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September 25, 1984

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Dresden Station Units 2 and 3
Response to IE Bulletin 84-03
NRC Docket Nos. 50-237/249

Reference (a): IE Bulletin 84-03 - R. C. DeYoung letter to All OLs and CPs dated August 24, 1984

Dear Mr. Keppler:

Reference (a) requested us to evaluate the potential for and consequences of a refueling cavity water seal failure prior to beginning refueling. Attached is the response for Dresden Station; Dresden Unit 2 is scheduled to come down for refueling on 9-29-84.

To the best of my knowledge and belief the statements contained in the Attachment are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison employees, contractor employees and consultants. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

Please address any questions that you or your staff may have concerning our response to this office.

One (1) signed original with Attachment is being sent directly to the USNRC Document Control Desk in Washington, DC for reproduction and distribution as requested in the Bulletin.

Respectfully,

G. L. Alexander
Nuclear Licensing Administrator

Attachment

cc: US NRC, Document Control Desk
Washington, DC 20555

RIII Inspector - D

SUBSCRIBED and SWORN to
before me this 27th day
of September, 1984

Rosalie A. Prenta
Notary Public

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ATTACHMENT 1

RESPONSE TO IE BULLETIN 84-03
REFUELING CAVITY WATER SEAL

DRESDEN STATION UNITS 2 AND 3

Dresden Station has reviewed IE Bulletin No 84-03 and has generated ideas on how to prevent a similar situation from occurring during its refueling operations. Given Dresden's seal design differences, alarm systems, and Station practices, the likelihood of such an event occurring is greatly reduced.

The first discussion topic is the design differences between the refueling cavity water seal used at Haddam Neck Plant and that used at Dresden Nuclear Station. The seal assembly at Haddam Neck consists of an annular plate with two pneumatic seals. The seal assembly at Haddam Neck was subject to a gross failure due to the lack of an interface between the width of the opening and the width of the seal annulus, which allowed the seal to be significantly displaced. The seal assembly at Dresden Station is a permanently installed stainless steel bellows seal. This type of seal is designed to flexibily compress when additional pressure is applied while still maintaining its seal. This design feature prevents the type of displacement experienced at Haddam Neck and reduces the potential for gross seal failure.

To provide early warning in the event of a leak or failure of the refueling bellow seal, Dresden is equipped with a high flow indicator which alarms in the Control Room. When the bellow seal leak reaches 5 gpm, the Control Room receives an alarm and the annunciator procedure's required action includes immediately verifying and maintaining reactor well level as well as determining the extent of the leak and initiating repairs. This warning system enables Dresden to make an early evaluation of the event and initiate prompt corrective actions.

Another Station practice which would provide Dresden with early detection of bellows seal leakage is the stationing of operating personnel in the drywell during the flooding process. It is the duty of this individual to verify bellow seal integrity and investigate for possible leaks. The fuel movement process is not commenced until a satisfactory investigation has taken place.

An analysis was done with respect to actions taken if Dresden's refueling bellows seal fails during the refueling process. The first concern in this event is the loss of water in the fuel pool. To remedy this concern, several inherent fuel pool design characteristics prevent drainage to a level which compromises fuel integrity and plant safety. The first of these characteristics is that the slot between the fuel storage pool and the reactor cavity is only deep enough to permit the passage of one fuel bundle when carried by the refueling grapple in the "full up" position. This ensures that, in the unlikely event that the reactor well is drained without fuel pool gates in place, an adequate water coverage above the active fuel in the pool is available. The depth of water in the pool is 37'9" and the depth of water in the transfer canal during refueling is 22 feet 9 inches. To avoid unintentional draining of the pool, there are no penetrations that would permit the pool to be

drained below a safe storage level since no connections which allow for drainage of the fuel storage pool are below the bottom of the fuel transfer canal from the reactor well. Therefore, the only method of draining the pool below 15 feet is to use a portable sump pump. In addition, Dresden possesses the ability to install the fuel pool gates quickly. Once the detection of leakage has been made, the fuel pool gates could be installed within minutes. Under normal refueling conditions, this ability ensures the maintenance of a safe fuel pool water level and fuel integrity. Concern over reactor vessel water level and core coverage is minimal because drainage would be limited to seal level. This level still maintains satisfactory fuel coverage and plant safety. Additional Dresden practices such as blank flanging the electromatic blowdown lines during refueling operations reduce the potential for the loss of adequate reactor vessel water level.

IE Bulletin No. 84-03 also outlines potential hazards which would have resulted if fuel had been in transfer at the time of seal failure. It states, "If, however, fuel had been in transfer at the time, it could have been partially or completely uncovered with possible high radiation levels, fuel cladding failure, and release of radioactivity. In addition, if the fuel transfer tube had been open, the spent fuel pool could have drained to a level which could have uncovered the top of the fuel". As has already been stated, during normal refuel conditions, the fuel pool gates can be installed quickly. This ability clearly reduces the potential for fuel pool drainage. But, Dresden has not limited its review to "normal" refuel conditions. It has analyzed unusual events which could strike during refueling operations and threaten the safety of the plant, employees, and the public. One such scenario discussed is "losing water from the refueling cavity during fuel movements while experiencing a loss of power to the grapple". This situation presents problems because it is possible that the grapple will be in a position whic prevents quick insertion of the fuel pool gates. Also, fuel in transit could be threatened by the loss of water. To alleviate these problems, Dresden maintains the ability to manually release the mechanical and electrical brakes on the grapple. The grapple can then be manually moved out of potentially dangerous positions and the process of installing the fuel pool gates can begin. Also, fuel in transit can still be maneuvered out of potentially dangerous positions. This ability provides Dresden with several options to maintain satisfactory fuel pool level and fuel integrity in the unlikely event that the refueling cavity water seal fails while experiencing a loss of power to the grapple.

As has been stated, the first concern over a refuel cavity water seal failure is the potential for draining a significant amou[illegible] of water from the fuel pool. The rate of this drainage is dependent on the type and degree of the failure as well as the Station's ability to install the fuel pool gates. The fuel pool cooling and cleanup system is designed to maintain water level

during refueling operations. Normal system flow is 700 gpm but can increased to 1400 gpm using both pumps. Should there be a problem maintaining fuel pool water level, Dresden's Technical Specifications and Site Emergency Procedures clearly outline the steps necessary to enhance plant, personnel, and public safety. These include:

1) To provide an early warning of a fuel pool gate seal leak, an alarm in the Control Room is sounded when gate seal leakage reaches 5 gpm. As previously stated, the Control Room also receives an alarm when the refueling bellow seal has a leak of $\geq$ 5 gpm.

2) In conjunction with Technical Specification 3.10.C, whenever irradiated fuel is stored in the fuel storage pool, the pool level shall be maintained at a level of $\geq$ 33 feet. Normal pool water level is 37'9".

3) When Technical Specification 3.10.C is violated (5' uncontrolled loss of level with level decreasing), as stated in our GSEP Procedures, and "ALERT" condition is initiated.

In conclusion, Dresden Station recognizes the potential seriousness of this documented event. But, with inherent design characteristics that prevent the drainage of the fuel pool to levels which compromises cladding integrity and procedures which clearly outline the refuel operations, Dresden is confident in its ability to ensure a safe and effective plant condition during a refuel outage. Personnel conducting the fuel movement process have been informed of the event which occurred at Haddam Neck Plant and have reviewed the actions necessary to maintain safety should such an occurrence happen at Dresden.

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