

Attachment I
Technical Specification Markups

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REACTIVITY CONTROL SYSTEMS

ROD DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full-length shutdown and control rod drop time from the fully withdrawn position shall be less than or equal to ^{2.2}~~2.2~~ seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a. T_{avg} greater than or equal to 551°F, and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the drop time of any full-length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.
- b. With the rod drop times within limits but determined with three reactor coolant pumps operating, operation may proceed provided THERMAL POWER is restricted to less than or equal to 66% of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The rod drop time of full-length rods shall be demonstrated through measurement prior to reactor criticality:

- a. For all rods following each removal of the reactor vessel head,
- b. For specifically affected individual rods following any maintenance on or modification to the Control Rod Drive System which could affect the drop time of those specific rods, and
- c. At least once per 18 months.

REACTIVITY CONTROL SYSTEMS

ROD DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The individual full-length shutdown and control rod drop time from the fully withdrawn position shall be less than or equal to ~~3.8~~^{2.2} seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a. T_{avg} greater than or equal to 551°F, and
- b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the drop time of any full-length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to proceeding to MODE 1 or 2.
- b. With the rod drop times within limits but determined with three reactor coolant pumps operating, operation may proceed provided THERMAL POWER is restricted to less than or equal to (*) of RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The rod drop time of full-length rods shall be demonstrated through measurement prior to reactor criticality:

- a. For all rods following each removal of the reactor vessel head,
- b. For specifically affected individual rods following any maintenance on or modification to the Control Rod Drive System which could affect the drop time of those specific rods, and
- c. At least once per 18 months.

*These values left blank pending NRC approval of three loop operation.

Attachment II

Discussion and Technical Justification

Discussion

Control rod drop time is a key parameter assumed in FSAR Chapter 15 transient analyses. These transients are listed by Chapter 15 Section number in Table 15.0.5-1. McGuire Unit 1 was originally licensed with a 2.2 second control rod drop time, but that was changed to 3.3 seconds as a part of, but not because of, the changeover to Westinghouse optimized fuel assemblies (OFA). The 3.3 second value was listed as an input assumption in the application for amendment to support McGuire Unit 1 Cycle 2 (Reference: Letter, H. B. Tucker to H. R. Denton, December 12, 1983), and is currently used in FSAR Chapter 15 analyses. This amendment was later approved as Amendment numbers 32 (Unit 1, Facility Operating License Number NPF-9) and 13 (Unit 2, FOL no. NPF-17). The new 2.2 second drop time will be included in the McGuire Unit 1 Cycle 8 (M1C8) reload submittal and all McGuire and Catawba reloads in the foreseeable future, if approved. The analyses performed in support of the M1C8 reload are largely complete and will be significantly impacted if this amendment request is not approved.

This change is not directly related to the changeover from Westinghouse OFA fuel to Babcock & Wilcox Mark-BW fuel, but rather to the reload analysis itself. Therefore, no fuel-related issues need be considered.

Technical Justification

As noted above, the rod drop time was changed by Amendment 32 to the Unit 1 FOL. In the NRC Staff's Safety Evaluation Report (SER) which accompanied the amendment, the staff stated, "The increased control rod drop time was taken into account in the scram curves used for the accident analyses with acceptable results... These changes are, therefore, acceptable." Similarly, the 2.2 second value is used in the M1C8 analyses as an input assumption. As stated in the basis for Technical Specification (TS) 3.1.3.4, the TS value should be consistent with the value used in the safety analysis. The results of the safety analyses continue to meet the acceptance criteria set forth in the Standard Review Plan (NUREG-0800).

From an operational perspective, this change is conservative and will result in a more meaningful surveillance of the capability of the control rods to insert on a reactor trip. Further, a test evaluation criterion will be added, to require an evaluation of drop times that are greater than the design value of 1.8 seconds.

Our experience has shown that the vast majority of drop times at McGuire and Catawba are less than 1.7 seconds. Figure 1 shows the results of drop time testing at all 4 units. Two drops exceeded the design drop time of 1.8 seconds, but were still within the proposed TS limit of 2.2 seconds. These somewhat longer drop times were determined to be caused by air in the control rod drive mechanisms. It can be concluded from these data that 2.2 seconds is sufficient to ensure the proper operation of the control rods, and that the plants are fully capable of meeting the more restrictive drop time requirement.

Conclusion

In order to gain margin to be used in the reload design process, and to create a more meaningful test acceptance criterion, the proposed change has been developed. The new value will be more restrictive, and therefore more conservative, than the current value of 3.3 seconds. Test experience has shown that the new value can be met. Also, the addition of the test evaluation criterion will ensure that any departure from the design drop time of 1.8 seconds will be reviewed for cause and significance.

MNS/CNS RCCA Drop Times

(Summary of 24 tests, all Units)

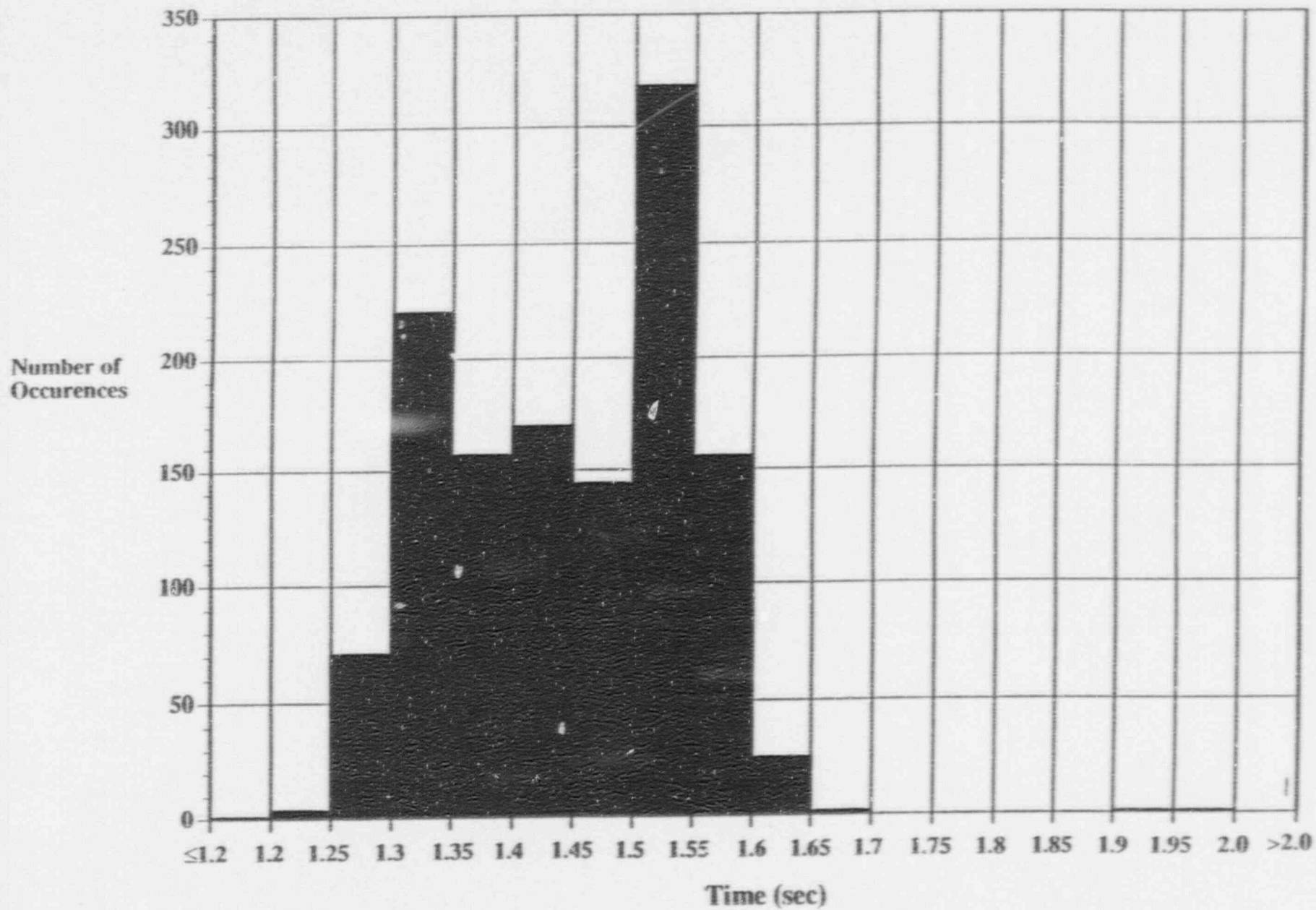


Figure 1

Attachment III
Basis For A No Significant Hazards Determination

Duke Power Company has made the determination that this proposed amendment does not create a Significant Hazards Consideration, as defined by the criteria of 10CFR 50.92. These criteria ensure that operation of the facility in accordance with the proposed amendment would not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

There is no change in the probability of any accident. The plant is not being modified in any way, except that the rod drop time will be more restrictive. The speed of the control rod drop is not an initiator of any accident.

The consequences of any accident will still meet the applicable acceptance criteria, so the consequences are acceptable. The allowable rod drop time is more conservative, in that it results in a more rapid shutdown of the reactor, and produces less severe consequences for all transients and accidents involving a reactor trip. The Chapter 15 analyses which are being performed in support of the upcoming M1C8 reload are expected to be submitted in early June.

- 2) Create the possibility of a new or different kind of accident from any previously evaluated.

This TS change will not require modifications to any equipment, components, or devices in the station. There is no need to revise any procedures to operate or maintain the plant. As such, the plant is not being modified in any way, and since the rod drop time will be more restrictive, there is no potential for a new or different kind of accident from any previously evaluated.

- 3) Involve a significant reduction in a margin of safety.

The transient and accident analyses which were performed in support of Unit 1 Cycle 8, which will be submitted for Staff review shortly, show that the acceptance criteria are met in all cases. Provided that the actual rod drop time is not greater than that assumed in the transient and accident analyses, the margin of safety is maintained. It should be noted that the rod drop time assumed in the analyses can be larger than the TS value and not impact the margin of safety. TS 3.1.3.4 ensures that the scram curves used in the safety analyses are validated by rod drop test results. The design drop time of 1.8 seconds remains unaffected, and the addition of the test review criteria provides additional assurance that

anomalous drop behavior is investigated. The results of the analyses continue to meet the acceptance criteria of the Standard Review Plan.

NRC Staff guidance provided in the Federal Register (48 FR 14870) regarding amendments not likely to involve a Significant Hazards Consideration stated that those amendments which constitute an additional limitation or restriction were not likely to involve an SHC. This proposed amendment clearly represents a more stringent Limiting Condition for Operation for TS 3.1.3.4. Therefore, this amendment request is considered to meet the Staff's guidelines for a NSHC determination.

Based on the above discussion, it can be concluded that the proposed change will not involve a Significant Hazards Consideration.