

Commonwealth Edison Company  
Dresden Generating Station  
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September 12, 1996

JSPLTR: #96-0159

Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Dresden Station Unit 2 Proposed Amendment to Facility  
Operating License No DPR-19 40-Year Operating License  
NRC Docket No. 50-237

- References:
- (a) Patricia Eng (NRC) letter to Thomas J. Kovach (ComEd) of April 2, 1990 - Amendment to Facility Operating License Related to License Expiration Date - Dresden Nuclear Power Station, Unit 3.
  - (b) J. Stephen Perry letter to NRC (Document Control Desk) of March 14, 1996. Dresden Nuclear Power Station Units 2 and 3 Updated Final Safety Analysis Report Revision.
  - (c) Environmental Assessment by the Office of Nuclear Reactor Regulation relating to the change in expiration date of Facility Operating License DPR-25 Commonwealth Edison Company Dresden Nuclear Power Station, Unit 3 Docket 50-249 Dated February 26, 1990.
  - (d) NPDES Permit No. IL 0002224 effective September 1, 1995.
  - (e) Evacuation Time Estimates Within the Plume Exposure Emergency Planning Zone for the Dresden Nuclear Station.

Dear Sir:

Pursuant to 10 CFR 50.90, ComEd proposes to amend Facility Operating License for Dresden Unit 2 to allow 40 years of operation from the original date of issuance of DPR-19. The current Unit 2 operating license, expires 40 years from the issuance of the construction permit, January 10, 1966 allowing an operating life of a little more than 36 years. An operating life extension of approximately forty-seven months would permit the license to expire forty years from the date of issue of the operating license. It is requested that this be handled as a Cost Beneficial Licensing Action. The cost benefit to ComEd customers is in excess of \$100,000.

Reference (a) extended the operating license of Dresden Unit 3 to January 12, 2011, which is a year beyond the date of December 22, 2009, requested for Unit 2. The Safety Evaluation of reference (a) concluded that the issue of the amendment for Unit 3 would not have a significant effect on the quality of the human environment. Operation of Unit 2 will be

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consistent with the points considered in reference (a) and (c). As discussed in the following pages the impact of Unit 2 operation may be reduced from those considered acceptable for the Unit 3 amendment issued April 24, 1990. As indicated in enclosure (2), this amendment involves no significant hazards in accordance with 10 CFR 50.92.

The topics discussed in enclosure (1) were selected because they are the most significant when considering extended operation. In addition, these subjects were consistently covered in similar applications for recapture of the construction period.


This proposed operating license amendment has been reviewed and approved by ComEd On-Site and Off-Site Review in accordance with ComEd procedures.

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 obtained information furnished by other Commonwealth Edison 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 application for amendment by transmitting a copy of this letter and its attachments to the designated state official.

Please direct any questions you may have concerning this submittal to this office.

Sincerely,

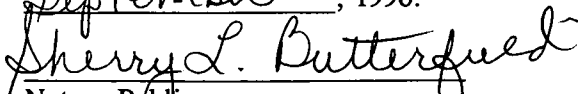
  
J. Stephen Perry  
Site Vice President  
Dresden Station

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

Enclosure 1 Evaluation of Changes  
Enclosure 2 No Significant Hazards Consideration

Subscribed and Sworn to before me

on this 16 day of  
September, 1996.

  
Notary Public



## ENCLOSURE 1

### EVALUATION OF CHANGES

#### VESSEL TOUGHNESS

The design of the reactor vessel and its internals considered the effects of 40 years of operation at full power and a comprehensive vessel materials surveillance program is maintained in accordance with 10 CFR 50 Appendix H which ensures that fracture toughness requirements of Appendix G are met. Reactor vessel surveillance capsules are periodically removed for Charpy V-notch and tensile strength tests.

On March 6, 1992, the NRC issued Generic Letter 92-01 (GL-92-01) which requested information to confirm that licensees satisfy the requirement for ensuring reactor vessel integrity. ComEd's response to GL-92-01 indicated that drop weight test and charpy test for beltline materials was either absent or incomplete for initial RTNDT determination. However, ComEd confirmed that NEDO-32205 BWR OWNERS GROUP TOPICAL REPORT ON UPPER SHELF LIFE ENERGY EQUIVALENT MARGIN ANALYSIS applied to the Dresden 2 & 3 reactor vessels and requested approval for that methodology to be used as the licensing basis for demonstrating compliance to 10 CFR 50 Appendix G.IV.A.1. The staff concluded that the reactor pressure vessels of the participating utilities should have adequate margins of safety against ductile failure in low use plates and welds until the end of life (EOL) 32 Effective Full Power Years (EFPY).

At the present time, Dresden Unit 2 has accumulated approximately 14.7 EFPY which gives that vessel 17.3 EFPY before it is projected to meet the ductility limits of Appendix G. The proposed extension to the Operating License would permit slightly less than 14 calendar years of operation. Under the most optimistic operating scenario, the vessel ductility limit would not be approached by the date of the proposed Operating License extension.

#### THERMAL AND LOADING CYCLES

Table 3.9-1 of the UFSAR, compares the predicted and allowable thermal cycles for Dresden 2 and 3 vessels. No component is predicted to exceed allowable thermal cycles. With improved operating and material standards currently implemented, it is likely that actual cycles will be less than the current projections.

#### INTERGRANULAR STRESS CORROSION CRACKING (IGSCC)

Inspections conducted at several boiling water reactors indicated intergranular stress corrosion cracking (IGSCC) has occurred in large-diameter stainless steel pipe. The NRC staff considered this a generic problem and as a result the Commission issued Generic Letter 84-11 requiring a re-inspection program at all BWRs, in systems that are part of or connected to the reactor coolant pressure boundary, out to the second isolation valve. Generic Letter 88-01 issued on January 25, 1988, superseded Generic Letter 84-11, and included a copy of NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping." NUREG-0313, Revision 2, describes methods acceptable to the staff to control the susceptibility of BWR ASME Boiler and Pressure Vessel Code Class 1, 2, and 3 pressure boundary piping and safe ends to intergranular stress corrosion cracking. ComEd commitments to Generic Letter 88-01 have been reviewed and approved by the NRC staff. On March 1, 1994 our plan to replace Reactor Water Cleanup Piping susceptible to IGSCC was approved. This piping was replaced during refueling outage D2R14 in the fall of 1995. Remaining systems subject to IGSCC will be controlled in accordance with our commitments to Generic Letter 88-01.

## EVALUATION OF CHANGES

### COMPONENTS AND SUPPORT SYSTEMS

The Safety Evaluation contained in reference (a) stated that although the plant was designed for a forty-year service life, some components may wear out before that time. Surveillance and inspection programs have been implemented in accordance with applicable sections of the ASME Code for Inservice Inspection and Inservice Testing of Pumps and Valves and Technical Specifications requirements to provide assurance that any unexpected degradation in plant equipment will be identified and corrected. The specific provisions and requirements of the ASME Code are set forth in 10 CFR 50.55a.

### PRIMARY CONTAINMENT

The primary containment was designed and built in accordance with ASME Code Section III of 1965 with addenda through the summer 1965. Integrated leak rate tests (Type A test) are performed in accordance with 10 CFR 50 Appendix J, Option B, and as required by the Technical Specifications. Periodic surveillance tests including local leak rate tests of various isolation valves and other penetrations to the containment are performed for purposes of identifying any degradation of containment safety function. These tests are unaffected by the proposed license amendment.

### PLANT DESIGN CHANGES

The staff published its original Safety Evaluation for Dresden Unit 2 on October 17, 1969. While changes have been made to the plant design since the original plant construction was completed, such as a spent fuel pool modification, major changes for fire protection in response to Appendix R, many TMI Task Action Plan modifications, and various other major design changes, each of these changes where it involved a safety-related component has been reviewed and approved by the staff with the details being documented in the staff's related Safety Evaluation. Further, as required by 10 CFR 50.71(e), these changes and their effect on accident analyses, if any, are routinely updated in UFSAR. The staff review of the original Safety Evaluation and Addenda and the UFSAR for the facility has not identified any concerns associated with approval of the proposed amendment to extend the expiration date of the license that are not already addressed by licensee commitments, operating procedures, and license requirements. Reference (b) transmitted the latest Dresden UFSAR revision to the NRC.

### ENVIRONMENTAL QUALIFICATION PROGRAM

Aging analysis have been performed for all safety-related electrical equipment in accordance with 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants," identifying qualified lifetime for this equipment. These lifetimes have been incorporated into plant equipment maintenance and replacement practices to ensure that all safety-related electrical equipment remains qualified and available to perform its safety related function regardless of the overall age of the plant.

### SPENT FUEL STORAGE

Spent fuel storage for Dresden Unit 2 is 3537 assemblies. The projected year of loss of full core discharge is estimated to be 2001. ComEd is pursuing various options including on-site dry cask storage because DOE will be unable to take the spent fuel for permanent storage before full core discharge capability is lost.

## EVALUATION OF CHANGES

### ENVIRONMENTAL ASSESSMENT

Reference (c) found that no significant radiological or nonradiological impact for the extension of the Dresden Unit 3 Operating License. No operating activities are contemplated for Unit 2 which could alter this conclusion. There are a number of activities which could reduce the impact already found acceptable by reference (c). Hydrogen Water Chemistry has been in use on Dresden Unit 2 since 1983. This has been found effective in mitigating intergranular stress corrosion cracking (IGSCC). This should lessen the potential for IGSCC as well as reduce occupational exposure as the number of potential repairs is diminished. In addition, a depleted zinc oxide system was installed on Unit 2 in March 1996. Industry studies have found this process effective in reducing the shutdown radiation levels by inhibiting the release of cobalt into the primary system. Management attention to reduction of occupational exposure and support for the ALARA Program have lowered this exposure despite a number of major projects in high radiation areas. The reduction of hot spots, decontamination of even remote areas of the plant, pre-job planning, use of remote tools and mock-ups, robotics, cameras, and temporary shielding are part of the ALARA Program at Dresden. These techniques and others which will be developed in the future will be available to minimize occupational exposure during the period of the license extension.

The impact of the transportation of fuel and waste will be less than that assumed in 10 CFR 51.52. Specifically there will be no shipments of spent fuel for the foreseeable future. The exposure of the fuel which would be shipped initially from the Unit 2 fuel pool in the future will be approximately 25 GWD/MTU compared with the 60 GWD/MTU assumed in table S-4. The exposure of fuel in subsequent shipments would be in the range of 25 to 40 GWD/MTU. When fuel shipments are undertaken in the future it is most likely that the fuel will have been discharged twenty or more years prior to shipment rather than the six months assumed in 10 CFR 51.52. The volume of Low Specific Activity (LSA) waste shipments will be lower in the future because the high cost of disposal has mandated aggressive action to reduce this quantity.

### DECOMMISSIONING

The inventory of activation products and associated radioactivity levels are not expected to increase significantly during the operating period of the extension. Decontamination of the primary system is frequently performed at the beginning of an outage to reduce containment radiation levels during the outage. The radiation levels seen at shutdown prior to decommissioning are not expected to be significantly higher than those expected without a license extension. In any event, no urgency is expected to begin decommissioning activities on unit 2 because Dresden Unit 3 is authorized for operation until 2011.

### ENVIRONMENTAL RELEASES

Currently effective chemical and thermal release limits for the Station, contained in reference (d), are set and regulated by the State of Illinois through the Illinois Environmental Protection Agency. Special Condition 7 of reference (d) states the following:

Commonwealth Edison Company has complied with 35 Ill. Adm. Code 302.211(f) and Section 316(a) of the Clean Water Act in demonstrating that the thermal discharge from its Dresden Nuclear Power Station has not caused and cannot be reasonably expected to cause significant ecological damage to receiving waters as approved by the Illinois Pollution Control Board in PCB Order 73-359 dated January 17, 1974 and PCB Order 70-134 dated July 9, 1981. Pursuant to 35 Ill Adm. Code 302.211(g), no additional monitoring or modification is now being required for reissuance of this NPDES Permit."

## EVALUATION OF CHANGES

NPDES compliance is reviewed by the Illinois Environmental Protection Agency (IEPA) every five years in order to renew reference (d). It is expected that chemical and thermal release limits for the station will be based upon evolving environmental information and technology.

### POPULATION TRENDS

Based on the 1980 census data reference (c) stated, "The small increase in the number of people living within the 5-mile zone, the lower than projection population increase within the 50-mile radius, and the continuing rural nature of the area indicate that the numbers of people living around and within the vicinity of the plant should pose no problem to the proposed extension of the operating license." Section 2.1.3.3 of the Updated Final Safety Evaluation Report (UFSAR), summarizes the population data based on the 1990 census as follows: "Permanent population distribution around the station has not changed significantly; although, total 1990 census population within the 5-mile Low Population Zone (LPZ) has increased to 8948 residents from 5090 reported in the FES. Industrial facilities and recreational facilities have also expanded, although their distribution is largely unchanged. The daily maximum transient population, including visitors to recreational facilities and workers employed by industries within 5 miles of the station is estimated to be approximately 15,200. The LPZ and population center distance specified for the site are in conformance with 10 CFR 100." Reference (e) reported the results of a study of the evacuation time of the plume exposure pathway specifically for Dresden Station based on the 1990 census. Section 7.1 of that report concludes that this zone could be evacuated in 225 minutes (less than four hours) during the day under adverse weather conditions.

### ECONOMIC IMPACT

The primary benefit of the extended operation of Unit 2 is the production of electricity which would have to be replaced if the unit were to be retired on January 10, 2006. Presently, this production would be from higher cost units.

ComEd paid \$9,700,812 in real estate taxes for Dresden Station in 1995 compared to \$3,700,000 paid in 1985. There were nearly 1000 people on the Dresden payroll in 1995 with a total payroll of \$63.4 million compared to 690 people and a payroll of \$31.8 million in 1985. Total expenditures for 1995 approached \$200 million.

Continued operation of Unit 2 will make more efficient use of the 2500 acres of land dedicated to the station and cooling pond in that Unit 3 is licensed to operate until January of 2011.

## ENCLOSURE 2

### NO SIGNIFICANT HAZARDS CONSIDERATION

The licensee proposes that the requested changes do not involve Significant Hazards Consideration for the following reasons:

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change affects only the expiration date of the operating license. No changes in the operation, configuration, or monitoring of the plant are part of this submittal. In as much as the plant is designed for a forty-year operating life, and this design was considered in the initial decision to grant the operating license, the current license basis remains in effect. Over the past twenty-six years of operation, issues affecting the integrity and reliability of primary system components have been addressed. These are discussed in enclosure (1) with projections of how they would be affected by the approximately four additional years of operation.

2. The proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

The accident analyses that define Dresden Station design bases are simulated using analytical models and assure that the initiating event will not result in radioactive releases that exceed 10 CFR 100 dose limits. Such analyses are performed only when major parameters, systems, or components are changed, e.g. plant modifications, fuel design changes, or new analytical methods. Since the operating license extension does not affect a plant parameter, a system or a component that is important to the safety analysis, the present design basis accident analyses remain valid. Therefore, additional years of operation will not have any adverse effect on operational exposure at the site or on the accident analysis and, therefore, are acceptable.

3. The proposed changes do not involve a significant reduction in a margin of safety.

The proposed amendment involves only a change in the expiration date of the Operating License. As discussed above, inspection, maintenance and surveillance practices of the Station Procedures, IST, ISI, EQ, and maintenance programs ensure that structures, systems, and components will be refurbished and/or replaced, as required, to maintain the margins of safety required by the Technical Specifications.