



Purpose:

The purpose of this evaluation is to review PIR 0-C89-0370 for its impact on plant safety. Although the criteria of 10CFR50.59a(2) does not directly apply in this situation, this type of a review will be performed to adequately determine the impact of this issue on plant safety. Thus, this calculation does not serve as a 50.59 evaluation of the subject PIR.

Modification Description:

This PIR addresses the non-use of the Boron concentration measurement system. This safety evaluation is based solely upon the technical aspects of non-use of the Boron concentration measurement system (ENC) Regulatory aspects associated with its non-use and NRC review are not addressed. The Boron concentration measurement system is a part of the Chemical and Volume control system (NV). The Boron concentration measurement system monitors boron concentration in the reactor coolant and provides continuous readout (both L. E. D. and chart recorder) in the control room as scales of concentration: 0-1250 ppm and 0-5000 ppm. The 0-5000 ppm range is also monitored by the computer. (Ref 5).

Safety Review and USQ Evaluation:

The Boron Concentration Measurement System is designed for use as an advisory system. It is not designed as a safeguards system or component of a safeguards system. The Boron Concentration Measurement System is not part of a control element or control system, nor is it designed for this use. No credit is taken for this system in any accident analysis. Therefore, redundancies of measurement components, self checking subsystems, malfunction annunciation, and diagnostic circuitry are not included in this system. As a general operating aid it provides information as to when additional check analyses are warranted rather than a basis for fundamental operating decisions (Ref 1).

Boron concentration addition and dilution accidents are protected for by use of the boron dilution mitigation system, which has completely redundant alarms, while in Modes 3, 4, 5 and 6 (Ref 1, 2, 7).

When in Modes 1 and 2, the operator is alerted to the dilution event by the overtemperature Delta-T reactor trip and/or the rod insertion limit alarm, and by the power range high neutron flux low setpoint reactor trip, respectively. (Ref 3).

While during startup, a boron dilution event is protected for via redundant alarms of the "Source range High Flux Level Reactor Trip" (Ref 2, 8).

Boron concentration is directly measured by chemical analysis on a twice daily basis during all modes (ref 7).

Since this system possesses no control or protective functions, and since the system is not being physically removed at this time (Ref 1, 6, 9) and it is not used as a basis for fundamental operating decisions (Ref 1), it is concluded that non-use of the boron concentration measurement system

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does not increase the probability of an accident evaluated in the SAR. Since this system is not part of a safeguards system, Control element, or control system and no credit is taken for this system in any accident analyses (Ref 1), the non-use of this system does not increase the consequence of an accident evaluated in the SAR. Since this system provides no control functions, indications for fundamental operating decisions, nor does its non-use adversely interact with any other system, its non-use does not create the possibility for an accident of a different type than any evaluated in the SAR. Since the non-use of this system does not adversely interact with any equipment important to safety (Ref 6), its non-use does not increase the probability of a malfunction of equipment important to safety evaluated in the SAR. Since this system is neither used nor taken credit for in any accident analysis, its non-use does not increase the consequences of a malfunction of equipment important to safety evaluated in the SAR. Since this system does not provide the basis for any fundamental operator decisions, possess any control functions nor does its non-use adversely affect any equipment important to safety, its non-use does not create the possibility for a malfunction of a different type than any evaluated in the SAR. Since no plant parameters, setpoints, operating conditions or basic operator decision making information sources are altered by the non-use of this system, the margin of safety as described in the bases to any technical specification is not reduced.

Conclusion:

Based purely on the technical aspects of this review, the response to all seven questions was negative and properly justified, therefore, there is no adverse nuclear safety impact associated with the non-use of this system.



Reference:

1. Catawba FSAR, 1988 update.
2. Catawba Technical Specifications, Amendments 62 and 68 inclusive.
3. Catawba SER and supplements 1 thru 6.
4. Flow diagrams CN-1554-1.6, rev. 5 and CN-2554-1.6, rev. 5.
5. Electrical System Description, Chemical and volume Control System, CNSD-0157-01, rev. 10.
6. Drawings CNM 1210.09-81 rev. 0  
CNM 1210.09-82 rev. 1  
CNM 1210.09-83 rev. 0  
CNM 1210.09-84 rev. 0  
CNM 1210.09-85 rev. 0  
CNM 1210.09-86, Sh 1, rev. 0  
CNM 1210.09-86, Sh 2, rev. 0  
CNM 1210.09-86, Sh 3, rev. 0  
CNM 1210.09-86, Sh 4, rev. 1  
CNM 1210.09-154 rev. 0
7. Memo from R. K. Seasey to R. G. Kurilla, dated January 16, 1990.
8. Electrical System Description, Out of Core Instrumentation (ENB), CNSD-0172-02, rev. 0.
9. Memo from R. G. Kurilla to R. Menichelli, dated January 22, 1990.