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 ADENSAM, E.      BWR Project Directorate 3

SUBJECT: Forwards response to questions re methodology employed to demonstrate isolation in accordance w/NUREG-0737, Suppl 1 for plant SPDS. Encl provides info concerning test requirements, including max credible fault levels.

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both manual data entry and the use of specialized software tools. The goal is to ensure that the data is both accurate and easy to interpret.

The third part of the document provides a detailed breakdown of the results. It shows that there is a clear trend in the data, which is consistent with the initial hypothesis. This finding is significant as it provides strong evidence for the proposed model.

The final section of the document discusses the implications of the findings. It suggests that the results could be used to inform future research and to develop more effective strategies. The author also acknowledges the limitations of the study and offers suggestions for how these could be addressed in future work.

Overall, the document provides a comprehensive overview of the research process, from the initial data collection to the final analysis and conclusions. It is a valuable resource for anyone interested in this field of study.



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APR 14 1986

Director of Nuclear Reactor Regulation  
Attention: Ms. E. Adensam, Project Director  
BWR Project Directorate No. 3  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
SPDS IMUX QUALIFICATION TESTING  
PLA-2622 FILES R41-2,A17-13

Docket Nos. 50-387  
50-388

Dear Ms. Adensam:

This letter is provided in response to questions from your staff regarding the methodology employed to demonstrate isolation in accordance with NUREG 0737, Supplement 1, for the Susquehanna SES Safety Parameter Display System (SPDS).

Figure 1 provides a simplified block diagram of the test setup, the fault locations and the test monitoring points applicable to additional isolation testing performed upon the SPDS Class 1E multiplexer.

Attachment A provides information concerning test requirements which includes maximum credible fault levels and acceptance criteria.

Essentially, the test required the application of four distinct types of faults. As indicated in Figure 1, these faults were applied to the 120VAC input power cable and the RS422 communications link. Upon application of the faults, the simulated class 1E inputs to the SPDS IMUX were monitored for possible electrical or electronic interference. As a result of maximum credible fault applications, there were no voltage or current transients of a magnitude or duration that caused interference within the simulated 1E circuitry.

The results of the test have been analyzed and the following is concluded:

1. There are no plant safety concerns which result from the existing SPDS input configuration.
2. As a result of the additional isolation testing, it has been demonstrated that SPDS provides suitable isolation from electrical or electronic interference with equipment and sensors that are in use for safety systems.

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry must be supported by proper documentation, such as receipts and invoices. This ensures transparency and allows for easy reconciliation of accounts. The second part of the document details the various methods used to collect and analyze data. It covers both manual and automated techniques, highlighting the benefits of using modern software tools for data processing. The final section provides a summary of the findings and offers recommendations for improving the efficiency and accuracy of the reporting process. It stresses the need for regular audits and updates to the system to stay current with industry standards.

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Ms. E. Adensam

Testing where faults were applied to the 1E input circuits was also successfully performed.

Technology for Energy Corporation (TEC) isolators are not used in 1E circuits in SPDS and, therefore, they do not perform a 1E/non-1E isolation function on SPDS.

This letter completes our response to your staff's questions regarding SPDS IMUX qualification testing. Should you have any questions, please call.

Very truly yours,



H. W. Keiser  
Vice President-Nuclear Operations

cc: M. J. Campagnone      USNRC  
R. H. Jacobs              USNRC

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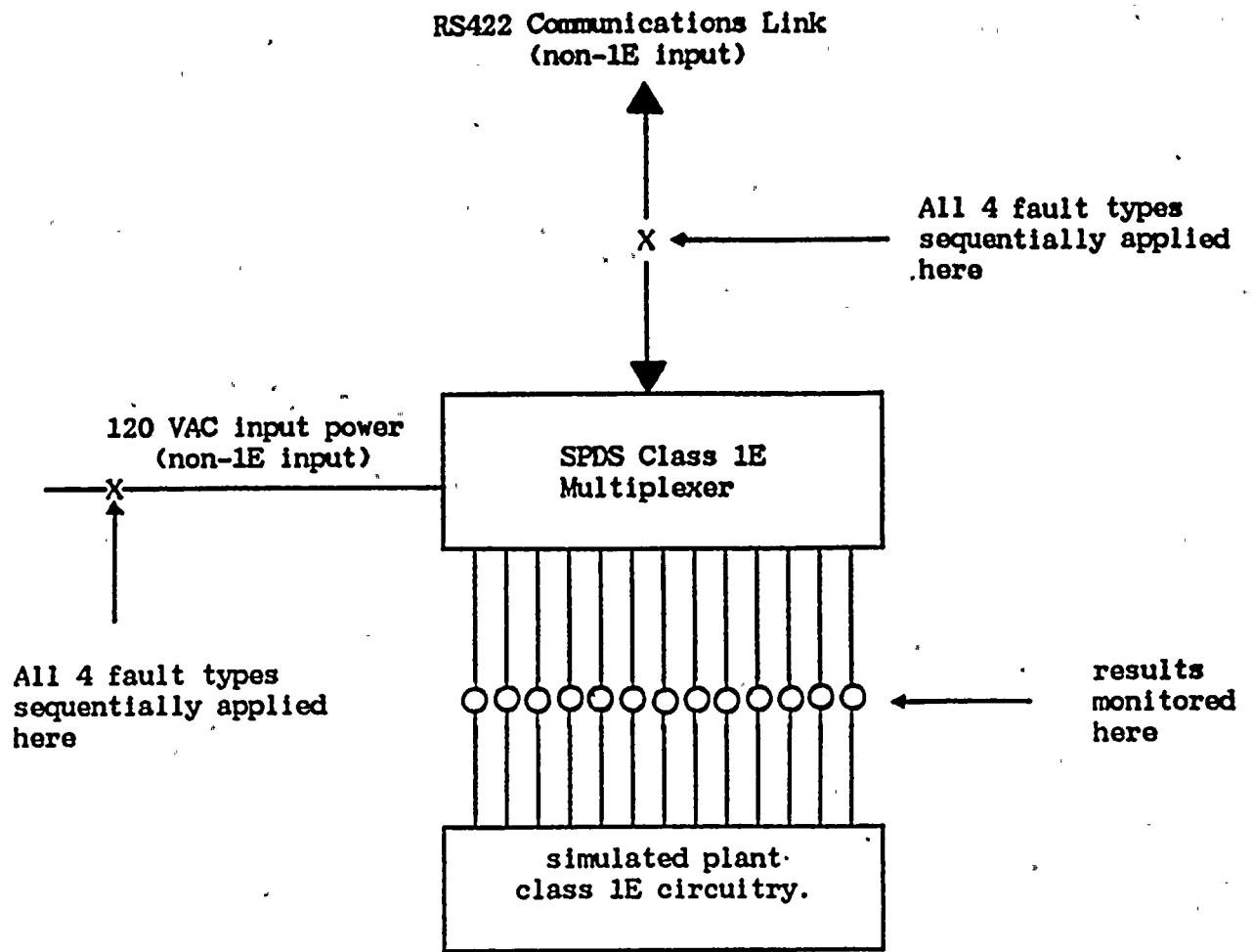
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Fault Types :

- 277VAC Common Mode
- 250VDC Common Mode
- 277VAC Transverse Mode
- 250VDC Transverse Mode

FIGURE 1 : Simplified Block Diagram of SPDS Isolation Qualification Test Setup.



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Attachment A

SPDS Isolation Qualification Test Parameters and Considerations

Prior to actual testing, the following criteria was determined :

1. Maximum Credible Fault Levels : 277VAC and 250VDC
2. Types of Fault Applications : Common Mode and Transverse Mode
3. Location of Applied Faults : RS422 Communications Link and  
120VAC Input Power Cable
4. Acceptance Criteria :

As a result of maximum credible fault applications, there shall not be any voltage or current transients of a magnitude or duration that would cause interference within the simulated IE circuitry.