FirstEnergy

Davis-Besse Nuclear Power Station
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Docket Number 50-346

License Number NPF-3

Serial Number 2676

October 12, 2000

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Subject: Additional Information for License Amendment Request (LAR) 96-0013
Regarding, Relative Humidity in the Control Room (TAC No. MA5731)

Ladies and Gentlemen:

By letter (Serial Number 2619) dated November 4, 1999, the FirstEnergy Nuclear Operating Company submitted an application for an amendment to the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1, Operating License NPF-3, Appendix A, Technical Specifications. The proposed changes involved adoption of a Ventilation Filter Test Program in Technical Specification (TS) Section 6.0 – Administrative Controls and removal of the specific ventilation filter testing requirements from TS 3/4.6.4.4 – Hydrogen Purge System, TS 3/4.6.5.1 – Shield Building Emergency Ventilation System, and TS 3/4.7.6.1 – Control Room Emergency Ventilation System. During the NRC Staff's review of this application, certain information regarding the relative humidity level in the control room was requested by the NRC.

Attached is the requested summary of the assumptions, calculation methodology, and conclusions for the determination of the relative humidity level in the control room following a postulated LOCA for the DBNPS. The detailed calculation (No. C-ME-28.01-099) is being retained on file at the DBNPS in accordance with DBNPS procedures and is available for review on site by NRC personnel.

This information does not affect the conclusions of the Safety Assessment and Significant Hazards Consideration previously provided in the November 4, 1999, license amendment application.

A003

If you have any questions regarding this information, please contact Mr. David H. Lockwood, Manager - Regulatory Affairs, at (419) 321-8450.

Very truly yours,

FWK/laj

Attachments

cc: J. E. Dyer, Regional Administrator, NRC Region III
S. P. Sands, NRC/NRR Project Manager
D. J. Shipley, Executive Director, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
K. S. Zellers, NRC Region III, DB-1 Senior Resident Inspector
Utility Radiological Safety Board

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Attachment 1

FACILITY OPERATING LICENSE NUMBER NPF-3

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

Attached is a summary of the assumptions, calculation methodology, and conclusions for the determination of the relative humidity level in the control room following a postulated LOCA for the Davis-Besse Nuclear Power Station. This information is being submitted in support of License Amendment Request Number 96-0013, Revision 1.

I, Guy G. Campbell, state that (1) I am Vice President - Nuclear of the FirstEnergy Nuclear Operating Company, (2) I am duly authorized to execute and file this certification on behalf of the Toledo Edison Company and The Cleveland Electric Illuminating Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

By: _____
Guy G. Campbell, Vice President - Nuclear

Affirmed and subscribed before me this 12th day of October, 2000.

_____
Notary Public, State of Ohio
Nora L. Flood
My commission expires September 4, 2002.

Summary of Assumptions, Calculation Methodology, and Conclusions for the Determination of the Relative Humidity Level in the Davis-Besse Nuclear Power Station Control Room

The relative humidity conditions (RH) for Davis-Besse Control Room Emergency Ventilation System (CREVS) were determined by calculation utilizing the psychrometric properties of the system under accident conditions and plotted graphically. This demonstrated that the RH remains below 70% for all conditions.

The initial condition of the air in the Control Room (CR) is approximately 75 F and 50% RH as controlled by the normal Control Room HVAC System. The Control Room is isolated on a LOCA and the normal HVAC is shut down. The CREVS is then started with 300 CFM of outdoor air taken in to pressurize the space and a total air recirculation through the HEPA and Charcoal filters and cooling coil of 3300 CFM for each unit. Heat loads in the CR are controlled per procedure to maintain the temperature in the Control Room Cabinet Room to less than 110 F.

The following assumptions were made.

1. The Control Room Normal Ventilation is off and the Control Room isolation dampers are closed.
2. Only one CREVS filtration unit is operating.
3. Air properties in the CR prior to going into isolation are 75 F and 50% Relative Humidity as contained in the USAR.
4. The outdoor air is at 95 F and the wet bulb temperature is 9 F above the USAR design value of 76 F or 85 F. This temperature was chosen as a conservative value.
5. The air temperature leaving the coil is estimated to be 65 F at a full load of 10 Tons and is at saturation. This condition is from actual test data for the cooling coil. The air temperature leaving the coil was approximately 60 F at partial load. 65 F is to be considered as a first estimate for full load and established the full load plot on the Psychrometric Chart.

The partial load data as given in test DB-SS-03710, dated 10/3/91, was plotted using the 60 F coil exit temperature that was measured in the test. In this partial load case, the relative humidity is at its maximum value (51%). The heat load for the CR is not expected to be lower than this because the heat loads during normal operation are higher than the CREVS capacity and the heat load is normally required to be reduced in the emergency situation.

The case at the expected full load condition with 65 F coil exit temperature results in a maximum RH of 38%.

An additional plot was placed on the chart for the maximum expected 110 F return air temperature. The RH for this case is approximately 40 %.

From the three cases plotted on the Psychrometric Chart, at full heat load, the relative humidity at each maximum point remains less than 40%. Only for the case where the heat load is relatively low, does the relative humidity exceed 50%. Because of all the electrical equipment in the CR, a lower heat load is not credible.

Also, by inspection of the Psychrometric chart, if the outdoor air is shut off and the CREVS is operated in the recirculation mode, the RH will be lower for each of the above cases.

Thus, the Relative Humidity of the air passing through the charcoal is expected to less than 70% for all CREVS operation.

COMMITMENT LIST

THE FOLLOWING LIST IDENTIFIES THOSE ACTIONS COMMITTED TO BY THE DAVIS-BESSE NUCLEAR POWER STATION (DBNPS) IN THIS DOCUMENT. ANY OTHER ACTIONS DISCUSSED IN THE SUBMITTAL REPRESENT INTENDED OR PLANNED ACTIONS BY THE DBNPS. THEY ARE DESCRIBED ONLY FOR INFORMATION AND ARE NOT REGULATORY COMMITMENTS. PLEASE NOTIFY THE MANAGER – REGULATORY AFFAIRS (419-321-8450) AT THE DBNPS OF ANY QUESTIONS REGARDING THIS DOCUMENT OR ANY ASSOCIATED REGULATORY COMMITMENTS.

COMMITMENTS	DUE DATE
None	N/A