



Docket No. 50-346

License No. NPF-3

Serial No. 726

July 9, 1981

RICHARD P. CROUSE
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Mr. T. M. Novak
Assistant Director for Operating Reactors
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington D. C. 20555

Dear Mr. Novak:

This is in response to your June 1, 1981 letter (log no. 727, generic letter 81-16) concerning the Abnormal Transient Operating Guidelines (ATOG) program for the Davis-Besse Nuclear Power Station Unit 1 (DB-1). This program relates to Item I.C.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements". Toledo Edison's scheduler commitment to this program was made in our submittal of December 30, 1980 (Serial No. 670). Based on our responses provided in the attachment, there is no change in our commitment schedule.

Very truly yours,

A handwritten signature in cursive script that reads 'R. P. Crouse' followed by a flourish.

RPC/SCJ

cc:
NRC DB-1 Resident Inspector
NRC DB-1 Project Manager - D. Garner

db c/1

2 Attachments

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Attachment 1

Response to NRC Generic Letter 81-16 On The
Abnormal Transients Operating Guidelines (ATOG) Program

The following constitutes Toledo Edison response to the NRC questions on the ATOG program related to the Davis-Besse Nuclear Power Station Unit 1. The item numbers correspond to those of NRC Generic Letter 81-16. For a detailed review of the program refer to the B&W program description (June 1981) attached.

Item 1: "The bases for the consideration of multiple and consequential failures is not provided. The sequence-of-event diagrams are not complete (i.e., ATWS following an initiating event)."

Response: It is emphasized that the guidelines developed by the ATOG program are symptom oriented rather than event oriented. A more detailed and realistic review of the provided guidelines by your staff will reveal that the multiple failure events which are likely to occur are covered by ATOG. The addressing of low likelihood events, although not within the original scope of the program is implicitly covered within its symptomatic approach. Specifically, an anticipated transient without scram (ATWS) was not considered as having a high enough likelihood of occurrence. However basic immediate responses are appropriately provided for a scram failure.

Item 2: "Supporting analyses for multiple failures are not presented for all cases. The description of the computer programs used to analyze the events is not provided."

Response: Multiple failures were qualitatively analyzed on a functional level. The basic transient code used for the computer simulation portion of the ATOG program was TRAP II. The version used for the guidelines had an equilibrium pressurizer model. Therefore, on transients with insurges into the pressurizer, these surge rates were used as inputs into the DYSID code (a non-equilibrium pressurizer model) and the Reactor Coolant System pressure response was obtained. The combination of these two codes was used as input in developing Part II of the guidelines. In the case of a steam line break inside the reactor building, the CONTEMPT code was used to predict building pressure response.

Item 3: "Operator errors of omission or commission are not addressed."

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Response: On the contrary, the event trees submitted extensively address the operator errors of omission and commission. The basic assumptions used in the preparation of the event trees with respect to operator action are:

- a. The operator error to be assumed will not be random. The operator will focus on the component to be manipulated and not on some other component that is unrelated. The event trees will show three situations (as applicable): (1) Operator error of omission, i.e., the operator fails to take action entirely (no action regardless of the time); (2) Operator error of commission, i.e., an incorrect manipulation that results in the worst conditions; (3) the operator takes the correct action for the existing circumstances (success).
- b. The error to be assumed will be complete, i.e., the operator will not manipulate one of two identical components correctly and the other incorrectly.
- c. For evaluation purposes, the operator will not be assumed to correct errors, even though information will be available.

From a detailed and more involved review of the operator guidelines submitted along with the event trees, it becomes evident that how the operator acts is not of much significance. The ATOG program phenomenologically uses the results of action that drive the plant response and, in turn, subsequent actions required by the plant systems and/or the operator. Thus, if the operator is required to throttle flow and does it incorrectly, to any extent, the resultant system response is addressed. From the foregoing it is concluded that operator errors are adequately addressed by the event trees and the guidelines.

Item 4: "The following multiple failure events are not addressed:

- a. SG tube rupture in more than one steam generator;
- b. Failure of the high-pressure reactor coolant makeup system;
- c. ATWS following an initiating event (with or without a turbine trip); and
- d. Failure of main and auxiliary feedwater with partial or complete loss of HPI."

Response: (a) At the outset, it was established that the ATOG program would address transients that (based on operating experience) were relatively likely to occur. The ATOG steam generator tube rupture event tree/procedure addresses a rupture of only one

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tube. In view of the operating experience of the once-through-steam-generators, this in itself is considered to be a very unlikely event, and, with multiple failures considered, to be even less likely to occur. The steam generator tube rupture guideline provided for Staff review is adequate for implementation under these conditions.

(b) In the initial formation of the program, it was established that those failures which assume an entire system to be defeated would not be considered, except for those cases where an error of operator decision is possible. However, in the development of the guidelines several cases of total failure of a single system, including the high pressure reactor coolant makeup system, are included. This is particularly addressed in the event trees by the use of the branches with inadequate make up flow. This includes zero make up flow.

(c) See response to item 1 above.

(d) The total loss of main and auxiliary feedwater with a partial or complete loss of HPI is considered to be an extremely unlikely event. As such, it was not originally considered as a realistic transient to be addressed by this program initially. However, the Loss of Main Feedwater event tree, as provided by the B&W submittal of April, 1980 does address just this concern. The total loss of feedwater along with partial or total loss of HPI results in a loss of core cooling. From the guidelines, the operator proceeds to Section III B and depending on whether or not adequate subcooling margin exists proceeds as directed. In the extreme case where no feedwater exists and HPI is not sufficient to maintain subcooling, the operator is promptly directed to observe core exit thermocouples for indications of superheated conditions and/or inadequate core cooling (ICC) conditions. If ICC is indicated, the operator is directed to take specific actions per the ICC procedure. The treatment of this event at Davis-Besse is different from the above; however, the plant specific guidelines developed for Davis-Besse will reflect the use of the start up feed pump, make up pump and the power operated relief valve in the event of a complete loss of feedwater.

In view of the foregoing discussion, it is considered that this particular event, even though extremely unlikely to occur, is adequately addressed by the operator guidelines.

Item 5: "The transition from emergency procedures into an inadequate core cooling (ICC) procedure is not developed or included. (We

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understand that B&W is incorporating ICC into the ATOG program for some future submittal.)"

Response: For the Davis-Besse specific abnormal transient operating guidelines (yet to be developed), the inadequate core cooling guidelines will be made an integral part. The operator will be instructed to proceed with the inadequate core cooling guidelines should such a condition occur.

bt c/7