UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAR 2 9 1980

Docket No. 50-10

Ms. Jean Mayes
2006 Southwood Drive
Champaign, Illinois 61820

Dear Ms. Mayes:

This is in response to your recent letter to Acting Chairman Ahearne, which expressed your concern related to the chemical decontamination of Dresden Nuclear Power Station, Unit No. 1.

We have been reviewing this project since Commonwealth Edison's initial decontamination proposal on December 12, 1974. On December 9, 1975, we issued a conditional authorization which allowed Commonwealth Edison to initiate the chemical decontamination subject to the completion of three items which would be resolved as follows:

1. The testing program will be completed and the results submitted for the review and approval of the NRC staff prior to performing the proposed chemical cleaning.

2. A pre-service inspection program for the primary coolant boundary will be formulated and submitted for NRC review and approval prior to returning the reactor to service.

3. A post-cleaning surveillance program which includes additional surveillance specimens and a specimen withdrawal and examination schedule will be submitted for NRC review and approval prior to returning the reactor to service.

A copy of our Safety Evaluation in support of these actions is enclosed for your information.

Since our 1975 authorization Commonwealth Edison has completed its materials test program and construction of the necessary support facilities to carry out the project in a safe and environmentally acceptable manner. Our review of the testing program and the facility construction is continuing and will be completed prior to the chemical cleaning that is currently scheduled for the first half of 1980.

The decontamination process involves the circulation of a Dow Chemical Company cleaning solvent through the reactor primary cooling system. The solvent, identified as NS-1, has been developed to remove the thin, tightly adherent, layer of highly radioactive oxide that has formed on the inside surfaces of the Dresden 1 primary cooling system.

The solvent will preferentially dissolve the oxide without significantly attacking the underlying base metal of the primary cooling system piping.

After removal of the uranium fuel, the solvent will be circulated through the primary coolant system for approximately 100 hours at about 250°F. After circulation the solvent and the dissolved oxides will be drained from the reactor to a waste treatment facility located adjacent to the reactor. Any remaining solvent will be cleaned from the reactor by rinsing with demineralized water. The rinse water and solvent will be stored in the waste treatment facility storage tanks until processed to concentrate and solidify the solvent and dissolved radioactive corrosion products.

The decontamination will be carried out entirely within a closed system and all waste processing will be accomplished within a specially designed, earthquake proof, leak tight, building. All transporation of radioactive wastes will be done in accordance with all applicable NRC and Department of Transporation regulations. Because of these precautions, there will be no increased hazard to the health and safety of the citizens of Illinois or any degradation of the environment in Illinois.

After processing the concentrated waste solution will be solidified in 55 gallon drums using a process developed by the Dow Chemical Company for the solidification of low level radioactive wastes. This solidification process has been tested on the NS-1 solvent and produced a solid waste form that contained no free liquids. The waste solidification procedures include a quality control process test on each barrel of waste to provide additional assurance that the liquid waste has been properly solidified.

After solidification the waste drums will be transported by a commercial radioactive waste carrier to a licensed solid waste burial ground such as Beatty, Nevada or Hanford, Washington. These arid, desert sites have been specifically selected for the disposal of the Dresden waste to further assure that there is no interaction of the waste with ground water. Because the waste is in a solid form, the ground water level is approximately 300 feet below the surface, and the burial sites are located in remote, uninhabited locations, there is adequate assurance that the waste will remain isolated from potential pathways for exposure of the population.

The cost of the Dresden 1 decontamination has been estimated at 36 million dollars. Much of this cost represents one time development costs which would not be incurred in subsequent reactor decontamination at Dresden 1 or other nuclear facilities. At this time there are no plans to decontaminate the primary cooling system of other U. S. nuclear facilities,

however, preliminary estimates of the cost for decontamination currently operating U. S. reactors range from 1 million to 5 million dollars per reactor and would vary depending on the extent of modification required at a specific facility to perform the decontamination.

The decontamination of reactor primary cooling systems will reduce the radiation exposure levels in the areas of these systems, thereby permitting greater access to the system for inspection, modifications, and repairs. These activities provide greater assurance of the continued safe operation of the reactor and are therefore in the best interest of the health and safety of the public. Furthermore, the decontamination will reduce the occupational exposure of the individuals employed at Dresden.

With respect to requests for the preparation of an Environmental Impact Statement for the Dresden Unit 1 decontamination, the Nuclear Regulatory Commission is fully committed to satisfying all requirements of the National Environmental Policy Act (NEPA). Our regulations which implement the NEPA requirements are contained in Title 10, Part 51.5, of the United States Code of Federal Regulations. These regulations are in conformance with guidelines issued by the President's Council on Environmental Quality which were in effect prior to July 30, 1979. They identify the following types of actions for which NRC must prepare an environmental impact statement:

> "(1) Issuance of a permit to construct a nuclear power reactor, testing facility, or fuel reprocessing plant pursuant to Part 50 of this chapter;
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> (2) Issuance of a full power or design capacity license to operate a nuclear power reactor, testing facility, or fuel reprocessing plant pursuant to Part 50 of this chapter;
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> (3) Issuance of a permit to construct or a design capacity license to operate an isotopic enrichment plant pursuant to §50.22 of this chapter;
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> (4) Issuance of a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride pursuant to Part 70 of this chapter;
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> (5) Issuance of a license to possess and use source material for uranium milling or production of uranium hexafluoride pursuant to Part 40 of this chapter;
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> (6) Issuance of a license authorizing commerical radioactive waste disposal by land burial pursuant to Parts 30, 40, and/or 70 of this chapter;

(7) Conversion of a provisional operating license for a nuclear power reactor, testing facility or fuel reprocessing plant to a full power or design capacity license pursuant to Part 50 of this chapter where no final environmental impact statement has been previously prepared;

(8) Issuance of a license to manufacture pursuant to Appendix M of Part 50 of this Chapter;

(9) Amendments of Parts 30 and 40 of this chapter concerning the exemption from licensing and regulatory requirements of any equipment, device, commodity or other product containing byproduct material or source material; and

(10) Any other action which the Commission determines is a major Commission action significantly affecting the quality of the human environment."

The Commission is presently in the process of modifying our Environmental Protection regulations to take into account, voluntarily, the regulations promulgated by CEQ which became effective July 30, 1979. We have concluded that this action is not one of these actions requiring an environmental impact statement under current Commission regulations.

While our regulations do not require the preparation of an environmental impact statement, we are evaluating the environmental impact of the proposed action to determine whether an environmental impact statement should be prepared because of specific circumstances related to this particular action. If it is determined that an environmental impact statement need not be prepared, a negative declaration and environmental impact appraisal will be prepared in accordance with Sections 51.7 and 51.50(d) of our procedures for environmental protection. We will complete our review and issue the appropriate statement or appraisal prior to the Dresden decontamination.

With regard to your comments about the study done at Oak Ridge National Laboratory report in Science, June 30, 1979, Commonwealth Edison, the licensee for Dresden Unit 1, has agreed to dispose of the Dresden 1 waste at either Beatty, Nevada or Hanford, Washington commercial low level waste burial sites. These sites differ significantly in their geologic and hydrologic characteristics from the Oak Ridge site where chelant-aided migration of radionuclides was observed.

Specifically, the Oak Ridge site, where migration occurred, experiences very high precipitation and has a water table so shallow that it probably intersects the disposal pits and trenches during periods of heavy rain fall. In addition, the Oak Ridge topography is hilly with steep slopes underlain by fractured shale material which allows underground water and radioactive waste to flow down hill through the fractures until it seeps to the surface within 250 feet of a perennial stream.

Conversely, the commercial waste burial sites at Beatty and Hanford, where no migration of radionuclides has been observed, are flat desert areas with very low precipitation, a water table approximately 300 feet below ground level and a distance of 8 to 10 miles to the nearest perennial stream.

In addition to these site characteristics, which prevent the migration of radioactive material from the desert waste burial sites, another significant difference between the proposed waste disposal technique and the now discontinued Oak Ridge methods is that the Dresden waste will be disposed of as a solid. At Oak Ridge over 35 million gallons of liquid radioactive waste was pumped into the disposal trenches. We estimate that approximately 7 million gallons of liquid waste was disposed of in Trench No. 7, which was identified as a source of chelated radionuclides Because of the differences we have concluded that the Dresden wastes should be disposed of in dry burial site.

With respect to your request for information relative to a public hearing on this matter, the Illinois Safe Energy Alliance (ISAE) by petition dated September 20, 1979, requested that the Nuclear Regulatory Commission hold a public hearing on this issue. This petition is under review in accordance with the provisions of 10 CFR 2.206 of the Commission's regulations. I enclose for your information a copy of our letter accepting that petition. We will provide you with a copy of our response to the ISEA petition when it is available.

In summary, the Dresden decontamination has been carefully planned to improve the safety of the reactor and reduce the exposure of plant personnel to radiation. The waste produced by the process is similar in type and quantity to the waste routinely produced at Dresden and its processing, transportation, and disposal will not cause any new hazards not previously evaluated and deemed acceptable.

Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
1. Safety Evaluation
2. Ltr. dtd. 10/30/79
   to ISEA