Docket No. 50-249

JUL 24 1970

Commonwealth Edison Company
P. O. Box 767
Chicago, Illinois 60690

Attention: Mr. Byron Lee, Jr.
Assistant to the President

Gentlemen:

During its meeting held on July 9-11, 1970, the Advisory Committee on Reactor Safeguards completed its review of your application for a license to operate Unit 3 of the Dresden Nuclear Power Station. A copy of the Committee's report, dated July 17, 1970, is enclosed. In its report the Committee made comments on certain matters that will require additional information or action on your part prior to licensing of Unit 3.

In this regard, we will need your responses to each of the Committee's concerns. These include provision for necessary instrumentation in the containment for remote monitoring of the containment atmosphere, measures taken to assure continued integrity and isolability of the small-diameter instrument lines, your plans and programs for submission of a proposed design for hydrogen control and purging, information on the adequacy of the biological shield to accommodate the effects of a safe end rupture or nozzle leak of equivalent cross-section, your schedule regarding the completion of the study of anticipated transients in the presence of a failure to scram resulting from a systematic or common mode failure, and the possible need for design modifications to make tolerable the consequences of such a transient. In addition, we will need your plans on the formulation of an inspection and surveillance program for the replaced and/or repaired furnace-sensitized stainless steel components in the Unit 3 reactor pressure vessel, and your plans to modify the design of the pressure sensors in the low pressure core cooling interlock in the automatic relief system. In this latter regard, please indicate what action you propose to take on Unit 2.

Please note the comments of Drs. Stratton and O'Kelly regarding their opinions on the undesirability of inerting. As we have indicated to you, inerting will be required for both Units 2 and 3; however, because it will

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also be necessary that you propose a system that can adequately cope with the effects of hydrogen that will be generated as a result of radiolysis following a loss-of-coolant accident, you may wish to include in this design proposal ways and means to cope with excess hydrogen that may be generated from metal-water reactions. The effectiveness of such a system to cope with all means of hydrogen generation could affect the decision to require inerting for Units 2 and 3.

We will need your responses to the items raised in the Committee's letter as soon as possible to complete our review of Dresden Unit 3 in time to meet your anticipated fuel loading date which we understand would be September 15, 1970.

Sincerely yours,

Original Signed by
Peter A. Morris

Peter A. Morris, Director
Division of Reactor Licensing

Enclosure:
ACRS Report for Unit 3

cc: Arthur C. Gehr, Esquire
Isham, Lincoln & Beale
Counselors at Law
72 West Adams Street
Chicago, Illinois 60690

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

July 17, 1970

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON DRESDEN NUCLEAR POWER STATION UNIT 3

Dear Dr. Seaborg:

During its 123rd meeting, July 9-11, 1970, the Advisory Committee on Reactor Safeguards completed its review of the application by the Commonwealth Edison Company for a license to operate Unit 3 of the Dresden Nuclear Power Station at power levels up to 2527 MW(t). Unit 3 is essentially identical to Unit 2, which was the subject of a Committee report to you dated September 10, 1969. A Subcommittee meeting was held with the applicant in Washington, D. C., on July 7, 1970. In the course of the review, the Committee had the benefit of discussions with the applicant, the General Electric Company, the AEC Regulatory Staff, and their consultants. The Committee also had the benefit of the documents listed.

The applicant reports that, with Units 2 and 3 in operation, the requirements of the Illinois Sanitary Water Board make it necessary to provide for cooling of the condenser circulating water and service water before discharge to the Illinois River. A 1275-acre artificial lake, nearly two miles from the plant, is being provided for this purpose by construction of an earthen dike. The applicant stated that the arrangement and topography are such that no failure of the dike or other features could lead to flooding of the plant or could otherwise interfere with the performance of safety features. The Committee believes that the construction and use of the lake will have no adverse effect on the safe operation of Units 2 and 3.

The Committee's report on Dresden Unit 2 referred to several improvements in the plant that had been developed and incorporated subsequent to the granting of the provisional construction permit. These improvements have also been incorporated in Unit 3. The Committee report on Unit 2 contained a number of recommendations, and the Committee believes these same recommendations should apply to Unit 3.

Problems experienced during preliminary operation of Unit 2 have shown the need for some improvements in the plant and in operating procedures. These improvements will also be incorporated in Unit 3. One of the improvements consists of instrumentation to be installed in the primary containment for remote monitoring of temperature and pressure over the full range of postulated accidents. The Committee believes that instrumentation should also be provided for monitoring high radiation levels by means more rapid than sampling and laboratory analysis.

As in other boiling water reactors, the containment is penetrated by a large number of small diameter instrument lines. The Committee recommends that special attention be given to assuring continued integrity and isolability of these lines and to a program for the periodic examination and testing of the valves in these lines. The adequacy of measures taken with regard to such instrument lines should be confirmed by the Regulatory Staff.

The Committee has commented in previous reports on the development of systems to control the buildup of hydrogen in the containment that might follow in the unlikely event of a loss-of-coolant accident. The applicant proposes to make use of a purging technique after a suitable time delay subsequent to the accident. The Committee believes that purging capability should be retained, but that the primary protection in this regard should utilize a method of hydrogen control that keeps the hydrogen concentration within safe limits by means other than purging. The hydrogen control system and provisions for containment atmosphere mixing and sampling should have redundancy and instrumentation suitable for an engineered safety feature. The Committee recommends that the applicant, on a reasonable time scale, submit a proposed design for hydrogen control and purging, for review by the Regulatory Staff. The Committee wishes to be kept informed.

As for other boiling water reactors, the Committee believes that the Regulatory Staff should assure itself that the biological shield surrounding the reactor vessel can withstand the pressure that could be developed by a safe-end rupture or a nozzle leak of equivalent cross-section, or that failure of the shield would have no unacceptable consequences.

In several recent reports, including that on Dresden Unit 2, the Committee discussed the need for study of anticipated transients in the presence of a failure to scram resulting from a systematic or common mode failure, and the possible need for design modifications to make tolerable the consequences of such a transient. The Committee believes it desirable to accelerate studies of the course of such transients including the effect of proposed changes, and to implement in timely fashion such design modifications as are found to improve significantly the safety of the plant in this regard. The Committee wishes to review this matter within the reasonably near future.

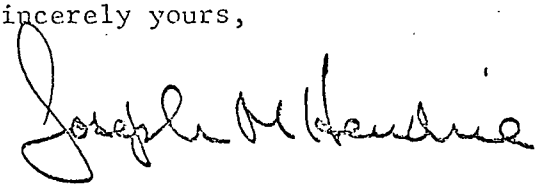
As in Dresden Unit 2, many safe end extensions to the reactor vessel nozzles became sensitized during stress relief of the vessel. All except four of the furnace-sensitized nozzle safe ends of the pressure vessel have been replaced with unsensitized material. The remaining four safe ends have been overlaid on the inner surface with stainless steel. In addition, the welds between all nozzles and stainless steel safe ends have been overlaid on the inner surfaces. The applicant proposes to provide a path for escape of gases that could become trapped at the core spray coolant injection nozzles. A number of sensitized internal brackets have also been replaced and many sensitized pads have been overlaid. The Committee believes these measures to be satisfactory, taken in conjunction with formulation of surveillance and inspection programs to be approved by the Regulatory Staff.

The Regulatory Staff reports that a single erroneous indication from a pressure sensor in the low-pressure core-cooling interlock in the automatic relief system could permit pressure blowdown at a time when the low-pressure cooling systems were not available. In two other recently licensed plants this condition has been corrected, and provision has also been made for testing the pressure sensors. The Committee believes the condition should also be corrected for Dresden Unit 3.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above, and subject to satisfactory completion of construction and pre-operational testing, there is reasonable assurance that the Dresden Nuclear Power Station Unit 3 can be operated at power levels up to 2527 MW(t) without undue risk to the health and safety of the public.

Additional remarks by Dr. William R. Stratton and Dr. Arlie A. O'Kelly are attached.

Sincerely yours,



Joseph M. Hendrie
Chairman

ADDITIONAL REMARKS BY DR. WILLIAM R. STRATTON

I agree with the Committee that the applicant should be granted a license to operate the Dresden Unit 3 power plant. However, I again suggest that the requirement that the containment atmosphere be replaced by nitrogen is a serious mistake, and I urge the Commission to review this decision. In my opinion, the impediments to safe operation offered by the inert atmosphere far overbalance the additional protection offered in the very improbable event of a serious accident.

In addition, I draw attention to the Committee's recommendation in this letter for a device which must control the hydrogen content of the containment atmosphere should this gas be created following the improbable event of a serious accident. If the design requirements of the hydrogen control system should be appropriate, such a device can satisfy the same requirements as inerting without the attendant disadvantages of the nitrogen atmosphere.

ADDITIONAL REMARKS BY DR. ARLIE A. O'KELLY

I disagree with the requirement to inert Dresden Unit 3. I believe that it represents an undesirable practice in nuclear power plant operation.

References

1) Letter from Commonwealth Edison Company dated November 17, 1967; Volumes I and II of Safety Analysis Report.

2) Amendments 8 - 22 to the License Application

3) Letter from Commonwealth Edison Company dated September 4, 1969; Additional Information relative to the Application.

4) Letter from Commonwealth Edison Company dated July 9, 1970; Additional Information relative to a vibration monitoring program for Dresden 3.