

October 4, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN - ISSUANCE OF EXIGENT AMENDMENTS - LIFTING HEAVY LOADS
(TAC NOS. MB6375 AND MB6376)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 196 to Facility Operating License No. DPR-19 and Amendment No. 189 to Facility Operating License No. DPR-25 for the Dresden Nuclear Power Station, Units 2 and 3. The amendments approve a change to the Updated Final Safety Analysis Report (UFSAR) in response to your application dated September 26, 2002.

The amendments consist of a one-time change to the Dresden UFSAR to state that lifting heavy loads up to and including 116 tons is allowed prior to and during the upcoming Dresden Unit 3 refueling outage number 17. The licensee requested that these amendments be treated as exigent amendments in accordance with 10 CFR 50.91(a)(6).

A copy of the safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Lawrence W. Rossbach, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-237 and 50-249

Enclosures: 1. Amendment No. 196 to DPR-19
2. Amendment No. 189 to DPR-25
3. Safety Evaluation

cc w/encls: See next page

October 4, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: DRESDEN - ISSUANCE OF EXIGENT AMENDMENTS - LIFTING HEAVY LOADS (TAC NOS. MB6375 AND MB6376)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 196 to Facility Operating License No. DPR-19 and Amendment No. 189 to Facility Operating License No. DPR-25 for the Dresden Nuclear Power Station, Units 2 and 3. The amendments approve a change to the Updated Final Safety Analysis Report (UFSAR) in response to your application dated September 26, 2002.

The amendments consist of a one-time change to the Dresden UFSAR to state that lifting heavy loads up to and including 116 tons is allowed prior to and during the upcoming Dresden Unit 3 refueling outage number 17. The licensee requested that these amendments be treated as exigent amendments in accordance with 10 CFR 50.91(a)(6).

A copy of the safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,
/RA/

Lawrence W. Rossbach, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-237 and 50-249

- Enclosures: 1. Amendment No. 196 to DPR-19
2. Amendment No. 189 to DPR-25
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:

PUBLIC OGC
PDIII-2 r/f ACRS
AMendiola RDennig
LRossbach GHill(4)
CRosenberg MRing, RIII
GHatchett

*Previously Concurred

OFFICE	PDIII-2/PM	PDIII-2/LA	SPLB/SC*	OGC*	PDIII-2/SC
NAME	LRossbach	RBouling for CRosenberg	SWeerakkody	AHodgdon	LRaghavan for AMendiola
DATE	10/04/02	10/02/02	10/03/02	10/02/02	10/04/02

ADAMS Accession No. ML022730565

OFFICIAL RECORD COPY

Dresden Nuclear Power Units 2 and 3

cc:

Site Vice President - Dresden Nuclear Power Station
Exelon Generation Company, LLC
6500 N. Dresden Road
Morris, IL 60450-9765

Dresden Nuclear Power Station Plant Manager
Exelon Generation Company, LLC
6500 N. Dresden Road
Morris, IL 60450-9765

Regulatory Assurance Manager - Dresden
Exelon Generation Company, LLC
6500 N. Dresden Road
Morris, IL 60450-9765

U.S. Nuclear Regulatory Commission
Dresden Resident Inspectors Office
6500 N. Dresden Road
Morris, IL 60450-9766

Chairman
Grundy County Board
Administration Building
1320 Union Street
Morris, IL 60450

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, IL 60532-4351

Illinois Department of Nuclear Safety
Office of Nuclear Facility Safety
1035 Outer Park Drive
Springfield, IL 62704

Document Control Desk-Licensing
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Vice President, Nuclear Services
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Vice President
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Licensing and Regulatory
Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Director - Licensing
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Counsel, Nuclear
Mid-West Regional Operating Group
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Manager Licensing - Dresden and
Quad Cities
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 196
License No. DPR-19

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Exelon Generation Company, LLC (the licensee) dated September 26, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the licensing basis. The changes relate to the single-failure heavy load carrying capacity of the reactor building overhead crane. The licensee shall include the revised information in the Updated Safety Analysis Report submitted to the NRC, pursuant to 10 CFR 50.71(e), as described in the licensee's application dated September 26, 2002, and evaluated in the staff's safety evaluation for this amendment.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by L. Raghavan for/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: October 4, 2002

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 189
License No. DPR-25

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Exelon Generation Company, LLC (the licensee) dated September 26, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the licensing basis. The changes relate to the single-failure heavy load carrying capacity of the reactor building overhead crane. The licensee shall include the revised information in the Updated Safety Analysis Report submitted to the NRC, pursuant to 10 CFR 50.71(e), as described in the licensee's application dated September 26, 2002, and evaluated in the staff's safety evaluation for this amendment.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by L. Raghavan for/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: October 4, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 196 TO FACILITY OPERATING LICENSE NO. DPR-19
AND AMENDMENT NO. 189 TO FACILITY OPERATING LICENSE NO. DPR-25
EXELON GENERATION COMPANY, LLC
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3
DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

By application dated September 26, 2002, the Exelon Generation Company, LLC (Exelon or the licensee) requested changes to the licensing basis for the Dresden Nuclear Power Station, Units 2 and 3 (Dresden). The proposed amendments would allow a one-time change to Section 9.1.4.3.2, "Reactor Building Overhead Crane," of the Dresden Updated Final Safety Analysis Report (UFSAR) to allow using the reactor building overhead crane to lift heavy loads up to and including 116 tons. Approval of the amendment request will prevent shutdown of Dresden Unit 2 and allow the licensee to complete removal and reinstallation of the Unit 3 reactor shield blocks in support of the upcoming Unit 3 refueling outage (D3R17) scheduled for October 2002.

In a teleconference between the Nuclear Regulatory Commission (NRC) staff and the licensee on September 13, 2002, the NRC staff stated that it considers the Dresden reactor building crane to be approved as meeting single-failure-proof criteria only for loads up to 110 tons. Subsequently, on September 21, 2002, the licensee determined that the reactor shield blocks weigh greater than 110 tons, but the weight of the heaviest shield block, including rigging, does not exceed 116 tons. The Dresden UFSAR does not include an analysis of a heavy-load drop accident. Since the licensee proposes to lift loads greater than the single-failure-proof rating of the crane and the UFSAR does not analyze the consequences of dropping these loads, 10 CFR 50.59, "Changes, tests, and experiments," requires that the licensee obtain a license amendment prior to using the crane for moving the reactor shield blocks.

Specifically, the proposed amendments would revise the first sentence of the first paragraph of UFSAR Section 9.1.4.3.2 to state: "The 125-ton capacity reactor building overhead crane main hoist is designated as a single failure proof crane for 110-ton loads. The NRC has approved use of the reactor building overhead crane during power operations to lift a total load up to 116 tons for removal and installation activities for the reactor shield blocks prior to and during Unit 3 refueling outage D3R17." The proposed amendments would also revise the first sentence of the 11th paragraph of UFSAR Section 9.1.4.3.2 to state: "The reactor building overhead crane meets the single-failure criteria stated in NUREG-0612 for heavy loads of 110-tons. The NRC has approved use of the reactor building overhead crane during power operations to lift a total load up to 116 tons for removal and installation activities for the reactor shield blocks prior to and during Unit 3 refueling outage D3R17."

2.0 REGULATORY EVALUATION

NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," dated July 1980, provides regulatory guidelines in two phases (Phase I and II) for licensees to assure safe handling of heavy loads in areas where a load drop could impact stored spent fuel, fuel in the reactor core, or equipment that may be required to achieve safe shutdown or permit continued decay heat removal. Phase I guidelines address measures for reducing the likelihood of dropping heavy loads and provide criteria for establishing safe load paths; procedures for load handling operations; training of crane operators, design, testing, inspection, and maintenance of cranes and lifting devices; and analyses of the impact of heavy-load drops. Phase II guidelines address alternatives for mitigating the consequences of heavy load drops, including using either (1) a single-failure-proof crane for increased handling system reliability, (2) electrical interlocks and mechanical stops for restricting crane travel, or (3) load drops and consequence analyses for assessing the impact of dropped loads on plant safety and operations. NUREG-0612, Appendix C, provides alternative means of upgrading the reliability of the crane to satisfy the requirements of NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants," dated May 1979. NUREG-0554 identifies features of single-failure-proof overhead crane handling systems.

Generic Letter (GL) 85-11, "Completion of Phase II of Control of Heavy Loads at Nuclear Power Plants, NUREG-0612," dated June 28, 1985, dismissed the need for licensees to implement the guidelines of NUREG-0612 Phase II based on the improvements obtained from the implementation of NUREG-0612 Phase I. However, GL 85-11 encouraged licensees to implement actions they perceive to be appropriate to provide adequate safety.

In NRC Bulletin (NRCB) 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment," dated April 11, 1996, the NRC staff addressed specific instances of heavy load handling concerns and requested licensees to provide specific information detailing their extent of compliance with the guidelines and their licensing basis.

Dresden Units 2 and 3 are boiling-water reactors (General Electric designed) which commenced commercial operation in 1970 and 1971, respectively, and whose current operating licenses will expire in 2009 and 2011, respectively. The licensee determined that, based on analyses of the potential drop of a shield block during power and refueling operations, various Dresden Unit 2 and 3 safety-related structures, systems, and components (SSCs) could be damaged. These postulated shield block load drop accidents have not been previously evaluated in the UFSAR. Therefore, in accordance with 10 CFR 50.59, movement of the shield blocks requires prior NRC approval. Accordingly, the licensee proposed a one-time change to its reactor building crane licensing basis to support heavy load lifts up to 116 tons during power and refueling operations to support D3R17.

The proposed amendments would revise the Dresden reactor building overhead crane licensing basis to support power and refueling operations during D3R17 only. In its review of the proposed amendments, the NRC staff considered the design, installation, inspection, testing, maintenance, and power and refuel operations, procedures, and the credibility of load-drop accidents for loads weighing up to 116 tons during D3R17.

3.0 TECHNICAL EVALUATION

3.1 10 CFR 50.59 Evaluation

By letter dated March 21, 2002, the licensee submitted to the NRC its 2001 Commitment Change Summary for Dresden. The revisions to NRC commitments were processed using Nuclear Energy Institute (NEI) 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes," dated July 1999. The commitment summary provided the licensee's revision to previous commitments it made in response to NRCB 96-02. The licensee's previous commitments were provided to the NRC in a letter dated May 13, 1996 (then Commonwealth Edison Co. (ComEd)). The original commitment stated the following:

"Current plans at ComEd [now Exelon] do not include the implementation of activities involving the handling of heavy loads over the spent fuel pool, fuel in the reactor core, or safety-related equipment which result in the potential for an unreviewed safety question per the provisions of 10 CFR 50.59, prior to April 11, 1998 (two years from the date of the NRC Bulletin 96-02) . . .

ComEd [Exelon] currently has no plans for any movement of dry storage casks over spent fuel, fuel in the reactor core, or safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled). However, should such movements be planned in the future, ComEd [Exelon] will demonstrate the capability of performing the actions necessary for safe shutdown in the presence of the radiological source term that may result from a breach of the dry storage cask, damage to the fuel, and damage to safety-related equipment as a result of a load drop inside the facility."

In the March 21, 2002, letter revising its commitments to the NRC, the licensee stated that the current commitment was too restrictive and that the licensee performs all spent fuel cask lifts in the Dresden reactor building utilizing a single-failure-proof crane equipped with a special lifting device. The licensee further stated that the reactor building crane was granted single-failure-proof status by NRC in a letter to the licensee (then ComEd) on June 3, 1976. As a result, the licensee concluded that a load drop analysis is not required to be performed. However, the NRC staff notes that this commitment change argument is only valid for loads up to the 110-ton single-failure rating of the crane.

During an inspection of preparations at Dresden for loading spent fuel into dry storage casks, the NRC staff identified concerns regarding the long term acceptability of heavy load handling facilities at Dresden. These concerns included apparent deviations from generally applicable standards for seismic qualification and single-failure criteria for handling heavy loads with regard to the Units 2 and 3 reactor building superstructure and reactor building crane. The inspection findings are documented in NRC Inspection Report 07200037/2001-002(DNMS), dated August 13, 2002.

As a result of the licensee's revisions to its NRC commitments and the concerns identified in NRC Inspection Report 07200037/2001-002 (DNMS), the NRC staff conducted a review of the Dresden reactor building crane and supporting structure to determine if the licensee's handling of heavy loads was being conducted in accordance with its licensing basis. The NRC staff issued License Amendment Nos. 22 and 19, dated June 3, 1976, for Dresden Units 2 and 3,

respectively, approving changes to the Dresden Technical Specifications governing the operation and surveillance of the upgraded crane with "single-failure-proof" capability. In the associated safety evaluation, the NRC staff stated that the reactor building crane met the intent of the requirements in Branch Technical Position (BTP), Auxiliary and Power Conversion Systems Branch (APCSB) 9-1, "Overhead Handling Systems for Nuclear Power Plants," for handling heavy loads weighing up to 110 tons, with the following exceptions: (1) the redundant mechanical limit switch in the main hoist power circuit (for two blocking), (2) an electrical interlock system to prevent crane travel outside its safe load path, and (3) a slow speed drive motor to limit the hoisting speed. The staff also stated that it expected that completion of the crane modifications would satisfy the intent of BTP APCSB 9-1.

As stated above, the NRC staff cited specific modifications in the June 3, 1976, safety evaluation that were needed to support the single-failure-proof capability of the crane. Such restorations would enable the licensee to conform to its licensing basis. Following restoration of the reactor building crane to conform to its original licensing basis, the licensee is prohibited from lifting loads exceeding 110 tons as a "single-failure-proof" crane. The guidelines of NUREG-0612, Section 5.1.1(4), "Reactor Building - BWR," apply to any loads above 110 tons to show that the evaluation criteria of Section 5.1, "Recommended Guidelines," are satisfied. The guidelines of NUREG-0612, Section 5.1.5(2), also apply to any load above 110 tons to demonstrate that the largest postulated load handled by the handling system could not penetrate the ceiling or cause spalling that could cause failure of the safe shutdown equipment where safe shutdown equipment has a ceiling separating it from the overhead handling system.

The Dresden reactor building crane is needed to lift reactor shield blocks weighing up to 116 tons with its associated rigging. However, evaluation of the potential drop of a shield block during power operations was not previously addressed in the UFSAR and the shield blocks exceed the 110-ton single-failure rating of the reactor building crane. Because of this, 10 CFR 50.59 requires that the licensee obtain a license amendment prior to using the crane for moving the reactor shield blocks. The licensee has provided its assessment of the reactor building crane's capability, the basis for a one-time change to the UFSAR, and no significant hazards consideration determination to support the requested license amendment for D3R17, scheduled for October 2002. The NRC staff's evaluation of the licensee's assessment and basis for a one-time change in support of D3R17 is evaluated below.

3.2 Heavy Load Control

The current Dresden UFSAR does not consider any credible load drop accidents that result from handling reactor shield blocks with the Dresden reactor building crane over safety-related equipment while the reactor is at power. Moreover, the Dresden common refuel floor is designed to support the complete disassembly of both Unit 2 and Unit 3 reactors simultaneously with all equipment stored within the boundaries of each unit. While this is an option for an emergency shutdown, eventual decommissioning, or safe store operations, it is impractical for general refueling operations because of additional laydown space that is required to be utilized. Utilizing all available space optimizes time, which translates to increased safety due to less restrictive work areas and lower dose rates due to better as-low-as-reasonably-achievable practices.

The licensee proposes to conduct the handling of heavy loads at Dresden during power and refueling operations. Unit 2 will be at 100-percent power and Unit 3 will not be completely shut down before commencing removal of the shield blocks prior to the start of D3R17. In its September 26, 2002, application, the licensee states that the weight of the heaviest shield block, including rigging, does not exceed 116 tons, and the blocks are placed on the refuel floor of the operating unit. Further, it would be impractical to conduct the refueling outage by placing the shield blocks on the Unit 3 refuel floor. As a result, heavy loads exceeding the crane's licensing basis would be carried over safe shutdown equipment of the operating unit that is separated by a ceiling between the equipment and the overhead handling system. Therefore, the one-time amendment request is needed to prevent the shutdown of Unit 2 and the complete shutdown of Unit 3 (prior to the start of the outage) to support D3R17. In addition, the licensee has stated that it will complete additional analyses and submit a license amendment request related to heavy-loads handling to provide a long-term resolution of heavy load handling issues and the reactor building crane licensing basis.

The licensee stated that the requested one-time amendments to lift the 116 tons at power are acceptable for the following reasons:

- The reactor building crane was modified with the intent of qualifying it as single-failure-proof for 125 tons. The reactor building crane has additional capacity for a total lifted load of the 116 tons with single-failure-proof features if a design basis earthquake (DBE) is not assumed;
- The probability of a DBE during the limited duration of the request is very small; and
- An analysis will be performed which will demonstrate that no adverse consequences result from a postulated load drop.

The NRC staff reached a similar conclusion, with the following comments: NUREG-0612 Phase I guidelines address measures for reducing the likelihood of dropping heavy loads and provide criteria for establishing safe load paths; procedures for load handling operations; training of crane operators; design, testing, inspection, and maintenance of cranes and lifting devices; and analyses of the impact of heavy load drops. Moreover, the licensee made Phase I commitments to the guidelines of NUREG-0612 in its response to GL 80-113, "Control of Heavy Loads," which was issued on December 22, 1980. The NRC staff, as part of its Phase I review, did not identify any changes or modifications needed to satisfy the guidelines of NUREG-0612, Phase I. Subsequently, the NRC staff issued a safety evaluation dated July 11, 1983, that accepted the licensee's NUREG-0612 Phase I heavy-loads program. Any heavy-load lifts during the D3R17 refuel outage, or any other time, would be subject to the licensee's commitments to NUREG-0612 Phase I as accepted in the NRC staff's July 11, 1983, safety evaluation.

The current reactor building crane configuration meets the intent of NUREG-0612 Phase II (i.e., single-failure-proof crane) for increased handling system reliability for handling loads up to 110 tons. The combined Phase I and II commitments help establish the licensing basis for the reactor building overhead crane and further reduce the likelihood of a heavy-load drop during plant operations.

3.3 Probability and Additional Stresses Induced by Earthquakes

The licensee stated that based upon the seismic estimates for the Dresden site that the NRC has published in NUREG-1488, "Revised Livermore Seismic Hazard Estimates for Sixty-Nine Nuclear Power Plant Sites East of the Rocky Mountains, 1994," the frequency of equaling or exceeding the Dresden DBE level is very low. The site-specific horizontal and vertical ground motion for Dresden is 0.13g. With this information, the NRC staff checked the data in NUREG-1488 for Dresden and found that for a ground motion of 0.15g, the frequency of occurrence was about $1E-4$ /year. However, the duration of the lifting activities is anticipated to occur over a 24-hour period, which reduces the likelihood of a DBE during the heavy-load lifts of concern to about $1E-7$ over a 24-hour period. The reactor building overhead crane has more than enough capacity to handle loads up to 116 tons during operation in the absence of a seismic event.

However, in the event of an operational basis earthquake (OBE), the NRC staff has reviewed Dresden calculation DRE 98-0020 (revision 1), which combines the maximum lifted load with an OBE event. This calculation is described in the licensee's letter to the NRC, "Supplement to Response to Request for Additional Information Regarding Heavy Loads Handling," dated July 8, 2002. The crane lifted-load included pendulum effects and the allowable stresses were the same as those specified in the UFSAR. Considering the maximum lifted load (crane capacity) of 125 tons in combination with the applicable loads for the OBE loading condition, the interaction coefficients (IC = applied stress/allowable stress) for the reactor building superstructure members, connections, and anchorages, as well as the runway girders, were all determined to be ≤ 1.0 , except for the superstructure interior columns (Member size W24) where the IC was determined to be 1.05, and the bearing stress on the interior column base plate, where the IC was 1.03.

Additional analyses were performed to determine the conditions under which the stresses in the two overstressed elements could be shown to be within allowable limits and their IC's less than ≤ 1.0 . Several options were explored for this purpose, namely, evaluation of actual loads of the items to be lifted instead of the maximum lift load of 125 tons used in the initial evaluation and/or specifying a travel path for the crane that would limit the crane reach to prescribed limits such that the stresses in the affected members would be reduced to within allowable limits.

The analysis results (for allowable lifted load in order to remain within stress limits and with no limits on crane movements and allowable reach) showed that the allowable lifted load for the crane should be limited to 93.75 tons or 187.5 Kip, which includes the weight of the lifting apparatus. For a 125-ton lifted load, the crane hook maximum reach to either end of the bridge beams must be limited to a minimum of 25 feet from the runway girder. This is equivalent to 27'-3" from column lines H and N, described in calculation DRE 98-0020 (revision 1), as discussed above.

In addition, the analysis showed that the reactor building superstructure members are all adequate to support the shield blocks weight during a postulated OBE event. All IC's are ≤ 1.0 provided that the hook maximum reach while lifting the bottom layer is limited to a minimum of 11'-0" from the runway girder. This is equivalent to 13'-3" from column lines N and H. For the top and middle layers, there were no limitations on the hook's maximum reach.

Based on a review of the licensee's analytical methodology, loads and load combinations, and calculation results, the NRC staff finds that for the actual lifted loads within the constraints of the prescribed path and crane's allowable reach, as discussed above, all members of the reactor building superstructure are within the UFSAR allowable stress limits during a postulated OBE event. Therefore, the NRC staff finds that the crane is capable of lifting loads above its current licensing basis during such a seismic event within the prescribed load path.

3.4 Probability of Load Drops and Slips Based on Operating Experience

The NRC staff has evaluated the potential for heavy load drops at commercial nuclear power plants, in the absence of a seismic event, for loads of approximately 30 tons or greater. This evaluation was done with a representative sample of crane operating experience obtained from approximately 19 power plants. These data were put into a database, and based on the sample, estimations of the number of heavy load lifts ≥ 30 tons were made. Also, crane issues or events information obtained from searching NRC's Nuclear Documents System (NUDOCS) files, licensee event reports, other licensee documents, and industry documents were used to form the basis for the industry operating experience.

The number of lifts per refueling cycle for each plant-design type was then used to estimate the number of lifts occurring at similar remaining power plants. The total number of estimated heavy-load lifts (≥ 30 tons) for all commercial nuclear power plants that operated from 1980 through October 1999 was approximately 47,400. Of the 47,400 lifts, there were two "load slips" and one "load drop" that involved heavy loads. A load slip is defined as a situation where the load may descend uncontrollably, but comes to a stop without impacting or damaging other equipment. A load drop is defined as a situation where the load may descend uncontrollably, but impacts other equipment and damage occurs. The two load slips were caused by crane deficiencies and the load drop by operator error. The dropped load did not result in a radiation release or risk to licensee personnel or the public.

The number of heavy-load lifts per reactor year (25) was determined by taking the total number of heavy-load lifts (47,400 lifts) that occurred since 1980 or commercial operation, whichever was the latest, and dividing it by the total number of reactor years for the same set of power plants having an operating license (1,920 years). For heavy loads occurring (at plants having an operating license) after the issuance of NUREG-0612, there were no actual load drops. To be conservative, one heavy-load drop was assumed to occur during the period of interest (1980 through 1999). Assuming that the number of heavy-load lifts was approximately 47,400, the load-drop frequency (drops/number of lifts) was determined to be approximately $2E-05$. Therefore, the likelihood of a load drop during the 24-hour period for which the licensee proposes to use the crane at Dresden, in the absence of a seismic event, is very low.

The likelihood of a heavy-load drop occurring during the 24-hour period for which lifts above the crane's current licensing basis are proposed that may or may not result from a seismic event is very low. The Dresden reactor building overhead crane, considering the aforementioned, is robust enough to handle the proposed heavy loads for that 24-hour period of D3R17. Moreover, the licensee's commitments to NUREG-0612 Phase I and the fact that the reactor building overhead crane meets the intent of NUREG-0612 Phase II (to the extent that it was reviewed for loads up to 110 tons) further reduces the likelihood of a drop during the proposed period of operation. Therefore, the NRC staff finds that a heavy-load drop during D3R17 within the proposed 24-hour period is not a credible event.

3.5 Summary

Based on the preceding evaluation, the NRC staff finds that the lifting of heavy loads up to 116 tons during D3R17 within the prescribed 24-hour period to be acceptable. The NRC staff finds that movement of heavy loads in excess of the reactor building overhead crane's current licensing basis of 110-tons over safety-related SSCs is acceptable because of (1) the low probability of a DBE occurring during the proposed period of heavy-load lifts; (2) low probability of a dropped load occurring; (3) commitments to NUREG-0612 and the 125-ton design capacity of the reactor building overhead crane; (4) crane safety devices (e.g., the safety lugs) responsible for keeping the bridge and trolley on their runways during a seismic event; and (5) the OBE analysis reviewed by the NRC staff in Dresden calculation DRE 98-0020 (revision 1). The aforementioned demonstrates that the reactor building overhead crane can safely lift heavy loads in excess of its current licensing basis for this one-time during D3R17 following the prescribed path and crane allowable reach as discussed above.

4.0 EXIGENT CIRCUMSTANCES

The Commission's regulations, as stated in 10 CFR 50.91, provide special exceptions for the issuance of amendments when the usual 30-day public notice cannot be met. One type of special exception is an exigency. An exigency exists when the NRC staff and the licensee need to act quickly and time does not permit the staff to publish a *Federal Register* notice allowing 30 days for prior public comment, and the staff also determines that the amendment involves no significant hazards consideration. In accordance with 10 CFR 50.91(a)(6)(B), the NRC staff published a public notice in the *Joliet Herald News* on October 1, 2002, providing reasonable notice to the public in the area surrounding the licensee's facility of the licensee's proposed amendment and of the NRC staff's proposed determination of no significant hazards consideration. No comments were received.

In its September 26, 2002, application, the licensee discussed the need for an exigent review of the proposed license amendment. In a teleconference between the NRC staff and the licensee on September 13, 2002, the NRC stated that it considers the Dresden reactor building crane to be approved as meeting single-failure-proof criteria only for loads up to 110 tons. Subsequently, on September 21, 2002, the licensee determined that the reactor shield blocks weigh greater than 110 tons, but the weight of the heaviest shield block, including rigging, does not exceed 116 tons. The Dresden UFSAR does not include an analysis of a heavy-load drop accident. Since the licensee proposes to lift loads greater than the single-failure-proof rating of the crane and the UFSAR did not analyze the consequences of dropping these loads, 10 CFR 50.59, "Changes, tests, and experiments," requires that the licensee obtain a license amendment prior to using the crane for moving the reactor shield blocks. The Unit 3 reactor shield blocks are placed on the refuel floor of the operating unit, Unit 2. It would be impractical to conduct the refueling outage by placing the reactor shield blocks on the Unit 3 refuel floor. Thus, the requested amendment is needed to prevent a shutdown of Unit 2 to support D3R17. In addition, the requested amendment is needed to allow removal of the Unit 3 reactor shield blocks during power operations. Removal of the reactor shield blocks is scheduled to begin on October 7, 2002, which did not allow sufficient time for the NRC staff to publish a *Federal Register* notice allowing 30 days for prior public comment.

On the basis of the above discussion, the NRC staff has determined that exigent circumstances exist and that the licensee used its best efforts to make a timely application and did not cause the exigent situation.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

In the regulations in 10 CFR 50.92, the Commission states that it may make a final determination that a license amendment involves no significant hazards consideration determination if operation of the facility in accordance with the amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

Operation of Dresden in accordance with the proposed amendments will not involve a significant increase in the probability or consequences of an accident previously evaluated. The reactor building crane has additional margin available if a seismic event is not assumed to occur during the shield block lifts. This is an acceptable assumption because the licensee has qualitatively demonstrated that the probability of a seismic event occurring during the limited duration of the shield block lifts for one refueling outage is very small, as verified by the NRC staff. The NRC staff also evaluated industry operating experience from 1980-1999 for lifts greater than 30 tons and quantitatively demonstrated that the probability of a load drop is very small. Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Operation of Dresden in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. The reactor building crane can be credited as being single-failure-proof for the limited duration of the shield block lifts for a single refueling outage based on the additional margin available if a seismic event is assumed not to occur. Thus, a heavy-load drop is not credible. Therefore, a possibility of a new or different kind of accident from any accident previously evaluated is not created.

Operation of Dresden in accordance with the amendment will not involve a significant reduction in a margin of safety. The reactor building crane is rated for lifting loads up to 125 tons. The NRC staff has approved qualification of the reactor building crane for loads up to 110 tons. The licensee has qualitatively demonstrated that the probability of a seismic event occurring during the limited duration of the shield block lifts for one refueling outage is very small, as verified by the NRC staff, so it is reasonable to assume that a seismic event will not occur. Existing safety margins are enhanced when lifting loads if a seismic event is not assumed, so that lifting loads up to 116 tons does not involve a significant reduction in a margin of safety. In addition, the likelihood of a load drop is very small, as determined by the NRC staff, for loads greater than 30 tons.

Based on the above considerations, the NRC staff concludes that the amendment meets the three criteria of 10 CFR 50.92. Therefore, the NRC staff has made a final determination that the proposed amendment does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final finding that the amendments involve no significant hazards consideration. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: G. Hatchett

Date: October 4, 2002