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Vogtle Project

March 4, 1985

Director of Nuclear Reactor Regulation
Attention: Ms. Elinor G. Adensam, Chief
Licensing Branch #4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

File: X7BC35
Log: GN-540

NRC DOCKET NUMBERS 50-424 AND 50-425
CONSTRUCTION PERMIT NUMBERS CPPR-108 AND CPPR-109
VOGTLE ELECTRIC GENERATING PLANT - UNITS 1 AND 2
REQUET FOR SUPPLEMENTAL INFORMATION
DSER OPEN ITEM 34 - STEAMLINE BREAK DNBR

Dear Mr. Denton:

On February 19, 1985, Westinghouse sent a letter (attached) to Mr. Cecil O. Thomas of your staff. As resolution to the VEGP DSER open item 34, it is requested that we be allowed to reference the attached letter.

If your staff requires any additional information, please do not hesitate to contact me.

Sincerely,

J. A. Bailey
Project Licensing Manager

JAB/sw
Attachment
xc: D. O. Foster
R. A. Thomas
G. F. Trowbridge, Esquire
J. E. Joiner, Esquire
C. A. Stangler
L. Fowler
M. A. Miller
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Westinghouse
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Box 355
Pittsburgh Pennsylvania 15230

February 19, 1985

NS-NRC-85-3007

Mr. Cecil O. Thomas, Chief
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Ref: 1) Westinghouse Licensing Topical Report, WCAP-9226(P)/9227(NP), "Reactor Core Response to Excessive Secondary Steam Releases."

2) Letter from C. O. Thomas, to E. P. Rahe, dated April, 1984. Subject: Request Number 3 for Additional Information on WCAP-9226(P)/9227(NP).

Dear Mr. Thomas:

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
WCAP 9226 (P) 19227 (NP)

Attached is one (1) copy of the Westinghouse response to the Steamline Break Topical Report (WCAP-9226) question 440.18 (Reference 2) concerning the use of the W-3 CHF correlation below its original pressure range of 1000 to 2300 psia. As discussed in the attachment, justification for its use is provided by the results of an analysis of low pressure data (700 - 1000 psia) using the W-3 correlation.

Please note that this letter will be referenced as part of the license application for Georgia Power Company (Vogtle).

Please feel free to contact M. P. Osborne, Manager, Plant Transient Analysis (412/374-4481) if you have any questions concerning this matter.

Very truly yours,

E. P. Rahe, Jr., Manager
Nculear Safety Department

Attachment

PWR/mh

ATTACHMENT

QUESTION ON GENERIC STEAMLINE-BREAK TOPICAL REPORT (WCAP-9226)

440.18)

In a letter from T. M. Anderson to J. Stolz, dated May 7, 1979, Westinghouse responded to NRC's questions relating to WCAP-9226. Question 222.9 requested references for the W-3 correlation which cover the applicable range of the calculated coolant parameters.

We have reviewed those references and find them incomplete for the range of coolant parameters calculated in WCAP-9226. The references limit the applicability of the W-3 correlation down to 1000 psia. Steamline break analyses, calculated by Westinghouse, have shown decrease in primary system pressure to the range of 500 psia. Provide additional justification for the applicablility of the W-3 correlation below 1000 psia. What is the minimum pressure for which the W-3 correlation and corresponding 1.3 minimum DNBR limit can be used?

Response:

Reference 1 describes the results of applying the W-3 correlation over its original pressure range, 1000 to 2300 psia. The mean measured-to-predicted critical heat flux ratio and sample standard deviation from that analysis are shown in Table 1.

Reference 2 contains the results of an analysis of low pressure (700 - 1000 psia) data using the W-3 correlation. Those data were taken from the same sources as those used in the development of the W-3 correlation. As shown in the attached figure (taken from Reference 2), no anomalous behavior is observed for the low pressure data.

The W-3 correlation statistics have been recalculated for the extended database (P = 700 - 2300 psia). The revised statistics are essentially unchanged from the original values (Table 1). The limit DNBR was also recalculated using the method of Owen (Reference 3.) As shown in Table 1, the revised correlation statistics demonstrate that there is a 95% probability with 95% confidence that DNB will not occur if the minimum DNBR is maintained in excess of 1.31. Again, this value is essentially unchanged from the limit DNBR associated with the original database.

This evaluation demonstrates that extending the pressure range of the W-3 correlation database by a significant amount has a negligible effect on the correlation statistics. Therefore, continued use of the 1.3 limit DNBR for steambreak analyses of Westinghouse pressurized water reactors is justified.

TABLE 1 - W-3 CHF CORRELATION STATISTICS

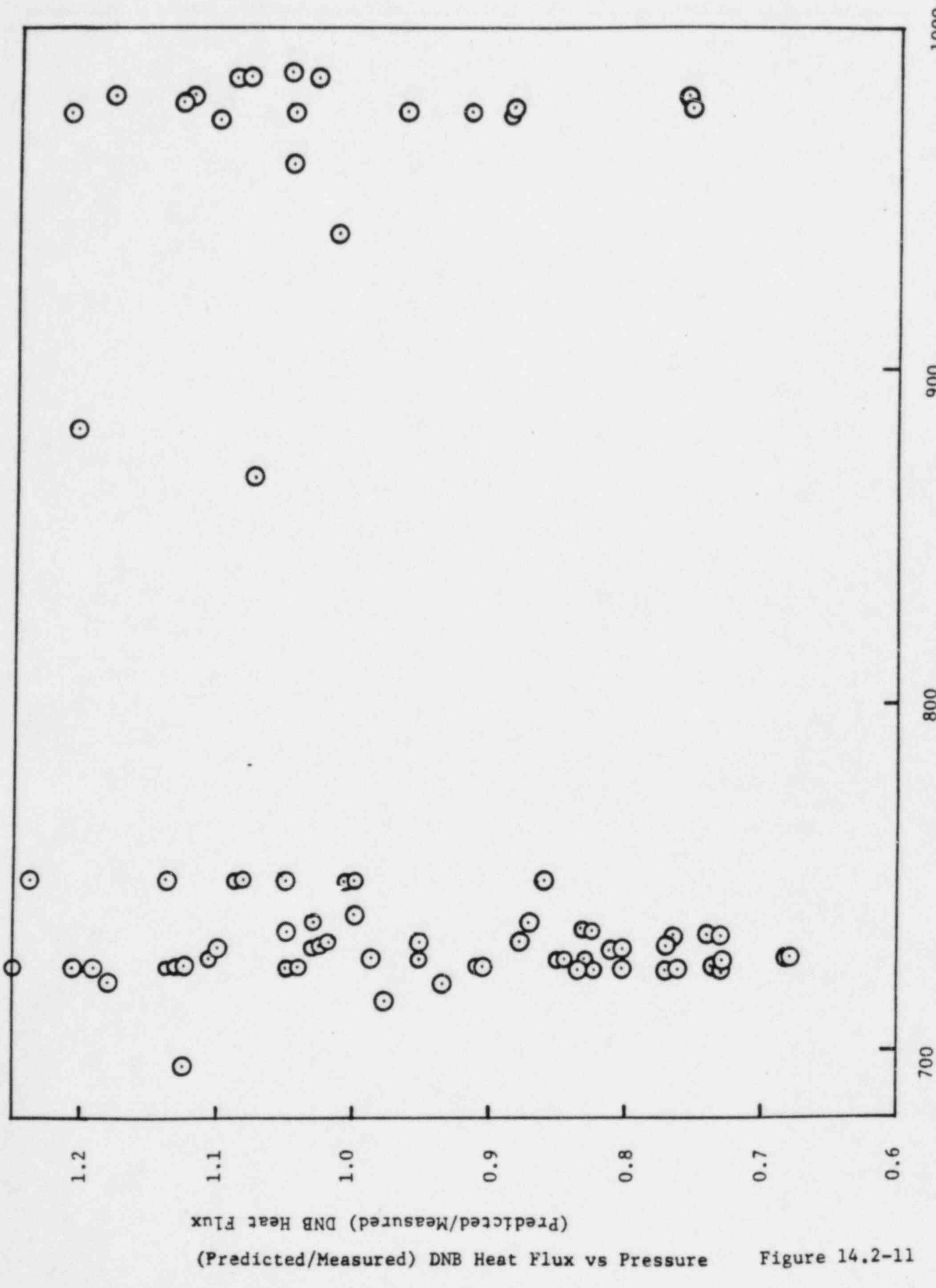
Pressure Range (psia)	Number of Data Points	M/P	Sample Standard Deviation	Limit DNBR
1000 - 2300	809	0.996	0.132	1.30
700 - 2300	885	1.001	0.137	1.31

REFERENCES

1) Tong, L. S., "Prediction of Departure from Nucleate Boiling for Axially Non-Uniform Heat Flux Distribution," J. Nuclear Energy, Vol. 21, pp 241-248 (1967).

2) Prairie Island FSAR Amendment 20, p. 14.2-30, Docket #50-282, August 4, 1972.

3) Owen, D. B., "Factors for One-Sided Tolerance Limits and for Variable Sampling Plans," SCR-607, March 1963.



(Predicted/Measured) DNB Heat Flux vs Pressure Figure 14.2-11