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File 3-0-3-a-3

Mr. T. M. Novak
Assistant Director
Division of Licensing
Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



Subject: Crystal River Unit 3, NUREG-0737,
Item 1.C.1, "Abnormal Transient Operator
Guidelines" (ATOG)
Docket No. 50-302
Operating License No. DPR-72

References:

1. NRC letter to all B&W licensees June 1, 1981 Subj. NUREG 0737
2. Arkansas Nuclear One, Unit 1 Abnormal Transient Operating Guidelines (ATOG) Parts I and II.
3. FPC Letter to NRC December 30, 1980 Subj. Docketing Reference 2

Dear Mr. Novak:

This letter is in response to your June 1, 1981, letter describing several deficiencies which the Staff considers as not covered by the Arkansas Nuclear One, Unit One Abnormal Transient Operator Guidelines (ATOG) submittal as compared to NUREG-0737. Since the ANO Unit 1 Guidelines are similar to those being prepared for Crystal River Unit 3, as attested to in our December 30, 1980 letter to you, we wish to establish our position on the ANO, Unit 1 Guidelines.

Recognizing your letter reported completion of only a "preliminary review", we feel that an in-depth review will show that several of the "deficiencies" identified do not exist, and that the basic intent of the ATOG program, as identified to the Staff in early August 1979, is adequately covered. Contained in the submittals and presentations made to the Staff in the mid- to latter part of 1979 and early 1980 are the bases for the B&W owners pursuit of operator guidelines which are much broader than what the Staff initially required in NUREG-0578.

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Transients which had a relatively high likelihood of occurring, i.e., loss of feedwater, loss of offsite power, and overcooling, were reviewed as were those that, if they occurred, could cause severe consequences, such as a small steam leak, and a steam generator tube rupture. It was initially assumed that all transients began with a reactor trip. However, the Anticipated Transients Without Scram (ATWS) event is indeed addressed by ATOG even though ATWS is considered to be a design/equipment issue rather than an operator action issue and is being addressed independently of the ATOG program.

Our responses to the specific items noted in your June 1, 1981, letter are given below using a numbering system corresponding to that used in the referenced letter.

1. The basis 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:

The sequence of event diagrams do provide evaluation of the failure of all relevant challenged systems including failures involving multiple systems. ATWS is, in fact, covered as described above.

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 ANO-1 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.

3. Operator errors of omission or commission are not addressed.

Response:

Operator errors of omission and commission are addressed in the event trees. The basic assumptions used in considering operator actions are listed below:

- (a) The operator acts only when required by existing procedures (e.g., trip RCP's on a low pressure safety actuation signal).

- (b) During the course of the event, the operator will be required to operate individual components. Assumptions for operator error at this time will be to assume a mistake of action. The error to be assumed will be complete, i.e., he will not manipulate one of two identical components correctly and the other incorrectly.
- (c) The operator error to be assumed will not be random. He 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) The operator fails to take action regardless of the time;
 - (2) An incorrect manipulation that results in the worst conditions;
 - (3) The operator takes the correct action for the existing circumstances.
- (d) For evaluation purposes, the operator will not be assumed to correct errors, even though information will be available.

By careful review of the operator guidelines submitted along with the plant specific event trees, it is of no consequence how the operator acts, it is the results of the act that dictate the plant response, and the subsequent actions required by the plant systems and/or the operator.

- 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 H.P.I.

Response:

- (a) We acknowledge that the rupture of more than one steam generator tube is not currently addressed by ATOG. At the beginning of the program, it was established that this program would address events that, based on operating experience, were relatively likely to occur. In review of operating experience of the B&W type Steam Generators, it is determinable that failure of even one tube is, in itself, an unlikely event and multiple failures are even less likely. Consideration of the failure of several tubes may be undertaken in a future program. We will inform you of its status at that time.
- (b) Total failure of HPI is addressed in the event trees, and guidance is provided on action to take and systems which are required to support the HPI system.

- (c) ATWS following an initiating event, though considered extremely unlikely, is covered, and guidance is provided to the operator if that event does occur. The first two steps of Section II of the Arkansas ATOG submittal address the required actions if installed equipment fails to function.
 - (d) The total loss of feedwater along with a partial or total loss of HPI is designated as a loss of core cooling and is addressed in Section III. B of the ATOG submittal and the Event Tree on Loss of Main Feedwater, Dwg. No. 1100937.
5. The transition from emergency procedures into an adequate core cooling (ICC) procedure is not developed or included. (We understand that B&W is incorporating ICC into the ATOG program for some future submittal.)

Response:

Operator guidelines to address loss of core cooling were submitted to you in response to NRC Staff requests (i.e., IE. Bulletin 79-05C and Item 2.1.3.b of NUREG-0578). Our letter dated November 4, 1979, submitted operator guidelines addressing loss of RCS inventory with and without the reactor coolant pumps plus loss of natural circulation due to loss of heat sink.

These guidelines have been incorporated into plant operating procedures since January 1, 1980. Even though Florida Power Corporation has yet to receive the ATOG guidelines which are specifically for CR-3, we have followed development of the early guidelines and attempted to incorporate the appropriate guidance into our plant procedures.

Since the ATOG program was first envisioned by the B&W owners in June 1979, we have attempted to fulfill the goals of NUREG 0578 and, in fact, have essayed to provide even better guidance than the NUREG required when it was issued in July, 1979.

The ATOG Program addresses events which have a relatively high likelihood of occurring and addresses these events in a symptom oriented manner. By looking at the guidelines in that manner, the Staff would have recognized the multiple failure event which is covered under ATOG and even the covering of the low likelihood events not within the original intent of the program.

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In summation, our "pro-active" action taken by the B&W owners received approval of the Staff early in its development. Florida Power Corporation states that our program meets the full intent of NUREG 0737, Item 1.C.1.

Please contact this office if you require any additional information.

Very truly yours,

Patsy G. Baynard

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