-plastic finite element analysis. The computed capacities were greater than the computed loads for each of these connections.

ATTACHMENT A

TABLE 1 SUMMARY OF TECHNICAL DIFFERENCES/CLARIFICATIONS (CONTINUED)

Item No.	Information Based on Dresden Unit 2 Evaluation (Presented in the JSP LTR 96-0080 and During the 5/23/96 Meeting)	Implementation for Dresden Unit 3 Corner Room Steel License Amendment Evaluation
6	The unreinforced D2SW corner room is the bounding configuration for all four of the Dresden Unit 2 and 3 corner rooms.	Upon completion of the final calculation of the D3SW corner room, it is found that for a majority of structural components, the D2SW corner room results are greater than those of D3SW. The highest interaction coefficient for beam and connections is found in D2SW corner room. Thus, the D2SW corner room can be considered to bound the D3SW corner room. D3SW corner room was concluded to be the bounding corner room for Dresden Unit 3 based on comparisons which are included in the calculation. A comparison of the Unit 2 and Unit 3 results for major components is shown in Table 2. All results meet the acceptance criteria of the license amendment.

Attachment A

TABLE 2 COMPARISON OF DRESDEN UNITS 2 AND 3 RESULTS

The following table provides a summary of the major beam and connection interaction coefficients (ICs) for Dresden Units 2 and 3. The major beams and connections are those which directly support the heat exchanger and thus are the primary load carrying members. Also included in this table is a summary of the maximum deflections for Beam 1. The deflections for Beam 1, (Unit 2 SW) were previously requested by the NRC staff, and are compared to the Beam 1 Unit 3 SW displacements in this table.

	Unit 2		Unit 3	
	Beam No.	IC	Beam No.	IC
Major Beam Interaction Coefficients	1	.99	1	.73
	4	.83	4	.98
	7	.93	7	.79
	11	.13	11	.13
	Connection No.	IC	Connection No.	IC
Major Connection Interaction Coefficients	1R	.99	1R	.80
	4L	.93	4L	.68
	7L	.93	7L	.58
	11R	.91	11R	.978
	11L	.72	11L	.79
	Direction	Seismic + Thermal Displacement	Direction	Seismic + Thermal Displacement
Beam 1 Maximum Deflection	Vertical	0.13"	Vertical	0.06"
	Lateral	0.04"	Lateral	0.0002"
	Longitudinal	0.03"	Longitudinal	0.0004"

ATTACHMENT B

MARKED UP PAGES OF UFSAR

1) Table 3.7-1 Damping Factors for Strong Vibrations Within The Elastic Limit

2) Page 3.8-24

3) Page 3.8-29

4) Table 3.8-11 Allowable Stresses for Class I Structures

5) Page 3.9-24 Insert Section 3.9.3.4 - Interim Operability Criteria

6) Insert "A" for Section 3.9.3.4

7) Insert "B" for Section 3.8.4.6.1.