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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
VERMONT YANKEE NUCLEAR POWER CORPORATION	)	Docket No. 50-271-OLA-2 (Testing Requirements for ECCS and SLC Systems)
	)	
(Vermont Yankee Nuclear Power Station)	)	(ASLBP No. 87-567-04-OLA)
	)	

STATE OF VERMONT'S FIRST SET OF
INTERROGATORIES AND REQUESTS
FOR THE PRODUCTION OF DOCUMENTS TO VERMONT
YANKEE NUCLEAR POWER CORPORATION

INSTRUCTIONS FOR USE

The following interrogatories are to be answered in writing and under oath by an employee, representative or agent of the Applicant with personal knowledge of the facts or information requested in each interrogatory. Please note the obligation to supplement answers to interrogatories, pursuant to 10 C.F.R. § 2.740 (e).

1. Please identify all persons who participated in the preparation of answers to these interrogatories and production requests, and identify the portions of your response to which each person contributed.
2. Provide an estimate per event of the man-hours and cost of complying with the surveillance requirements which are proposed to be deleted.

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3. Provide an estimate of the man-hours and cost to effect the proposed amendment. Include, but do not limit, costs to:
   a. Costs to respond completely to all regulatory agencies and satisfy completely all regulatory processes.
   b. Costs of all analyses.
   c. Costs for modification of all documents.
   d. Costs for modification of all plant procedures.
   e. Costs for retraining of all personnel for modifications.
4. Discuss the cost effectiveness of the proposed amendment for the balance of plant life. Do not assume as cost, any instance of planned inoperability of components where surveillance can be doubled for requirements other than those proposed to be deleted by proper scheduling. Neither assume as cost any outage or shutdown as a result of the testing proposed to be deleted since identification of a subsystem which is on the verge of failure, while its redundant subsystem is inoperable, can only be considered a benefit.
5. Provide a legible set of Piping and Instrumentation Diagrams (P&ID's) for each system or subsystem which is affected by the proposed amendment.
6. Provide a legible set of One-line Wiring Diagrams for Station One-line, 4160 V Auxiliary One-line, Emergency 4160 V Auxiliary One-line, BOP 4160 V Auxiliary One-line, and Emergency 480 V Auxiliary One-line.
7. For each system or subsystem affected by the proposed amendment, provide a failure mode analysis showing each potential failure mode (passive and active) which would

prevent the system from performing its safety function, and the consequence of such failure.

8. For each system or subsystem affected by the proposed amendment, identify each active component or device necessary to perform the safety function of the system (include by special note, each component or device which becomes active only during the testing which is proposed to be eliminated). For each identified device or component, provide a table or computer printout of the following:

   a. Mark number of system identification
   b. Component or device name or description
   c. Manufacturer/Supplier
   d. Model Number
   e. Safety Classification
   f. Applicable Manufacturing Code
   g. Applicable Environmental Qualification (IEEE-323) Report
   h. Qualified Service Life (in both time and number of demands)

9. The Vermont Yankee submittal of December 7, 1987, proposes to amend the Bases of the Technical Specification by removing the present daily testing Basis and replacing it with:

   "Assurance of the availability of the remaining systems is demonstrated by testing performed in accordance with the requirements of ASME Section XI..."

For each component or device tabulated in Interrogatory No. 7 above, identify the ASME Section XI reference which establishes test requirements.

10. For each deleted or amended surveillance requirement proposed in the Vermont Yankee submittal dated December 7, 1987, provide the following "before and after" tabulation. A tabulation should be made for each Technical Specification Surveillance Section proposed for revision.

    a. Each component or device responsible for providing safety function (from Interrogatory No. 7 above) for this specific surveillance requirement.

    b. Surveillance frequency for each component listed in a. above which is proposed to be deleted.

    c. Surveillance frequency for each component in a. above without the surveillance requirement which is proposed to be deleted.

    d. Reference for the surveillance identified for c. above (Technical Specification Section, ASME XI IST Program Section).

11. Describe the availability of Manufacturer and Model Specific failure rate information for the components and devices affected by the proposed amendments. Identify any applicable industry reports. Provide copies of your correspondence with the suppliers identified in Interrogatory No. 7 above requesting Manufacturer and Model Specific failure rates, and their responses.

12. Identify any I&E Bulletins, Circulars and Information Notices, and any NRC Generic letters which are applicable to components and devices identified in Interrogatory No. 7 above (Manufacturer and Model Number, or similar models). Provide Vermont Yankee responses to identified items.

13. Provide a chronological identification of failures or reportable events in any of the systems or subsystems affected by this proposed amendment. For each item identified, provide the following:

    a. Date of the Event

    b. System

    c. Event Report Number

    d. Component or device (by mark number) responsible or affected by the event

    e. Repair/Replacement time for the component or device responsible for the event

    Provide a copy of each event report identified above.

14. Identify the following for each proposed deletion of testing requirements:

    a. Number of <u>anticipated</u> (planned maintenance or repairs, etc.) instances in the life of the plant in which this testing requirement has been invoked.

    b. Number of <u>unanticipated</u> (unplanned events) instances in the life of the plant in which this testing requirements has been invoked.

    Provide event reports and all related documentation for these unanticipated events. Provide documentation from plant

records (operator's logs, procedure checklists) which demonstrate the results of invoking these testing requirements.

c. Number of instances in either group a. or b. above in which testing of alternate systems produced a failure and caused power reduction. Identify the date of occurrence and Event Report Number. Provide all related documentation, such as operational logs, procedure checklists, repair records, etc.

d. Number of instances in either group a. or b. above in which the Limited Condition of Operation (LCO) time limit expired, and power reduction occurred. Identify the date of occurrence and Event Report Number. Provide all related documentation, such as operational logs, procedure checklists, repair records, etc.

15. How are the testing requirements which are proposed to be deleted presently incorporated into plant procedures? Identify and provide copies of all operating, maintenance, emergency and/or other procedures incorporating these test requirements.

16. Describe the anticipated surveillance and maintenance activities of the components affected by this proposed amendment. Specifically:

a. What is the maintenance frequency of each component?

b. How is the maintenance scheduled?

c. How often does the testing the alternate system requirement come into effect?

d. What, if any, verification and surveillance of the alternate system takes place before taking a component out of service for maintenance?

e. Is this pre-maintenance surveillance required by Technical Specifications? If so, identify the references.

f. Is this pre-maintenance surveillance covered in maintenance and operation procedures? If so, provide copies of the procedures and identify the applicable section(s).

g. Provide all checklists and maintenance records since the last scheduled outage for the components and devices affected by this request.

17. The Vermont Yankee submittal of December 7, 1987, proposes to amend the Bases of the Technical Specification by removing the present daily testing Basis and replacing it, in part, with:

> Assurance of the availability of the remaining systems is demonstrated by ... verifying the system is in an operable status."

a. Describe the bypassed and inoperable status indications available to the control room operator for each system or subsystem affected by the proposed amendment.

b. Describe the degree of compliance with Regulatory Guide 1.47, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems."

c. If manual operations or actions (movement of toggle switches, etc.) are necessary for the systems or subsystems affected by the propssed amendment, provide copies of procedures controlling those who must take those actions.

d. Identify an instances in the life of the plant in which bypassed and inoperable status indication has not been set correctly. Provide all related documentation.

e. The subject of bypassing safety systems is identified as an area of concern in NUREG-1251, "Implications of the Accident at Chernobyl for Safety Regulation of Commercial Nuclear Power Plants in the United States," August 1987. In the report Section 1.3.2, it is stated,

> "The current effort under way at NRC to revise RG 1.47 was recommended in NUREG/CR-3621 ... [which] identifies some of the tasks associated with monitoring the status of bypassed safety systems (e.g., updating status boards and determining system status during all modes of operation) which are prone to human errors. These human factors considerations are being reviewed for possible inclusion in RG1.47."

Describe Vermont Yankee's awareness of and involvement with this NRC program.

f. Discuss why Vermont Yankee believes it to be prudent to alter the present safety Basis of the plant to a Basis which is currently an NRC concern and being revised.

Why would it not be more prudent to withdraw the present request until the Bypassed and Inoperable Status Indication issue is resolved?

18. Why are the Surveillance Sections of the Technical Specifications which are proposed to be deleted not replaced with statements requiring operators to verify immediately the operability status of the redundant system?

19. On July 15, 1988, Vermont Yankee responded to an NRC request for additional information by submitting the report, "Impact of Alternate Testing on Component and System Availability (hereafter called "The Report")."

    a. Indicate who prepared "The Report," Pickard, Lowe and Garrick, Inc., or Yankee Atomic Electric Company. Indicate the relationship between Yankee Atomic Electric Company and Pickard, Lowe and Garrick, Inc.

    b. "The Report"" is a document which affects quality and safety, falling under the requirements of 10 CFR 50, Appendix B, Section VI, "Document Control," which states that such documents must be "reviewed for adequacy and approved for release by appropriate personnel." However, "The Peport" provides no indication of review or approval. Provide documentation demonstrating that such review and approval took place, including the names of all reviewers and approvers; and copies of review, comment and approval copies from all reviewers and approvers.

c. Provide a copy of the Quality Assurance procedure governing the preparation, review and approval of "The Report."

d. Identify the qualifications of all preparers, reviews and approvers, and specifically their background and experience in the preparation of PRA analyses.

20. Section 5.2.1 of "The Report", as well as Sections 5.2.2 and 6.2, and Appendix C, make reference to 'Reference 4' for generic input data. Section 11 identifies Reference 4 as Pickard, Lowe and Garrick, Inc., "Probabilistic Risk Assessment Data Base for Light Water Reactors," PLG-0500, August 1988.

a. How can "The Report," submitted on July 15, 1988, use a reference published in August 1988?

b. Since PLG-0500 is used as basis for safety-related conclusions, it appears it should also meet 10 CFR 50, Appendix B, Section VI, Document Control requirements. Provide an indication of the level of Quality Assurance associated with the preparation of PLG-0500. Has Yankee Atomic audited this area of PLG's work?

c. Indicate the level of review of PLG-0500 by Yankee Atomic personnel.

d. Provide a copy of Reference 4.

21. Several areas of "The Report" should have references added:

a. At page 1, line 1, identify a reference for "the Vermont Yankee Inservice Testing Program," and provide a copy.

b. At pages 6, 7, 27 and 28, references are not provided for equations. Identify the references and provide copies.

22. At page 1, lines 20-22 of "The Report" it is indicated, "Analyses were performed to quantify the impact of alternate testing on the availability of affected systems. The report presents the results of these analyses." Provide copies of these analyses and all supporting information.

23. At page 1, line 5 of "The Report" it is stated, "Most other Boiling Water Reactors (BWRs) do not have these alternate testing requirements, since alternate testing is not part of the BWR Standard Technical Specification."

a. In order to make this statement, the testing requirements for all other BWRs must have been reviewed. Based on this statement, identify <u>all</u> BWR plants which have <u>any part</u> of the testing proposed to be eliminated which is more stringent than the Vermont Yankee proposal.

b. Provide a tabular review of the BWR Standard Technical Specifications comparing (for each surveillance test proposed for elimination):

1) Vermont Yankee LCO "out of service times" before power reduction with those from the Standard Technical Specifications.

2) Any areas where the standard Technical Specifications require testing upon a "component

out of service" which are not included in the Vermont Yankee proposal.

c. Provide justification for any item in part b. above in which the Standard Technical Specification is more stringent than Vermont Yankee proposal. If there are either LCO or Surveillance Testing requirements which are more restrictive in the Standard Technical Specifications, explain what is meant by the statement in the Vermont Yankee proposal letter of December 7, 1987, at page 3, paragraph 3, "The change is ... consistent with the testing requirements contained in the BWR Standard Technical Specifications."

24. In Attachment 1 to the Vermont Yankee proposal of December 7, 1987, it is reasoned that daily surveillance should not be performed based on the increased chance of component failure or degradation due to testing. It is further mentioned in "The Report" at page 4, "Reduced reliability due to equipment degradation from excessive testing."

a. What is considered to be "test degradation"? Is it failures caused by the testing or is it the increased potential for demand failures required from misalignment in the event of an accident?

b. For each system or subsystem affected by this proposed change, discuss whether design changes are possible or desirable to allow the required testing to be accomplished safely.

c. IEEE-323 and Regulatory Guide 1.89 require that safety-related electrical equipment and components are tested to the environment and service conditions in which they are expected to function. For each component identified in Attachment 1 of Vermont Yankee letter, December 7, 1987, provide copies of the applicable Environmental Qualification test reports and identify a section reference in the report which indicates how this surveillance testing has been taken into account in the qualification.

d. Discuss why a requirement to be at HOT SHUTDOWN within 12 hours of an inoperable redundant component is not a more prudent action to protect public safety since it is stated that the testing presently required is unsafe.

25. At page 6 of "The Report," it is indicated that the linear approximation is valid only when the condition is met that the failure rate-time product is 'much-less' than 1. At page 7, the same condition applies, although it is not stated. However, for the failure rate data provided on pages 31 and 32, and the time periods graphed on pages 34 through 38, it appears this condition may not always be satisfied. Describe how the results of the analysis would change if the failure rate-time product approaching 1 were taken into account.

26. At page 8 of "The Report," the second example indicates that the valve which fails the test would be declared inoperable and repaired.

a. Why should it not rather read that, if the valve fails the test, the unit is brought to a safe shutdown condition?

b. If it is the practice to attempt repair when both redundant trains are inoperable, provide a comparison between Vermont Yankee and BWR Standard Technical Specifications of the time allowed for this repair before LCO shutdown is required. Provide this comparison for each surveillance test which is proposed for deletion or modification.

c. Provide an explanation and basis if, for any system, the comparison indicates the BWR Standard Technical Specification is more restrictive than the Vermont Yankee Technical Specifications.

27. The anomaly presented in the graphs on pages 34, 43 and 45 of "The Report" is purely a function of the attempt to repair while both redundant trains are inoperable instead of bringing the plant to an immediate safety shutdown condition. This is confirmed by statements in Sections 5.3.1 and 7.0 of "The Report." This is an anomaly because it seems to indicate it is more desirable to <u>not</u> discover a failure by testing (if the failure is to occur on the next demand), but rather to discover it in an accident event if one were to occur. The anomaly is removed from the results if it is assumed the plant immediately proceeds to safe shutdown instead of repair.

a. Describe how shutdown situations are treated in the analyses described by "The Report ." If the repair period extends beyond the LCO limit, how is this accounted for? Does your analysis account for unavailability because the plant is in an outage?

b. Provide the graphical representations on pages 34, 43 and 45, assuming immediate shutdown instead of repair. For this analysis, to assure conservatism, choose and justify a minimum value for Demand Failures and a maximum value for time-related failure rate.

c. Comparing the results from part b. above with the graphs on pages 34, 43 and 45, discuss the prudency of a policy of proceeding immediately to safe shutdown.

d. If a failure is to occur on the next demand (and the redundant train is inoperable), is it more desirable to discover this by test or in an emergency situation?

28. Discuss how the inoperable state of the standby Liquid Control System which existed from July 11, 1984 to February 8, 1986, is taken into account in the analysis described in "The Report."

29. In Section 8.0 of "The Report," it is indicated:

"The identification of potential common cause component groups and development of procedures to systematically evaluate events for the root causes and coupling mechanisms is an effective method for minimizing the occurrence of unanticipated multiple failures."

For the life of the plant, tabulate each potential common cause which has been identified by your procedures. Include date, descriptions, and event reports numbers. Provide a copy of all event reports identifying common causes.

30. In EPRI NP-5475, "Identification and Classification of Technical Specification Problems," December 1987, the statement is made in Section 4.2, Implications for the Use of Risk Based Methods in Technical Specification Improvement:

> "There are at present no generally accepted means of directly associating levels of risk and risk changes with the requirement of any technical specification."

Why it would not be more prudent to withdraw the present amendment at this time pending establishment by the Industry of "generally accepted means," endorsed by the NRC?

31. Demonstrate that the "out-of-service times," during which it is proposed <u>not</u> to verify redundant subsystem availability by test, do not cause unnecessary risk to public health and safety and the environment.

Submitted bY,

STATE OF VERMONT

BY: S. H. Press (by)

Samuel H. Press
Special Assistant Attorney General
Director for Public Advocacy
Vermont Department of Public Service
120 State Street
Montpelier, Vermont 05602
(802) 828-2811

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges

Charles Bechhoefer, Chairman
Glenn O. Bright
Dr. James H. Carpenter

In the Matter of	)	
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VERMONT YANKEE NUCLEAR POWER POWER CORPORATION	)	Docket No. 50-271-OLA-2 (Testing Requirements for ECCS and SLC Systems)
	)	
(Vermont Yankee Nuclear Power Station)	)	
	)	

CERTIFICATE OF SERVICE

The undersigned certifies that on September 1, 1988, copies of State of Vermont's First Set of Interrogatories and Requests for the Production of Documents to Vermont Yankee Nuclear Power Corporation were served on the following parties to this case by first class mail or as otherwise indicated:

Charles Bechhoefer, Chairman
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Glenn O. Bright
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. James H. Carpenter
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Secretary of the Commission
Attn: Docketing and Service Section
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555 (2 Copies)

Christine N. Kohl, Chairman
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

George Dean, Esq.
Assistant Attorney General
Commonwealth of Massachusetts
Department of the Attorney General
One Ashburnton Place
Boston, MA 02108

Ellyn R. Weiss, Esq.
Harmon & Weiss
Suite 430
2001 S. Street, NW
Washington, D. C. 20009

Ann Hodgdon, Esq.
Office of the General Counsel Bethesda
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Thomas G. Dignan, Esq.
Ropes & Gray
225 Franklin Street
Boston, MA 02110

Gary J. Edles
Atomic Safety and Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Howard A. Wilber
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Geoffrey M. Huntington, Esq.
Office of the Attorney General
Environmental Protection Agency
State House Annex
25 Capitol Street
Concord, NH 03301-6397

Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Lando W. Zech, Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Thomas M. Roberts, Commissioner
U.S. Nuclear REgulatory Commission
Washington, D.C. 20555

Frederick M. Bernthal
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Kenneth M. Carr
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Kenneth Rogers
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Samuel H. Press
Special Assistant Attorney General
Director for Public Advocacy
Vermont Department of Public Service
120 State Street
Montpelier, VT 05602
(802) 828-2811

Counsel for State of Vermont