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Docket Nos: 50-327/328

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Summary Report on Hydrogen Control Measures

On March 30, 1982, we informed the Commission (Enclosure 1) that an additional four months delay in the Ice Condenser Owners Group hydrogen control R&D program has occurred which will have the effect of delaying the completion of NRC evaluations on the adequacy of the hydrogen control systems by a corresponding amount of time. Our previous Commission status report gave April 1982 as an anticipated completion date. We also stated in our latest report that we expect each licensee to assess the data from their point of view on adequacy of their hydrogen control systems.

With regard to this assessment, we ask that you provide us within sixty days from the completion of R&D efforts a report whose purpose is to substantiate your position on the adequacy of the hydrogen control system in compliance with the license condition. We have in mind an Executive Summary Report of a few pages and possibly some attachments that are suitable for Commission and Senior Management reviews for our respective organizations. It should reference and draw from the many technical reports that you have produced on the efficacy of the ignitor systems and from other available sources. The report should cover but not necessarily be limited to the following:

a. Description of the issues and concerns that have been raised by consultants and other responsible organizations and your assessment of their merits.
b. Final criteria and design basis utilized for your permanent system and how each pertinent issue was factored into your design considerations.
c. Applicability of the test data and analysis by the licensees and others for substantiating the adequacy of the ignition systems.

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d. Recommendation for any continued R&D efforts on hydrogen control measures that should be carried out on a generic basis.

We welcome your comments and suggestions on the content of the report.

Sincerely,

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

W.Butler 4/12/82

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SEQUOYAH

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ENCLOSURE

DEC 23 1981

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Bradford
Commissioner Ahearne
Commissioner Roberts

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: STATUS REPORT ON R&D PROGRAM FOR HYDROGEN CONTROL AND COMBUSTION FOR THE ICE CONDENSER PLANTS, SEQUOYAH, MCGUIRE, D. C. COOK

This is to advise you of the status on the R&D hydrogen control program and its impact on the three operating ice condenser nuclear power facilities. TVA and its associates, Duke Power and AEP, are continuing their cooperative efforts on hydrogen control measures and the possible effects of hydrogen burns on safety functions. The three utilities are contributing financially and technically to the R&D program; however, each licensee has reserved the right to judge independently the results of the R&D effort and the adequacy of their own installed or proposed hydrogen mitigation system for compliance with NRC requirements. For this reason TVA, AEP and Duke Power are responding separately to this matter.

TVA now states that the R&D results to confirm the adequacy of the proposed permanent system(s) will be available in December 1981. This is approximately three months later than anticipated at our last Commission discussion on Sequoyah Unit 2 in June 1981. This delay is due to the need in assimilating information from numerous sources outside of the respective utility organizations. Complete information is not expected until December 1981 from the EPRI test program which includes igniter development, hydrogen combustion and mixing studies.

With respect to the survivability of equipment in the event of hydrogen burns, Duke Power states that all essential equipment would survive hydrogen burning and could be depended on to operate when hydrogen burning ceased. They consider their analysis to be based on conservative assumptions concerning geometry and heat transfer coefficients, and submit that it considers all relevant forms of heat transfer in multi-dimensional configuration. Modified CLASIX code results used in the analysis show less severe thermal environments than previously assumed which support their conclusion that safety equipment will survive hydrogen burns. The staff's evaluation of equipment survivability

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will be based on an assessment of the adequacy of the licensee's submittals. Additionally, Sandia is performing analysis and testing of equipment in a hydrogen burn environment which will provide the staff with test results and an analytical method for confirming the staff's evaluation of the licensee's analysis. This program is scheduled to be completed by mid 1983.

Due to the three-month licensee slippage, we anticipate completing our evaluations on the adequacy of the information and the proposed or installed permanent hydrogen mitigation systems in April 1982, instead of January 1982, and will be prepared to brief you at that time. The impact of this delay for the three ice condenser plants is as follows:

A. Sequoyah Units

The Commission approved deferring installation of the proposed permanent hydrogen mitigation system in Unit 2 until first refueling (estimated March 1983) to avoid a lengthy forced outage. This was acceptable principally on the basis that the installed interim system is very similar to the proposed final system in that it has the same functional capability; equivalent coverage by location, and diesel backup power. TVA will also formally request delaying the installation of the final system for Unit 1 on the same basis as Unit 2. We believe that their request will be equally valid for this unit. No information has evolved which would cause the staff to request rescinding our earlier approval of the mitigation systems for interim use. The first refueling of Unit 1 is estimated for September 1982; therefore, no impact is expected from the delay in the utility R&D program for both units.

B. D. C. Cook

After extensive discussions, AEP voluntarily installed and placed in operation a hydrogen mitigation system that incorporates certain improvements with respect to seismic and electrical design features compared to the interim Sequoyah system. A status report on D. C. Cook was provided to you on June 22, 1981. AEP considers their currently installed system meets NRC requirements as they perceive them. Additional requirements for this facility will be established, if necessary, consistent with the other ice condenser facilities.

C. McGuire

On October 30, 1981, Duke Power submitted the results of their

investigations in which they state the licensing conditions for the installation of an adequate hydrogen mitigation system by January 31, 1982 are satisfied. License condition changes have not been requested by Duke Power. The delays in the R&D program do have an impact on this plant because the staff will not be able to judge the adequacy of the system until well beyond the date the current license condition for McGuire, Unit 1 calls for NRC approval to be completed. However, operation beyond January 31, 1982 is recommended by the staff for essentially the same reasons stated for Sequoyah. The installed system is comparable to Sequoyah's with some of the improvements noted for D. C. Cook. The impact of the R&D delays is considered administrative in nature; therefore, we recommend changing the McGuire license condition (not requested by Duke Power) to require the installation of the permanent systems to conform with the Sequoyah, Unit 2 license condition, which requires installation by the first refueling.

In summary, the utilities plan to complete their R&D efforts and analyses by the end of the calendar year and each licensee is responding, separately, to the adequacy of their respective hydrogen mitigation systems. Our evaluations will be completed by April 1982, provided the current licensee schedules are maintained and the licensees are fully responsive to our needs. We, therefore, propose to modify the license condition on Sequoyah 1 and McGuire 1 to reflect the above consideration, i.e. the date that the Commission must confirm that an adequate hydrogen control system for the plant is installed and will perform its intended function in a manner that provides adequate safety margins will be changed from January 31, 1982 to prior to startup following the first refueling outage for each unit. Because these changes entail no significant hazards consideration, the staff would issue necessary amendments with post notices. Because the McGuire case is currently before the Appeal Board, a copy of this memorandum as well as the subsequent license amendments and notice will be served upon the Board and parties.

(Signed) William J. Dircks

William J. Dircks
Executive Director for Operations