



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 29, 1979

MEMORANDUM FOR: Chairman Hendrie
Commissioner Gilinsky
Commissioner Kennedy
Commissioner Bradford
Commissioner Ahearne

FROM: H. R. Denton, Director
Office of Nuclear Reactor Regulation

THRU: L. V. Gossick
Executive Director for Operations *[Signature]*

SUBJECT: POINT BEACH UNIT 1 STEAM GENERATOR INTEGRITY

During the briefing to Commissioners, on November 28, 1979, on the subject matter, a question was asked with regard to the potential leakage rate from a postulated guillotine break of steam generator tube within the tube sheet zone. The staff stated that the maximum in-leakage rate through a guillotine break of a tube within the crevice would not be expected to exceed 10 gpm, and would even be lower if the actual crevice conditions were considered.

To further clarify the response to the question, we have prepared a brief description of the underlying assumptions used in the staff's independent calculations. We believe these assumptions are conservative in view of what have actually been observed and the basic concern regarding the effects of steam binding during a postulated LOCA.

These calculation results are in general agreement with values provided by Westinghouse.

[Signature]
Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
Calculation of Secondary-Primary Leakage

cc: OPE
OGC
SECY
Point Beach Licensee
Wisconsin Environmental Decade

79/2280025
XA

ENCLOSURE

CALCULATION OF SECONDARY-PRIMARY LEAKAGE

First addressing the out-leakage flow phenomenon the staff assumed a nominal crevice gap of 0.008 inch, the crack is located mid-depth (about 10 inches) below the top surface of tubesheet and primary-to-secondary Δp of 1500 psi, the leakage rate is calculated to be 9.5 gpm. Within 9 seconds of a LOCA, the pressure difference drops to zero psi primary-to-secondary, the leakage rate would then be zero. After this time the Δp reverses and the in-leakage takes place.

Under LOCA conditions that the in-leakage is of concern, this in-leakage rate is calculated to be 5.5 gpm under the following assumptions:

- . Mass Flux G: 3800 lbm/ft² -sec
- . Nominal Crevice Gap: 0.008 inch
- . Saturation condition of secondary water at the maximum pressure difference of 800 psi.

In addition a conservative calculation was made which assumed guillotine tube rupture at .5 inches below top of tubesheet giving an in-leakage rate of 9.2 gpm. Based on the above two calculations, the in-leakage flow rate was estimated to be 7 gpm.

Therefore, a large number of tubes has to be simultaneously breaking in a guillotine manner to induce a large total in-leakage (1300 gpm) to be of concern regarding the steam binding effect that may slow down the ECCS performance.

These estimates are conservative in that the guillotine break has to be initiated from circumferential cracks which have not been observed, and the gaps are filled with sludge and not clean as assumed.



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Denton
Cys: Gossick
Smith
Rehm
Shapar
Stello

November 29, 1979

Handwritten notes:
Denton
2/2/80
C. Trammell

MEMORANDUM FOR: Lee V. Gossick, Executive Director for Operations
FROM: *ja* Samuel J. Chilk, Secretary *(PIT)*
SUBJECT: STAFF REQUIREMENTS - BRIEFING ON POINT BEACH 2.206 PETITION, 2:50 P.M., WEDNESDAY, NOVEMBER 28, 1979, COMMISSIONERS' CONFERENCE ROOM, D. C. OFFICE (OPEN TO PUBLIC ATTENDANCE)

The Commission* was briefed on the status of Point Beach Unit 1, and on the steam generator tube degradation situation there. The Commission also heard presentations from Gerald Charnoff, Esq. representing Wisconsin Electric Power Company, and from Kathleen Falk, Esq., and Peter Anderson representing Wisconsin's Environmental Decade, Inc., concerning Wisconsin's Environmental Decade, Inc.'s petition to keep Point Beach Unit 1 in a shutdown condition.

The Commission requested:

1. that copies of the calculation estimating a 7 GPM leakage rate from a steam generator tube with a circumferential break in the area of the tube within its tube sheet, be provided to all parties and to the Commission. (NRR) (SECY Suspense: 11/30/79)*

The Commission noted that any action on the petition would come only after the Commission had had 48 hours to consider the matter.

** Complete - See 11/29/79
Memo to the Commission
from Denton*

cc:
Chairman Hendrie
Commissioner Gilinsky
Commissioner Kennedy
Commissioner Bradford
Commissioner Ahearne
Commission Staff Offices

*Chairman Hendrie was not in attendance.

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