Nebraska Public Power District

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CNSS867070

January 30, 1986

Mr. J. E. Gagliardo, Chief
Reactor Projects Branch
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Subject: NPPD Response to NRC Request for Information Concerning Control Room Habitability

Dear Mr. Gagliardo:

This letter is written in response to your letter dated December 31, 1985, forwarding the comments resulting from the Control Room habitability survey conducted on October 2-3, 1985. In that letter, you identified four conditions which were different than those described by Nebraska Public Power District in a previous submittal.

As a matter of clarification, our previous submittal (letter, J. M. Pilant, NPPD to D. G. Eisenhut, NRC, Subject: "Post TMI - Requirements/Action Plan", dated December 30, 1980, LQA8000581) contained responses to several NUREG 0737 items. One of these, Item III.D.3.4, deals with Control Room Habitability. Our specific response was in the form of a Control Room Habitability Study which had been performed by a consultant and which was included as an enclosure to the December 30, 1980 letter. During your aforementioned survey, the accuracy and adequacy of this study was questioned. In reviewing this matter, we determined that this study compared existing CNS control room habitability design provisions against pertinent regulatory requirements. Therefore, the parameters described in the study reflect the "as designed" conditions, versus the "actual" conditions which were measured during your survey. The survey noted these differing conditions, to which you requested a response. Our position regarding each of these conditions is given below. Where required, short-term corrective actions that have been taken and planned are also described. In addition, our review of this matter also revealed several broader issues which are addressed in the closing paragraphs of this letter.

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1. Emergency Bypass Filtration Unit

December 30, 1980, licensee response:

The CNS Control Room ventilation system is designed to maintain the Control Room at about 1/4" water gauge (WG) positive pressure by supplying air at a high enough pressure that even after system losses and the booster exhaust fan pressures are accounted for, the Control Room pressure is still positive. During emergencies, the normal supply is shut off and either (1) a 225 cubic feet per minute (cfm) makeup bypass train, including a pre-filter, HEPA filter, and carbon absorption filter, is operated, or (2) all outside makeup is shut off.

The as found conditions were:

ANL measured a flow of 600 cfm through this unit.

NPPD Response

Even though the flow measured during the survey (600 cfm) is higher than the minimum design value (225 cfm), a conservative margin exists for the capacity of the installed unit. The HEPA filters and charcoal adsorbers are sized to handle a maximum flow rate of 1000 cfm and 666 cfm, respectively. Pre-operational test data established the proper flow to maintain positive Control Room pressure to be 341 cfm. This value has been used as the performance parameter for yearly surveillance testing, with minor variations in actual flow noted over the years. Differences in configuration and measuring instrumentation account for the differences between the 600 cfm and 341 cfm measured values.

As a result of the survey, however, it was determined that the filter unit isolation damper would properly control flow through the unit, but it could not be adjusted to ensure adequate system isolation (a more detailed explanation of this condition is provided in your Item 2. below). A design change is currently being developed to replace this damper with one of higher quality.

2. Infiltration Leakage Rate

December 30, 1980, licensee response:

The Control Room area construction is tight, with sealed cable penetrations, tight fitting sealed doors, and tight ventilation louvers with interlocking neoprene edges. The area serviced by the Control Room ventilation system includes the Control Room and the cable spreading room, including kitchen and sanitary areas. Although the cable spreading room does not require access during accident conditions, it contains the air conditioning unit and is a sealed volume, so it does not adversely affect system function.

Upon detection of smoke in the ventilation systems, all outside air is shut off, since the makeup bypass filter train will be of little value in absorbing the toxic substance. This flow mode will also be initiated

manually during a toxic gas accident. In this case, the only outside air makeup is leakage through the isolation dampers, which has been conservatively calculated at 225 cfm. This inleakage is mixed with recirculation flow as discussed above and returned to the Control Room.

The as found conditions were:

With the Control Room normal intake isolated and the emergency bypass filtration unit in operation, ANL measured 1000-2000 cfm of unfiltered inleakage through the normal intake isolation damper, and an exhaust flow of 4000 cfm through the closed exhaust damper.

A flow of approximately 300 cfm was measured through the emergency bypass filtration unit when the system was isolated.

NPPD Response:

The isolation dampers were inspected and found to be in need of closure adjustment. Maintenance was performed on the intake isolation damper and the exhaust damper to ensure that they closed tightly. The emergency bypass filtration unit inlet isolation damper will be replaced with a higher quality butterfly damper, as previously described.

3. Control Room Emergency Zone

December 30, 1980, licensee response:

The Control Room emergency zone includes the Control Room, kitchen, toilet, and access area around the Control Room. Also serviced by the Control Room ventilation system is the cable spreading area, which is a sealed volume.

The as found conditions were:

ANL measured a Control Room pressure of plus 0.1" WG. However, tests conducted by ANL showed that the cable spreading room, which is within the Control Room envelope, was at a substantially negative pressure with respect to the surrounding areas outside of the envelope.

NPPD Response:

An independent organization has been contracted by NPPD to adjust and balance the Control Room emergency ventilation system to ensure that the Control Room and cable spreading room are maintained at a positive pressure of 0.1" (approximately 1/8") WG, as specified in the Standard Review Plan, Section 6.4.

4. Control Room Chillers

The Control Room chillers are not specifically addressed in Item III.D.3.4; however, NRR had the following observation.

On loss of offsite power, the Control Room chillers would be cooled by the plant service water system. The NRR representative was informed by the licensee that the capability of this system is questionable due to silt deposition in the service water lines and a plumbing restriction.

NPPD Response:

The existing solenoid globe valves require system operating pressure to provide the opening force for the valves. Should seal or port leakage exist, silt deposition could conceivably reduce the dependability of these valves to open. Prior to the survey, a design change had been initiated to replace the existing valves with more reliable air operated diaphragm valves. This configuration will eliminate the problems as identified above.

In addition to the conditions noted above, our review of this matter has identified that the existing Control Room ventilation system may not meet all the latest requirements for systems of its type. Our plan of action to upgrade this system is as follows:

1. The existing Control Room ventilation system will be reviewed against the latest NRC recommendations and guidance. As a minimum, this review will include the guidance of the Standard Review Plan, Standard Technical Specifications, and pertinent Regulatory Guides.

2. Where a significant increase in safety will result, design changes will be implemented to upgrade the existing system. Areas that may be impossible to upgrade will be identified and justified.

3. Design documents will be updated to reflect the upgraded system configuration. This will include pertinent drawings, related operating and maintenance procedures, and the Updated Safety Analysis Report. Additionally, the CNS Technical Specifications and related Surveillance Procedures will be strengthened to clarify system operability requirements and ensure that they are met.

While several of these corrective measures are currently underway, a definitive completion schedule cannot be developed until the extent of any required design changes has been determined. However, at this point we have ascertained that all corrective measures will be completed prior to the completion of the 1986 Refueling Outage, currently scheduled to begin in October, 1986. In the interim, we feel that the short-term corrective actions described above meet the requirements for the existing Technical Specifications and provide for adequate Control Room habitability.

If you have any questions regarding the responsed contained in this letter, please contact me.

Sincerely,

Jeffrey D. Weaver for

Jay M. Pilant
Technical Staff Manager
Nuclear Power Group

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