

Davis Besse Unit 1

Safety Evaluation Report Supplement # 3

Docket # 50-346

7.2 Reactor Protection System

In the Supplemental Safety Evaluation Reports (dated December 28, 1976 and March 2, 1977) we identified our concerns and requests regarding the lack of separation in the applicants design between Class 1E and non-Class 1E wiring inside the Class 1E logic cabinets (i.e., Reactor Protection and Engineered Safety features Actuation System) and in various control panels (identified in 7.9.3 of the SER). In response, the applicant recently submitted a test proposal for our review which they will conduct on the above mentioned systems in order to demonstrate that their design as implemented will not degrade the safety systems below an acceptable level. We have reviewed the type of tests that will be performed and the type of faults that the system will be subjected to. We conclude that the proposed tests are acceptable in part. The applicant was advised that in addition to the presently proposed tests, we require that noise tests in accordance with Mil. Standard 19900, Section 4.6.11 (or equivalent) be conducted on the non-Class 1E circuits that interface with the Reactor Protection System, in order to satisfy the objectives of Section 4.6 of IEEE Std. 279-1968. In addition, we require that noise test procedures (identified above) be submitted to the staff and found acceptable before power operation is permitted, and that the applicant complete these tests and submit the test results for our review prior to the first refueling or no later than 18 months of power operation, whichever comes first.

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7.2 Based on the operating experience of the Reactor Protection System and the Engineered Safety Features System on similar designs and our review of the qualification documentation presently submitted, we conclude that there is sufficient basis to allow power operation for the period stated, conditioned only on the satisfactory resolution of the noise tests requirements identified above. We will review the noise test procedures and the test results when submitted, and will report our evaluation in a supplement to this report.

7.9.2 Separation Criteria Between Redundant Class 1E Circuits Routed in Metal Conduits

In the Supplement Safety Evaluation Report (dated March 2, 1977), we identified that the applicants separation criteria for routing redundant Class 1E cables in metallic conduit allows less than one inch separation, and that the adequacy of such a design when subjected to internal faults was still under review. Subsequently, the applicant submitted their final test results, analysis, and the test procedures which they conducted (at our request) to justify the adequacy of their design. We have reviewed these procedures, the test results, and the adequacy of the methods that were used on these circuits to simulate abnormal conditions. Based on our review of these tests and the separation requirements established at the construction permit stage of review, we conclude that the design for redundant Class 1E cables in metallic conduit as implemented at the Davis Besse Unit 1 plant satisfies the objectives of GDC #22 and is therefore, acceptable. Although the applicants design criteria was compared to the recently established separation requirements, we do not believe that the

incremental safety margins which would be achieved via these new requirements warrants backfitting their design to the new standards. We do however, require that all future plant designs conform fully with the new established guides and standards.