



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.
PERRY NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-440 AND 50-441
GENERIC LETTER 83-28 ITEM 2.2 PART 1

1.0 INTRODUCTION

On February 25, 1983, both of the scram circuit breakers at Unit 1 of the Salem Nuclear Power Plant failed to open upon an automatic reactor trip signal from the reactor protection system. This incident was terminated manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers was determined to be related to the sticking of the undervoltage trip attachment. Prior to this incident, on February 22, 1983 at Unit 1 of the Salem Nuclear Power Plant, an automatic trip signal was generated based on steam generator low-low level during the plant startup. In this case the reactor was tripped manually by the operator almost coincidentally with the automatic trip.

Following these incidents, on February 28, 1983, the NRC Executive Director for Operations directed the NRC staff to investigate and report on the generic implications of these occurrences at Unit 1 of the Salem Nuclear Power Plant. The results of the staff's inquiry into the generic implications of the Salem unit incidents are reported in NUREG-1000, "Generic Implications of the ATWS Events at the Salem Nuclear Power Plant." As a result of this investigation, the NRC requested by Generic Letter (G.L.) 83-28 dated July 8, 1983, that all licensees of operating reactors, applicants for an operating license, and holders of construction permits respond to the generic issues raised by the analyses of these two ATWS events.

The Cleveland Electric Illuminating Company, et al., licensees for the Perry Nuclear Power Plant, responded to G.L. 83-28 by letter dated April 6, 1984. The NRC staff and their contractor, EG&G of Idaho, have reviewed the licensees' responses. The purpose of this safety evaluation is to document the staff's review of item 2.2, Part 1, of G.L. 83-28. The contractor's Technical Evaluation Report (TER) is attached.

2.0 EVALUATION

G.L. 83-28 Item 2.2 requires, in part, that licensees and applicants submit for staff review, a description of their programs for safety-related* equipment classification as described below:

For equipment classification, licensees and applicants were required to describe their programs for ensuring that all components of safety-related systems necessary for accomplishing required safety functions are identified as safety-related on documents, procedures, and information handling systems used in the plant to control safety-related activities, including maintenance, work orders and replacement parts. This description was to include:

1. The criteria for identifying components as safety-related within systems currently classified as safety-related. This was not interpreted to require changes in safety classification at the systems level.
2. A description of the information handling system used to identify safety-related components (e.g. computerized equipment lists) and the methods used for its development and validation.
3. A description of the process by which station personnel use this information handling system to determine that an activity is safety-related and what procedures for maintenance, surveillance, parts replacement and other activities defined in the introduction to 10 CFR 50, Appendix B, apply to safety-related components.
4. A description of the management control utilized to verify that the procedures for preparation, validation and routine utilization of the information handling system have been followed.
5. A demonstration that appropriate design verification and qualification testing is specified for procurement of safety-related components. The specifications were to include qualification testing for expected safety service conditions and provide support for the licensees' receipt of testing documentation to support the limits of life recommended by the supplier.

Licensees and applicants were also directed to include the broader class of structures, systems, and components important to safety required by GDC-1 (defined in 10 CFR Part 50, Appendix A, "General Design Criteria, Introduction") in their equipment classification program.

*Safety-related structures, systems, and components are those that are relied upon to remain functional during and following design basis events to ensure: (1) the integrity of the reactor coolant boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, and (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines of 10 CFR Part 100.

The licensees' response to item 2.2 provided details concerning their method for equipment classification at the Perry Nuclear Power Plant including discussions of the Q-list review program, Perry Material Management System, work order process, Perry Plant Maintenance Information System, parts procurement procedures, audits, and the Equipment Qualification Program.

Our contractor, EG&G of Idaho, evaluated the licensees' submittal for conformance with each of the positions listed above. The details of their review are contained in the attached TER.

3.0 CONCLUSION

Based upon our review of the licensees' submittal and the attached TER prepared by our contractor, EG&G of Idaho, the staff concludes that the licensees adequately meet the provisions of G.L. 83-28 Item 2.2 Part 1 for the Perry Nuclear Power Plant, Units 1 and 2.

Attachment: Technical Evaluation Report

Principal Contributor: T.G. Colburn

Date:

TECHNICAL EVALUATION REPORT

CONFORMANCE TO GENERIC LETTER 83-28, ITEM 2.2.1--
EQUIPMENT CLASSIFICATION FOR ALL OTHER SAFETY-RELATED COMPONENTS
PERRY-1/-2

Docket Nos. 50-440/50-441

Alan C. Udy

Published January 1988

Idaho National Engineering Laboratory
EG&G Idaho, Inc.
Idaho Falls, Idaho 83415

Prepared for the
U.S. Nuclear Regulatory Commission
Washington, D.C. 20535
Under DOE Contract No. DE-AC07-76ID01570
FIN No. 06001

8811170107 17A

ABSTRACT

This EG&G Idaho, Inc., report provides a review of the submittal from the Perry Nuclear Power Plant on conformance to Generic Letter 83-28, Item 2.2.1.

Docket Nos. 50-440/50-441

TAC No. 61756

FOREWORD

This report is supplied as part of the program for evaluating licensee/applicant conformance to Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." This work is being conducted for the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of Engineering and System Technology, by EG&G Idaho, Inc., Electrical, Instrumentation and Control Systems Evaluation Unit.

The U.S. Nuclear Regulatory Commission funded this work under the authorization B&R 20-19-10-11-3, FIN No. D6001.

Docket Nos. 50-440/50-441

CONTENTS

ABSTRACT	ii
FOREWORD	iii
1. INTRODUCTION	1
2. REVIEW CONTENT AND FORMAT	2
3. ITEM 2.2.1 - PROGRAM	3
3.1 Guideline	3
3.2 Evaluation	3
3.3 Conclusion	4
4. ITEM 2.2.1.1 - IDENTIFICATION CRITERIA	5
4.1 Guideline	5
4.2 Evaluation	5
4.3 Conclusion	5
5. ITEM 2.2.1.2 - INFORMATION HANDLING SYSTEM	6
5.1 Guideline	6
5.2 Evaluation	6
5.3 Conclusion	6
6. ITEM 2.2.1.3 - USE OF EQUIPMENT CLASSIFICATION LISTING	7
6.1 Guideline	7
6.2 Evaluation	7
6.3 Conclusion	7
7. ITEM 2.2.1.4 - MANAGEMENT CONTROLS	8
7.1 Guideline	8
7.2 Evaluation	8
7.3 Conclusion	8
8. ITEM 2.2.1.5 - DESIGN VERIFICATION AND PROCUREMENT	9
8.1 Guideline	9
8.2 Evaluation	9
8.3 Conclusion	9
9. ITEM 2.2.1.6 - "IMPORTANT-TO-SAFETY" COMPONENTS	10
9.1 Guideline	10
10. CONCLUSION	11
11. REFERENCES	12

CONFORMANCE TO GENERIC LETTER 83-28, ITEM 2.2.1--
EQUIPMENT CLASSIFICATION FOR ALL OTHER SAFETY-RELATED COMPONENTS:
PERRY-1/-2

1. INTRODUCTION

On February 25, 1983, both of the scram circuit breakers at Unit 1 of the Salem Nuclear Power Plant failed to open upon an automatic reactor trip signal from the reactor protection system. This incident was terminated manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers was determined to be related to the sticking of the undervoltage trip attachment. Prior to this incident, on February 22, 1983, at Unit 1 of the Salem Nuclear Power Plant, an automatic trip signal was generated based on steam generator low-low level during plant startup. In this case, the reactor was tripped manually by the operator almost coincidentally with the automatic trip.

Following these incidents, on February 23, 1983, the NRC Executive Director for Operations (EDO), directed the NRC staff to investigate and report on the generic implications of these occurrences at Unit 1 of the Salem Nuclear Power Plant. The results of the staff's inquiry into the generic implications of the Salem unit incidents are reported in NUREG-1000, "Generic Implications of the ATWS Events at the Salem Nuclear Power Plant." As a result of this investigation, the Commission (NRC) requested (by Generic Letter 83-28 dated July 8, 1983¹) all licensees of operating reactors, applicants for an operating license, and holders of construction permits to respond to the generic issues raised by the analyses of these two ATWS events.

This report is an evaluation of the response submitted by the Cleveland Electric Illuminating Company, the licensee for the Perry-1, for Item 2.2.1 of Generic Letter 83-28. The document reviewed as a part of this evaluation is listed in the references at the end of this report, and is applicable also to the postponed Unit No. 2.

2. REVIEW CONTENT AND FORMAT

Item 2.2.1 of Generic Letter 83-28 requests the licensee or applicant to provide, for the staff review, a description of their programs for each piece of equipment classification including supporting information, to the maximum detail, as indicated in the guideline section for each classification within this report.

As previously stated, each of the six subitems of Item 2.2.1 is evaluated in a separate section in which the guideline is presented, an evaluation of the licensee's/applicant's response is made, and conclusions concerning the acceptability of the program of the licensee or applicant are drawn.

3. ITEM 2.2.1 - PROGRAM

3.1 Guideline

Licensee and applicants should confirm that an equipment classification program is in place that will provide assurance that all safety-related components are designated as safety-related on plant documentation and in information handling systems that control activities that may affect safety related components. The purpose of this program is to ensure that personnel performing activities that affect such safety-related components are aware that they are working on safety-related components and are guided by safety-related procedures and constraints. Licensee and applicant responses which address the features of this program are evaluated in the remainder of this report.

3.2 Evaluation

The licensee for the Perry Nuclear Power Plant responded to these requirements with a submittal dated April 6, 1984.² This submittal included information that describes the Perry safety-related equipment classification program. In the review of the licensee's response to this item, it was assumed that the information and documentation supporting this program is available for audit upon request. We have reviewed this information and note the following general concerns.

The licensee states that they are using the computerized Perry Material Management System (PMMS) as the information handling system referred to, which has, as part of its data base, the Q-list. The Q-list is a listing of components and parts that have been determined to be safety-related. The PMMS prints out work orders (for any maintenance, surveillance, inspections or testing) that designates automatically whether the activity is safety-related. Additionally, parts procurement procedures require the determination of the safety-related status of the material ordered.

3.3 Conclusion

We have reviewed the licensee's submittal and find that the licensee's response is adequate.

4. ITEM 2.2.1.1 - IDENTIFICATION CRITERIA

4.1 Guideline

The applicant or licensee should confirm that the program used for equipment classification includes criteria used for identifying components as safety-related.

4.2 Evaluation

The licensee states that a component is determined to be safety-related if it is needed to function in order to ensure (a) the integrity of the reactor coolant pressure boundary, (b) the capability to shut down the reactor and to maintain it in a safe shutdown condition, and (c) the capability to prevent or to mitigate the consequences of an accident that could result in offsite releases.

4.3 Conclusion

We find that the criteria used in the identification of safety-related components meets the requirements of Item 2.2.1.1 and are acceptable.

5. ITEM 2.2.1.2 - INFORMATION HANDLING SYSTEM

5.1 Guideline

The licensee or applicant should confirm that the program for equipment classification includes an information handling system that is used to identify safety-related components. The response should confirm that this information handling system includes a list of safety-related equipment and that procedures exist which govern its development and validation.

5.2 Evaluation

The licensee states that the original Q-list was prepared according to written procedures by a consultant. The preparation was audited by the licensee to ensure that the Q-list was prepared according to the written procedures. The Q-list information has been entered into the PMIS (computer) data base under controls and verification procedures. An auditable record of all input data ensures that the approved data is entered. Unauthorized changes to the data base are controlled by the use of log-on procedures and password combinations that are controlled by the General Supervisor of the Perry Plant Department Maintenance Section. Controlled (protected) data fields have software logic to prevent inadvertent changes.

5.3 Conclusion

We find that the information contained in the licensee's submittal is sufficient for us to conclude that the licensee's information handling system for equipment classification meets the guideline requirements. Therefore, the information provided by the licensee for this item is acceptable.

6. ITEM 2.2.1.3 - USE OF EQUIPMENT CLASSIFICATION LISTING

6.1 Guideline

The licensee's or applicant's description should confirm that their program for equipment classification includes criteria and procedures which govern how station personnel use the equipment classification information handling system to determine that an activity is safety-related. The description should also include the procedures for maintenance, surveillance, parts replacement and other activities defined in the introduction to 10 CFR 50, Appendix B, that apply to these safety-related components.

6.2 Evaluation

The licensee's computerized Perry Plant Maintenance Information System (PPMIS) is used to determine what work activities are safety-related. The PPMIS automatically consults the data base Q-list to determine the safety-related status of the work activity. The work order printout is then verified manually. Work requests, work orders, corrective maintenance, procurement, technical specification surveillance, inservice inspections and testing, and preventative maintenance are included in this process.

6.3 Conclusion

We find that the licensee's description of plant administrative controls and procedures meets the requirements of this item and is, therefore, acceptable.

7. ITEM 2.2.1.4 - MANAGEMENT CONTROLS

7.1 Guideline

The applicant or licensee should confirm that the management controls used to verify that the procedures for preparation, validation, and routine utilization of the information handling system have been followed.

7.2 Evaluation

The licensee's submittal describes the managerial controls that are applied to assure that the equipment classification information handling system has been properly prepared, that its contents have been validated, that it is being maintained current, and that it is being used to determine equipment classification as intended. These controls include audits by the Perry Plant Department and the Nuclear Engineering Department during the preparation of the Q-list. These audits verify compliance with approved procedures and the validation of the Q-list contents. The use of the Q-list is verified during Quality Assurance audits, during surveillances, and during the review of work orders, procurement documents, and other documents. Periodic evaluations of the Q-list are used to initiate changes to ensure that the Q-list is maintained current.

7.3 Conclusion

We find that the licensee's description meets the requirements of this item and is, therefore, acceptable.

8. ITEM 2.2.1.5 - DESIGN VERIFICATION AND PROCUREMENT

8.1 Guideline

The applicant's or licensee's submittal should document that past usage demonstrates that appropriate design verification and qualification testing is specified for the procurement of safety-related components and parts. The specifications should include qualification testing for expected safety service conditions and should provide support for the applicant's/licensee's receipt of testing documentation to support the limits of life recommended by the supplier. If such documentation is not available, confirmation that the present program meets these requirements should be provided.

8.2 Evaluation

The licensee's response states that the Q-list is the central data base used for procurement requirements. The licensee states that safety-related components are qualified, by the use of the Q-list, with documentation to ensure that the equipment will perform its design function in normal, abnormal, accident, and post-accident environments for its service life. The licensee states that the qualification documentation is reviewed to show the qualified life of the component or part.

8.3 Conclusion

The licensee's response for this item is considered to be complete. The information provided addresses the concerns of this item and is acceptable.

9. ITEM 2.2.1.6 - "IMPORTANT-TO-SAFETY" COMPONENTS

9.1 Guideline

Generic Letter 83-28 states that the licensee's or applicant's equipment classification program should include (in addition to the safety-related components) a broader class of components designated as "Important to Safety." However, since the generic letter does not require the licensee or applicant to furnish this information as part of their response, review of this item will not be performed.

10. CONCLUSION

Based on our review of the licensee's response to the specific requirements of Item 2.2.1, we find that the information provided by the licensee to resolve the concerns of Items 2.2.1.1, 2.2.1.2, 2.2.1.3, 2.2.1.4 and 2.2.1.5 meets the requirements of Generic Letter 83-28 and is acceptable. Item 2.2.1.6 was not reviewed, as noted in Section 9.1.

11. REFERENCES

1. NRC Letter, D. G. Eisenhut to all Licensees of Operating Reactors, Applicants for Operating License and Holders of Construction Permits, "Required Actions Based on Generic Implications of Salem ATWS Events (Generic Letter 83-28)," July 8, 1983.
2. Cleveland Electric Illuminating Company letter, M. R. Edelman to D. G. Eisenhut, NRC, "Response to Generic Letter 83-28," April 6, 1984, PY-CEI/NRR-0100 L.

NRC FORM 335 (2-84) NRCM 1102 3201 3202 SEE INSTRUCTIONS ON THE REVERSE		U.S. NUCLEAR REGULATORY COMMISSION		REPORT NUMBER (Assigned by NRC and not by the agency) EGG-NTA-7286	
BIBLIOGRAPHIC DATA SHEET				2. LEAVE BLANK	
3. TITLE AND SUBTITLE CONFORMANCE TO GENERIC LETTER 83-28, ITEM 2.2.1-- EQUIPMENT CLASSIFICATION FOR ALL OTHER SAFETY-RELATED COMPONENTS: PERRY-1/-2				4. DATE REPORT COMPLETED MONTH: January YEAR: 1988	
5. AUTHOR(S) Alan C. Udy				6. DATE REPORT ISSUED MONTH: January YEAR: 1988	
7. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) EG&G Idaho, Inc. P. O. Box 1625 Idaho Falls, ID 83415				8. PROJECT/TASK/WORK UNIT NUMBER	
				9. PIN OR GRANT NUMBER D6001	
10. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) Division of Engineering and System Technology Office of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, DC 20555				11. TYPE OF REPORT 12. PERIOD COVERED (If applicable, use YYYY)	
13. SUPPLEMENTARY NOTES					
14. ABSTRACT (200 words or less) This EG&G Idaho, Inc., report provides a review of the submittal from the Perry Nuclear Power Plant regarding conformance to Generic Letter 83-28, Item 2.2.1.					
15. DOCUMENT ANALYSIS & KEYWORD DESCRIPTIONS				16. AVAILABILITY STATEMENT Unlimited Distribution	
17. IDENTIFIERS/OPEN ENDED TERMS				18. SECURITY CLASSIFICATION Unclassified Unclassified	
				19. NUMBER OF PAGES	
				20. PRICE	