U. S. NUCLEAR REGULATORY COMMISSION

INSPECTION REPORT

FACILITY DOCKET NO.	50-309
INSPECTION REPORT NO.	50-309/89-81
FACILITY LICENSE NO.	DPR-36
LICENSEE:	Maine Yankee Atomic Power Company 83 Edison Drive Augusta, Maine 04336
FACILITY:	Maine Yankee Atomic Power Company Bailey Point Ferry Road Wiscassett, Maine 04578
INSPECTION DATES:	July 17 - 28, 1989
INSPECTION TEAM:	
Team Leader:	B. S. Norris, Senior Operations Engineer, NRC
Team Members:	L. J. Defferding, Systems Engineer, PNL R. J. Freudenberger, Resident Inspector, Maine Yankee G. S. Galletti, Human Factor Specialist, NRC C. M. Meeker. Systems Engineer, COMEX D. T. Moy, Reactor Inspector, NRC A. B. Sutthoff, Human Factor Specialist, SAIC R. D. Warner, Licensing Examiner, PNL

PREPARED BY: Peter W Eselgroth for Barry S. Norris — 10-25-89
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DETAILS

1.0 EXECUTIVE SUMMARY

1.1 A special, announced team inspection was conducted of the Maine Yankee emergency procedures. The purpose of the inspection was to determine if the emergency procedures used at Maine Yankee were technically correct; that their specified actions could be physically accomplished using the existing equipment, controls and instrumentation; and that the available procedures had the usability necessary to provide the operators with an effective operating tool. For this inspection, the term emergency procedures included the EOPs, FRPs, AOPs, and procedures referenced within the EOPs, FRPs, and AOPs. The inspection included reviewing over 100 documents, observing two operating crews in the simulator, and interviewing 14 facility personnel.

No violations or deviations were identified as a result of this inspection. One concern was identified as significant; the direction and training given to the operators with respect to how the emergency procedures were to be utilized and implemented was that the emergency procedures were a guidance document and that verbatim compliance was not required. Generic concerns identified during the inspection are discussed within the body of the inspection report; those concerns that are specific to an individual procedure are enumerated in Attachment 2.

The overall assessment of the emergency procedures in place at Maine Yankee at the time of the inspection is that the procedures are generally well written and that the operators should be able to utilize the procedures to mitigate an accident. At the exit meeting on July 28, 1989, NRC management stated that the Maine Yankee program for emergency procedures was very good and he would place the program in the upper 15% of the programs looked at to date. It was further recommended that the Maine Yankee program be used as an example of a well developed program that has been well implemented.

1.2 During the inspection, one of the team members noted that some industrial gas cylinders on site were out of date with respect to proper hydrostatic pressure testing (49CFR173.34). This was a personnel safety concern and potentially a plant safety concern.

The facility took prompt action to remove the initially identified cylinders from the site, and performed a thorough search to identify and remove all other out of date cylinders. The facility has agreed to develop a program to address the storage of industrial gases.

This item is considered closed.

2.0 USE OF EMERGENCY PROCEDURES AS GUIDELINES VICE PROCEDURES

During the inspection, it was noted that the Maine Yankee AOPs and EOPs were not to be considered verbatim compliance documents but were intended to be a guide (procedure 1-200-10, Conduct of Operations). This policy does not support the concept that procedures should be developed such that the operators can implement them as written and that any changes to the procedures should be via a formal process as described in the licensee's Technical Specifications. 10 CFR 50, Appendix B, Criterion V, states, in part, that "Activities affecting quality shall be prescribed by documented instructions or procedures, . . . and shall be accomplished in accordance with these instructions or procedures . . ."

During discussions, it was determined that the facility management agreed that procedures should be implemented as written, when possible.

The licensee agreed to submit a plan for changing the policy for implementation of the emergency procedures. The plan is to contain the specifics of how the change will be made, and a schedule of when the change will be implemented, including training on the change.

The weaknesses identified in paragraph 2.0 will be tracked as Item No. 50-309/89-81-01.

3.0 BASIC COMPARISON OF OWNERS' GROUP ERGs WITH FACILITY'S EOPs

PURPOSE: To ensure that the licensee had developed sufficient procedures in the appropriate areas to cover the broad spectrum of accidents and equipment failures.

3.1 The list of Maine Yankee EOPs was compared to the Westinghouse Owners' Group (WOG) list of Emergency Response Guidelines (ERGs), Revision 1 of the High Pressure Version, to ensure that the licensee had developed procedures in accordance with the WOG recommendations. The facility was in the process of revising the current EOPs to be consistent with Revision 1A of the WOG ERGs.

3.2 It was noted that six of the ERGs were not listed in the table of contents for the Maine Yankee EOPs, specifically:

ES -3.2 Post-SGTR Cooldown Using Blowdown
ECA-1.1 Loss of Emergency Coolant Recirculation

ECA-2.1	Uncontrolled Depressurization of All Steam Generators
ECA-3.1	SGTR with Loss of Reactor Coolant - Subcooled Recovery Desired
ECA-3.2	SGTR with Loss of Reactor Coolant - Saturated Recovery Desired
ECA-3.3	SGTR without Pressurizer Pressure Control

To determine the acceptability of not including the above recommended guidelines, the team reviewed the Maine Yankee justification and background documents supporting the exclusion of the above six ERGs, and discussions were held with facility personnel responsible for development of the EOPs. In all cases, the justification was adequate, but the documentation supporting the justification was not always complete.

The licensee revised the documentation before the end of the inspection to fully explain the justification.

This item is considered closed.

4.0 INDEPENDENT TECHNICAL ADEQUACY REVIEW OF THE EMERGENCY PROCEDURES

PURPOSE: Review the emergency procedures to assure that procedures are technically adequate and accurately incorporate the guidelines of the ERGs.

4.1 The Maine Yankee EOPs were reviewed to ensure that the procedures were technically adequate and accurately incorporated the guidelines of the WOG ERGs. Each deviation from the ERGs was reviewed to ensure that: (1) all deviations were warranted by the plant specific design (2) safety significant deviations were reported to the NRC as required, (3) and prioritization of accident mitigation strategies was correct.

Except as noted below, the EOPs were technically adequate and accurately incorporated the procedural guidance of the ERGs.

4.2 During the course of the inspection, the team identified the following concerns:

a. The setpoints listed in the EOPs are the same as those listed in the Technical Specifications. The initial concern of the team was: if an operator waited until the value listed in the procedure was reached before taking manual action, the specific TS limit may be exceeded prior to completion of corrective actions.

A facility representative responded that the instrument inaccuracies had been taken into account when determining the TS value. And that the Instrumentation & Control (I&C) procedures

required the setpoint of the instrument to be conservative. The team reviewed several safeguards setpoints. In all cases I&C procedures used a setpoint more conservative than the Technical Specification limit.

This concern had been previously identified by an NRC Safety System Functional Inspection (SSFI) team (see Inspection Report No. 50-309/89-80, paragraphs 3.3.1 through 3.3.4) and is being tracked under that inspection report.

b. During the interviews and plant walkdowns, some of the operators stated that the use of ECA-0.0 (Loss of All AC Power) was confusing. Maine Yankee procedure ECA-0.0 directs a transition to AOP 2-90-1, (Plant Shutdown Plan for Fire in Control Room, ... and/or Station Blackout) prior to the plant being in a stable condition. A transition from the EOPs (a higher tier procedure) to a lower tier procedure before the plant is in a stable condition is not consistent with the WOG guidelines for usage of the EOPs. However, it is reasonable to initiate concurrent actions, such as manually starting an emergency diesel generator, to mitigate the event while remaining in the EOP.

To determine if there was a need for improvement in the logic in the procedure, a scenario was developed and run on the simulator by two different operating crews. The expected actions sequence did not occur with the first crew, the second crew mitigated the event by means other than strictly following the procedure. This lack of consistency substantiated the difficulties described by the operators with executing ECA-0.0.

The facility has agreed to review the transitions within ECA-0.0 and clarify the hierarchy of the various operating procedures.

The weakness identified in paragraph 4.2.b will be tracked as Item No. 50-309/89-81-02.

c. The effects of harsh containment on the steam generator and pressurizer level indications were verified to be addressed in the EOPs. The definition of what constitutes harsh containment was clearly defined within the background documents; however, the definition was not defined within the EOPs themselves. Some operators correctly stated that high containment radiation and high containment pressure were the parameters monitored; other operators incorrectly stated that the parameters were high containment radiation and high containment temperature.

The facility has agreed to clarifying the definition of harsh containment and to train the operators.

This item is considered closed.

d. The concept of harsh environment needs to be considered for the effects on other qualified equipment outside of the containment - such as the steam generator pressure transmitters in the tornado proof building. These instruments could be subject to a harsh environment during a steam line break inside of the tornado proof building.

The licensee agreed with the above concern and has committed to developing harsh environment values for the steam generator pressure transmitters. The licensee has discussed this issue with the WOG, and the WOG is considering making this a generic issue.

The weakness identified in paragraph 4.2.d will be tracked as Item No. 50-309/89-81-03.

e. The Technical Data Book (TDB) is a compilation of approved graphs and charts, used by the engineering and operations staffs. The readability of some of the material in the control room copy of the TDB was poor. The poor readability appeared to be due to a lack of attention during the reproduction of the material; i.e., copies were not made from the original document, and care was not taken during the reproduction to ensure that the copy was legible and complete. The readability of the simulator copy of the TDB was worse than that of the control room copy.

The facility has agreed to review the condition of the TDB and ensure that all pages are complete and legible.

This item is considered closed.

5.0 REVIEW OF THE EMERGENCY PROCEDURES BY CONTROL ROOM AND PLANT WALKDOWNS

PURPOSE: To assure that the emergency procedures can be successfully accomplished.

5.1 Licensed and non-licensed operators were utilized to walkdown the procedures listed in Attachment 1. The walkdowns were conducted in the control room and in the plant to ensure that: (1) actions required by the procedure could be accomplished using the installed equipment, instrumentation and controls; and (2) procedural guidance was clear and detailed enough such that operator confusion and error would be avoided.

No instances were identified where the step could not be performed using the installed equipment, instrumentation and controls. Except as detailed in paragraph 5.2, the procedures were clear and provided sufficient detail for the operator to complete the step.

5.2 During the reviews and walkdowns of the procedures, deficiencies were identified and discussed with the licensee prior to the exit meeting. The licensee acknowledged and committed to correction of the identified deficiencies. In many cases, the licensee had already identified the deficiency and corrective action had been started. Deficiencies considered to be generic procedural weaknesses are listed below:

a. Cautions and notes contain action steps, which is contrary to the guidance contained in the writer's guide.

b. Several procedural steps contained double negatives.

c. Several steps were repeated within a procedure unnecessarily.

Those deficiencies identified within specific procedures that were not covered by the generic weaknesses identified above are listed in Attachment 2 of this report.

The weaknesses identified in paragraph 5.2 and those identified in Attachment 2 will be tracked as Item No. 50-309/89-81-04.

5.3 Although not specific to procedures, the team considered labeling and operator aids to be generic weaknesses.

a. The labeling in the control room and in plant is not always consistent with the terminology used in the procedure. Additionally, labels are not always complete; i.e., the label will not include either the component number or the component name.

b. The use of operator aids in the control room and in plant is an effective tool to be provided to the operators. However, the aids need to be carefully controlled to ensure that only approved aids are used and that information posted as an aid is current. Many examples were identified by the inspectors of operator aids that were not being controlled by the existing program. Specific examples included: (1) Magnetic labels used in the control room (and simulator) to indicate where the spare charging pump is aligned and which service water header is isolated; (2) in the PAB, detailed instructions for operation of the auxiliary charging pump were posted but no control or approval stamp was affixed.

The weaknesses identified in paragraph 5.3 will be tracked as Item No. 50-309/89-81-05.

5.4 The Alarm Response Procedures are not stand alone documents, but are entered via various AOPs (AOPs 2-36, 2-37, 2-38, and 2-39). These AOPs contain the generic objective, discussion, and precautions associated with a certain set of ARPs; this is followed by a single

procedural step which directs the operator to refer to the specific ARP for further action. The ARPs contain the operator actions required for response to each individual alarm.

During the inspection, it was noted that the method for use of the ARPs was not consistently applied by operators. The operators were not clear as to which set of procedures were the guiding documents.

It is apparent that corrective action on the use of the ARPs and the AOPs is needed to ensure a consistent determination by the operators of which procedures to use.

The weakness identified in paragraph 5.4 will be tracked as Item No. 50-309/89-81-06.

6.0 SIMULATOR OBSERVATION

PURPOSE: To assure that emergency procedure training provided the operators with the necessary information background and to ensure that the emergency procedures can be correctly implemented under emergency conditions.

6.1 Utilizing the site specific simulator, the team assessed the adequacy of the training on the emergency procedures by observing the actions of two crews of licensed operators during unrehearsed scenarios designed to exercise the crews familiarity with and ability to utilize the emergency procedures.

The scenarios were developed with the intent of providing the team with an opportunity to;

a. Observe the crews' performance to validate or resolve concerns resulting from the review of the emergency procedures,

b. Assess the licensee's operating philosophy with respect to the emergency procedures, especially where initial reviews identified differences from the Emergency Response Guidelines,

c. Assess the human factors elements associated with the performance of the procedures in a "real time" situation, and

d. Assess the operating crews' diagnosis of accident conditions and transitions from one EOP to another EOP (or AOP).

6.2 The scenario sets consisted of:

First Crew

Scenario 1: Loss of condenser vacuum/inadvertent safety injection

(Use of AOP 2-2 and EOP E-0)

Scenario 2: Fire in emergency diesel generator room (resulting in a minimum TS crew remaining in the control room) followed by a loss of all AC power.

(Use of AOPs 2-90-0, 2-90-1 and EOP ECA-0.0)

Scenario 3: Steam generator tube rupture concurrent with a steam line break.

(Use of AOPs 2-10, 2-25 and EOPs E-0, E-2, E-3)

Scenario 4: Feedline break inside containment.
(Use of EOPs E-0, E-2 and E-1)

Second Crew:

Scenario 1: Plant trip on loss of both heater drain tank pumps with an (ATWS).

(Use of EOPs E-0 and FR-S.1)

Scenario 2: Loss of instrument air resulting in a plant trip.

(AOP 2-28 and EOP E-0)

Scenario 3: Loss of all AC power.

(Use of EOPs ECA-0.0, ES-0.1 and AOP 2-90-1)

Scenario 4: Fire in emergency diesel generator room (resulting in a minimum TS crew remaining in the control room) followed by a steam generator tube rupture concurrent with a steam line break.

(Use of AOPs 2-10, 2-25 and EOPs E-2, E-3)

Scenario 5: Failure of the plant computer prior to a plant trip with a loss of all feedwater.

(Use of EOPs E-0, ES-0.1 and FR-H.1)

6.3 Observations:

a. Both crews observed were capable of utilizing the procedures to mitigate the accidents. When required, there was no hesitancy to enter the Function Restoration Procedures.

b. One scenario with each crew began with a fire in the plant which required the response of the fire brigade. The SOS is the fire brigade leader and the ACRO is a fire brigade member. This

resulted in the minimum TS crew (consisting of the PSS, CRO and NSE) in the control room. Both crews were able to appropriately implement the procedures restoring the plant to a stable condition.

c. The team noted that there were variations among the crews with respect to the methodology used when implementing the AOPs concurrently with the EOPs. During some scenarios, the concurrent implementation of AOPs and EOPs resulted in the PSS and the SOS simultaneously providing direction to the control board operators. From discussions with the crew members, it was determined that the policy is dependent on the preference of the PSS. The team stated that a consistent policy of how the AOPs and EOPs should be implemented concurrently appeared necessary to prevent simultaneous direction being given by two supervisory individuals to one operator.

The licensee agreed to evaluate the circumstances which resulted in the above condition of concurrent EOP and AOP activities and implement appropriate actions.

The weakness identified in paragraph 6.3.c will be tracked as Item No. 50-309/89-81-07.

d. The team observed that a rail in front on the electric panel (installed to prevent inadvertent contact with the controls) blocked the operators view of some of the indicators. The rail had been reviewed for human factor considerations prior to its installation.

The facility agreed to re-evaluate the design and placement of the rail.

No further NRC followup is required.

e. When an EOP was revised, the required operator training had been determined by the ATMOD. Per discussions with the Training Manager, it was determined that formal criteria had not been utilized to determine when the training should be accomplished (i.e., before the change is issued, after it is issued, or is training required at all) and the environment in which the training would be most appropriate (i.e., classroom, simulator, read and sign while on shift). However, criteria had recently been established in a joint effort between the Operations and Training Departments.

The licensee agreed to including the criteria in an operations department procedure to ensure consistent implementation.

The weakness identified in paragraph 6.3.e will be tracked as Item No. 50-309/89-81-08.

f. The Maine Yankee simulator was the first simulator in the country to be certified in accordance with NRC regulations (specifically 10 CFR 55.45(b)(iii). As part of the certification process, the facility established annual simulator fidelity evaluations. During the inspection, the team identified several differences between the simulator and the control room. No significant differences were identified by the team which had not been previously documented in the licensee's simulator fidelity evaluation.

The licensee's annual simulator fidelity evaluation included (1) a survey of the operations department personnel and (2) a report which outlined the approved differences in the simulator. The annual evaluation should be a valuable aid in enhancing the usefulness of the simulator as an operator training tool.

7.0 ON-GOING EVALUATION OF THE EMERGENCY PROCEDURES

PURPOSE: Determine if the licensee has established a long term evaluation program for the emergency procedures as recommended in Section 6.2.3 of NUREG-0899.

7.1 A review of the Maine Yankee system of on-going evaluation and revision of EOPs was conducted to assess whether the licensee's current system could ensure high quality EOPs over time. The system was evaluated on the basis of a number of elements, including but not limited to:

a. the completeness of a method for ensuring that changes in plant design, technical specifications, technical guidelines, the writer's guide, referenced plant procedures, and the control room are promptly reflected in the EOPs;

b. completeness of a method for revising the EOPs to reflect findings from operational experience and use, training experience, simulator exercises, and control room and plant walkdowns;

c. the timeliness of revisions to the EOPs when incorrect or incomplete information is identified;

d. the adequacy of the system for determining necessary training, validation, and verification, when procedures are changed or revised;

e. the adequacy of basis documents, including technical guidelines and writer's guide;

f. the adequacy of verification and validation; and

g. the effectiveness of a system of soliciting and utilizing feedback from procedure users and other cognizant personnel.

The team determined that most aspects of the Maine Yankee system were well done. Specifically, the use of a combined writer's guide for all operating procedures, the development of an EOP Steering Committee to address necessary EOP revisions and the inclusion of Training Department representation on that committee. However, several important components of on-going EOP maintenance were considered deficient, with a potential for degradation of EOP quality and integrity over time. These areas of concern are detailed in the following paragraphs.

7.2 Writer's Guide:

Because of the important information contained in cautions, it is particularly important that they be emphasized in a way that attracts operator attention and distinguishes cautions from procedural steps and notes. The Maine Yankee writer's guide does not define a method of emphasis for cautions that clearly distinguishes them from the less significant information contained in notes. In addition, the Maine Yankee writer's guide does not address any aspect of flowchart format, although this format is used within the EOP set.

The facility agreed to review the writer's guide based on the comments of the inspection team and to revise the writer's guide, as appropriate.

The weaknesses identified in paragraph 7.2 will be tracked as Item No. 50-309/89-81-09.

7.3 Changes to the Procedures:

In order to assure that revisions to the procedures are appropriate, accurate, and consistent, the system for changing procedures is expected to be complete and consistent. The system used by Maine Yankee for revising EOPs has three weaknesses which may reduce the quality of the EOPs over time.

a. Two programmatic defects contribute to scattered responsibility for the EOPs and eliminate a central control source for any EOP.

(1) While individual crews are assigned responsibility for a subset of the EOPs, this responsibility extends only to the biennial review process and some of the changes initiated by the operations department; changes may be incorporated without the assigned crew being involved. Therefore, the attempt to control procedures by crew assignments does not address all aspects of procedure changes.

(2) The operations department holds many of the recommended changes until the next revision of a specific procedure is being processed. Because the EOP coordinator is not always made aware of these changes, the effectiveness of the EOP coordinator is reduced.

b. Two programmatic faults lead to discouragement of operator input on EOP changes and improvement.

(1) Individuals who want to initiate a change to the EOPs are required to provide a rewrite of the step(s) they wish to change, as well as complete all research on technical and format implications of the change. This burden on the initiator of a change greatly discourages operators from suggesting improvements to the procedures, thereby depriving the EOP change process of certain recommendations based on operational experience.

(2) When an individual suggests a change to an EOP, no acknowledgment of the acceptance or rejection of the change is provided. This lack of response with respect to the resolution of proposed changes also discourages operator input.

c. No method exists for easy re-issuance of EOP pages with typographical error corrections or minor format revisions. This results in errors in the EOPs in use that are not revised for a long period of time. EOPs containing such errors suggest a lack of concern over the quality of the procedures that could lead to less confidence in overall EOP integrity by operators.

Currently, revision of EOPs due to changes in procedures referenced by or referencing the EOPs, changes in plant labeling, or revision of standard steps is dependent upon the memory of the EOP coordinator. No system of tracking cross-references exists to assure that these changes are promptly and accurately reflected in the EOPs, increasing the likelihood that the procedures will degrade in accuracy over time.

The weaknesses identified in paragraph 7.3 will be tracked as Item No. 50-309/89-81-10.

7.4 Verification and Validation Program:

A thorough and complete verification and validation of new procedures, and changes to those procedures, will ensure that: (1) adherence to the basis documents (i.e., the technical guidelines and the writer's guide) is maintained; (2) the language and level of information is appropriate for the user; (3) there is a correspondence between the procedures and the plant hardware; and (4) the procedures will function as intended.

a. While it appeared that the procedures functioned as intended (i.e. validated), this review of the Maine Yankee EOPs indicated that not all of the above objectives had been met (i.e. verified). Indications of weaknesses in the verification program are: (1) the writer's guide defines "go to" and "refer to" as the terms to be used for transitions and references to procedures; in a number of the procedures, "per" was used to indicate references; (2) throughout the procedures, cautions and notes contain action steps, in contrast to writer's guide direction that no actions were to be included in cautions and notes; and (3) numerous instances of differences between the procedures and the plant labeling.

   To ensure that all aspects of the writer's guide, including those items identified above, are reflected in the final product, a mechanism is needed to guide the verification process, such as a detailed checklist of writer's guide items. To assure that the procedures accurately reflect plant nomenclature, verification must include in-plant walkdowns of the procedures. Maine Yankee lacks both of these elements in their verification program.

b. Decisions about necessary reverification and revalidation are made by a committee composed of engineering and operations representatives. The absence of committee membership by the training department as a source of expertise on observed operator use of the procedures may deprive this part of the process of valuable input.

The weaknesses identified in paragraph 7.4 will be tracked as Item No. 50-309/89-81-11.

8.0 EOP USER INTERVIEWS

PURPOSE: To augment and clarify findings from other inspections tasks through interviews with procedures users, developers, trainers, and other appropriate plant staff.

Interviews were conducted with fourteen Maine Yankee personnel; including reactor operators, senior reactor operators, plant operators, design engineers, simulator training instructors, QA representatives, and facility management. The interviews were used both to corroborate and augment inspection findings. The specific results of the interviews are reflected in the appropriate sections of the inspection report.

9.0 MANAGEMENT MEETINGS

9.1 PRE-EXIT MEETING (July 27, 1989)

The details of the inspection findings were discussed with facility management at the working pre-exit meeting. The purpose of the pre-exit was:

(1) to ensure that the facility understood all of the findings;

(2) to give the facility a chance to comment on the findings, as appropriate; and

(3) to obtain commitments from the facility with respect to correction of the valid findings.

9.2 EXIT MEETING (July 28, 1989)

The major inspection findings were reviewed and the remainder of the findings were summarized. The Plant Manager reconfirmed the facility's commitments with respect to the deficiencies noted.

10. PERSONNEL CONTACTED:

Licensee

R. Blackmore, Manager, Operations Department
#* E. T. Boulette, Vice President Operations, Plant Manager
#* A. J. Cayia, Assistant Manager, Operations Department
#* R. N. Chase, Quality Programs - Project Engineer
#* R. Crosby, Senior Licensing Engineer
* C. D. Frizzle, Maine Yankee - President
#* J. H. Garrity, Vice President Licensing & Engineering
#* R. R. Lawton, Jr., Manager, Safety Engineering & Operations Support
#* S. E. Nichols, Licensing Supervisor
#* J. A. Niles, Plant Shift Supervisor
#* A. R. Shean, Manager, Training
#* G. N. Stowers, Staff Supervisor OSD (EOP Coordinator)
#* G. D. Whittier, Manager, Nuclear Engineering & Licensing

State

#* P. J. Dostie, State Nuclear Safety Inspector

NRC

#* R. J. Freudenberger, Maine Yankee Resident Inspector
#* G. S. Galletti, Human Factors Engineer, NRR
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#* B. S. Norris, Senior Operations Engineer, DRS, RI
#* W. H. Regan, Jr., Chief, Human Factors Branch, NRR

NRC Contractors

#* C. M. Meeker, Systems Engineer, COMEX
#* R. D. Warner, Licensing Examiner, PNL

Attended Pre-Exit Meeting on July 27, 1989
* Attended Exit Meeting on July 28, 1989

ATTACHMENT 1

DOCUMENTS REVIEWED

Document Number	Document Title	Rev No./ Date
WESTINGHOUSE OWNERS GROUP:		
---	WOG Emergency Response Guidelines	1
---	WOG Emergency Response Guidelines	1A
EMERGENCY OPERATING PROCEDURES:		
E-0	Emergency Shutdown from Power or Safety Injection	6
ES-0.0	Event Rediagnosis	0
ES-0.1	Reactor Trip Response	5
ES-0.2	Natural Circulation Cooldown	5
ES-0.3	Natural Circulation Cooldown with Steam Voids in Vessel (with PITS)	5
ES-0.4	Natural Circulation Cooldown with Steam Voids in Vessel (without PITS)	4
ECA-0.0	Loss of All AC Power	4
ECA-0.1	Loss of All AC Power Recovery, SI Not Required	2
ECA-0.2	Loss of All AC Power Recovery, SI Required	2
E-1	Loss of Primary or Secondary Coolant	4
ES-1.1	SI Termination	2
ES-1.2	Post-LOCA Cooldown and Depressurization	2
ES-1.3	Transfer to Recirculation Cooling (RAS)	0
ES-1.4	Establishing Hot Leg Injection	1
ECA-1.2	LOCA Outside Containment	1
E-2	Steam Line Break	1
E-3	Steam Generator Tube Rupture	3
ES-3.1	Post-SGTR Cooldown Using SG Backfill	2
ES-3.3	Post-SGTR Cooldown Using Steam Dumps	3
FUNCTIONAL RESTORATION PROCEDURES:		
F-0.1	Subcriticality Status Tree	0
FR-S.1	Nuclear Power Generation/ATWS	0
FR-S.2	Loss of Shutdown Margin	0
F-0.2	Core Cooling Status Tree	1
FR-C.1	Inadequate Core Cooling	3
FR-C.2	Degraded Core Cooling	2
FR-C.3	Saturated Core Cooling	0
F-0.3	Heat Sink Status Tree	0
FR-H.1	Loss of Secondary Heat Sink	3
FR-H.2	Steam Generator Overpressure	3
FR-H.3	Steam Generator High Level	0
FR-H.4	Loss of Normal Steam Release Capabilities	2
FR-H.5	Steam Generator Low Level	0

ATTACHMENT 1 (cont.)

DOCUMENTS REVIEWED

Document Number	Document Title	Rev No./ Date
FUNCTIONAL RESTORATION PROCEDURES (cont.):		
F-0.4	Integrity Status Tree	0
FR-P.1	Imminent Pressurized Thermal Shock Condition	3
FR-P.2	Anticipated Pressurized Thermal Shock Condition	1
F-0.5	Containment Status Tree	0
FR-Z.1	High Containment Pressure	2
FR-Z.2	Containment Flooding	0
FR-Z.3	High Containment Radiation Level	0
F-0.6	Inventory Status Tree	1
FR-I.1	High Pressurizer Level	1
FR-I.2	Low Pressurizer Level	0
FR-I.3	Voids in Reactor Vessel	2
ABNORMAL OPERATING PROCEDURES:		
AOP 2-2	Loss of Condenser Vacuum	13
AOP 2-3	High Energy Line Break (HELB) Isolation System Actuation	6
AOP 2-7	Excess Steam Demand	11
AOP 2-10	Loss of Pressure Control/RCS Leak	19
AOP 2-11	Loss of Instrument Bus	9
AOP 2-12	BUS 5 and/or BUS 6 Under Voltage	5
AOP 2-13	Loss of Vital DC BUS	0
AOP 2-16	Partial Loss of Load	5
AOP 2-17	Post-Accident Hydrogen Control	10
AOP 2-20	Reactor Regulating System Failure	8
AOP 2-21	Misaligned (Dropped) CEA	24
AOP 2-22	Uncontrolled Reactivity Addition	10
AOP 2-23	Inoperable CEA	4
AOP 2-25	High Radiation Levels	15
AOP 2-26	Abnormal Loss of Refueling Cavity Level (CRS-1)	2
AOP 2-27	Corrosive Contaminants in the Steam Generators	14
AOP 2-28	Loss of Control Air	13
AOP 2-29	Loss of Containment Control Air	7
AOP 2-30	Loss of Containment Integrity	14
AOP 2-31	Service Water Header Rupture	8
AOP 2-32	Loss of SCC	13
AOP 2-33	Loss of PCC	12
AOP 2-34	Loss of Core Decay Heat Removal Capability While Shutdown	10
AOP 2-35	Refueling Accidents	10
AOP 2-36	Response to Safeguards Annunciators, MCB and Diesel Generators	16

ATTACHMENT 1 (cont.)

DOCUMENTS REVIEWED

Document Number	Document Title	Rev No./ Date
ABNORMAL OPERATING PROCEDURES (cont.):		
AOP 2-37	Non-Safeguards Annunciators	1
AOP 2-38	Response to PAB Annunciators	0
AOP 2-39	Response to Annunciators: Water Treatment, H2 Panel, Auxiliary Boiler, and P-2C Local Panel	0
AOP 2-40	High Wind, Hurricane or Tornado	6
AOP 2-41	Earthquake	11
AOP 2-42	Flooding	6
AOP 2-43	Control Room Isolation	3
AOP 2-44	Control Room Evacuation	13
AOP 2-45	Emergency Loop Shutdown	12
AOP 2-46	Loss of Offsite Power While Shutdown or Post Trip	16
AOP 2-90-0	Plant Fire Assessment	3
AOP 2-90-1	Plant Shutdown Plan for fire in Control Room, Control Room Cable Chase, Protected Cable Vault, Cable Tray Room (Protected), Protected Switchgear Room &/or Station Blackout	9
AOP 2-90-2	Plant Shutdown Plan for Fire in Containment, Spray Pump Area, Steam Feed Valve House, Containment Electrical Penetration South EL. 46'	3
AOP 2-90-3	Plant Shutdown Plan for Fire in PAB EL. 11'	5
AOP 2-90-4	Plant Shutdown Plan for Fire in PAB EL. 21'	3
AOP 2-90-5	Plant Shutdown Plan for Fire in Reactor MCC EL. 21' & 33', and Containment Electrical Penetration Room North EL. 46'	6
AOP 2-90-6	Plant Shutdown Plan for Fire in Emergency Feed Pump Room	4
AOP 2-90-7	Plant Shutdown Plan for Fire in Turbine Hall, Circulating Water Pump House	2
AOP 2-90-8	Plant Cooldown from Alternate Shutdown Panel (ASP)	6
QUALITY ASSURANCE IMPLEMENTING PROCEDURES		
0-03-1	Control of Activities Affecting Permanent Design Changes	2
0-05-1	Procedure Preparation, Classification, Format, Use and Adherence	3
0-05-2	Procedure Writers' Guide	3
0-06-4	10 CFR 50.59 Determination	2
0-06-4	Emergency Operating Procedure Maintenance Program	1
0-10-1	Inspection Program	3
0-14-2	Temporary Modification Control	

ATTACHMENT 1 (cont.)

DOCUMENTS REVIEWED

Document Number	Document Title	Rev No./ Date
PRIMARY OPERATING PROCEDURES:		
1-12-6	Control Room Ventilation	8
OPERATIONS DEPARTMENT CLASS C PROCEDURES		
1-200-7	System & Component Labeling	2
1-200-9	Independent Operating Procedure Review	2
1-200-10	Conduct of Operations	7
1-200-13	Operating Dept. Interface with Design Change Activities	3
20-201	EOP Verification	0
20-202	EOP Validation	0
OPERATIONS DEPARTMENT CLASS D PROCEDURES:		
1-300-2	Maine Yankee Operational Information Posting System	4
ADMINISTRATIVE MANUAL:		
F.2	Supervisory Guidelines, Table of Organization	1

LESSON PLANS:

RO-L-8.1 Emergency Shutdown from Power or Safety Injection and Response
RO-L-8.5 Loss of All AC Power and Recovery
RO-L-8.7 Subcriticality Challenge and Recovery
RO-L-8.9 Heat Sink Challenge and Recovery
RO-L-8.12 Containment Challenge and Recovery
RO-L-8.23 Introduction to Emergency Operating Procedures, Emergency Operating Procedures Users' Guide

OTHER DOCUMENTS:

1. QA Evaluation Report No. 89E-015, Maintenance of Emergency Operating Procedures
2. Audit of Maine Yankee Emergency Operating Procedures, Final Report, May 1989, General Physics Company
3. EOP Audit Action Plan, Status of Issues Identifies during Internal and General Physics Audits, 7/14/89
4. EOP Philosophy Steering Committee Minutes, 6/29/89
5. Plant Operations Review Committee Charter
6. Plant Operations Review Committee Subcommittee Charter - Procedure Review
7. Guidelines for Procedure Development & Review, Rev 0, 4/16/87
8. Simulator Exercise Guide, MY-T-61-84, Rev 2

ATTACHMENT 2

DEFICIENCIES IDENTIFIED

The deficiencies noted below were all discussed with the facility staff prior to the exit meeting. All comments were understood and accepted by the facility. For some of the comments, additional facility response is included.

Generic:

1. Valve lists do not exist for the various ESFAS actuations (SIAS, CIS, etc.)

2. When an alarm is referenced in the procedure, addition of the alarm window number in the procedure would aid the operator.

3. The definition of harsh containment is not included within the EOPs.

4. When equipment is in the overhead, a ladder or other means of access is needed.

5. Some of the procedures direct transitions to steps or procedures that no longer exist.

E-0: Emergency Shutdown from Power or Safety Injection

1. Step 2, pg 3:
The AER column allows for one stuck rod; the RNO column does not give this latitude.

2. Step 8, pg 5:
The AER column does not define whether the minimum flow is for each loop of for total flow.

3. Step 16, pg 8:
This step places severe limitations on the allowed pump configurations.

4. Step 17g, pg 9:
This step is redundant.

5. Step 13.b.2, pg 10:
The operators do not perform this step as written; instead, they verify the yellow light lit.

ES-0.1: Reactor Trip Response

1. Step 13.a.2:
Guidance is needed to ensure the fan is running.

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

2. Step 9:
P-10B is incorrect, should be P-9B.

3. Step 11 RNO:
Procedure does not allow operation of other pumps if desired combinations cannot be achieved.

4. Attachment B, Step 12:
FIC-1301 is incorrect, should be FIC-1303.

ES-0.2: Natural Circulation Response

1. Steps 23 and 24:
Procedure has the operator check if RCS temperature may be reduced, but does not provide for stopping of the cooldown.
Facility Response: The Operations Department will investigate. Also, they will check ES-0.3 and ES-0.4.

ES-0.3: Natural Circulation Cooldown with Steam Voids in Vessel (w/PITS)

1. Step 2, RNO a:
Why is 44°F subcooling required?
Facility Response: Will ensure step is correct or delete if unnecessary.

2. Step 5, RNO g:
This step does not direct a return to the beginning of Step 5.

ES-0.4: Natural Circulation Cooldown with Steam Voids in Vessel (w/o PITS)

1. Step 1:
A note is needed to address possible rapid decrease in PZR level when RCPs are started.

ECA-0.0: Loss of All AC Power

1. Step 5, RNO b.1:
The position of MS-T-163 is difficult to verify.

2. Step 23, RNO b:
The operator performing the walkdown did not know how to perform this task, the appropriate procedure is not referenced.

3. Step 27.a, RNO:
The task appears to rely on the operation of interlocks?

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

ECA-0.1: Loss of All AC Power Recovery, SI Not Required

1. Step 4.c:
   The reference to the power supply is incorrect. It should be MCC-7a and MCC-8a.

2. Step 13:
   LD-7 and LD-8 are not checked open, they may have been closed in ECA-0.0.

ECA-0.2: Loss of All AC Power Recovery, SI Required

1. Step 4:
   This step does not identify the standby CS pump (P-61S) as a possible LPSI pump.

E-2: Steam Line Break

1. Step 5, RNO, pg 7:
   (a) Does not include an option to feed directly from the PWST.
   (b) No procedure exists for sluicing from the PWST to the DWST.

E-3: Steam Generator Tube Rupture

1. Step 4, pg 5:
   Step directs the clearing of "White tags" from isolation valve breakers and disconnects, but there is no similar step removing the Orange danger tags on the RCS loop isolation valves. These tags must be removed prior to conducting step 4.d., which strokes all RCS loop isolation valves.

2. Step 10.d, pg 8:
   Charging Header flow controller "FIC-212/CH-F-38" is labeled incorrectly.

3. Step 12, RNO a, pg 10:
   Should read "GO TO STEP 13" vice 14.

4. Step 14, RNO b.(4) and RNO c, pg 10 & 11:
   Title of AOP 2-46 is incorrect.

5. Step 15, RNO d, pg 12:
   Step does not provide a refererce to a procedure to complete the actions specified.

6. Step 17, RNO c.(3), pg 14:
   This step does not alert the Control Room personnel that taking control at the ASP will produce an instrument alarm. (T-1-7).

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

7. Step 21, Caution 2, pg 18:
The caution prohibits operation of the PORV's if Quench Tank pressure exceeds 75 psig. The same caution in the ERGs only alerts the operators to the fact that the Quench Tank may rupture and create harsh containment conditions.

8. Step 23, RNO a, pg 20:
This step directs the operator to "Return to Step 17", but does not direct the operator to the caution prior to Step 17.

9. Step 40.a.(1), pg 33:
"FW-M-366" is incorrect, should be "FW-M-336".

10. Attachment C, Step (12), pg 37:
(a) The second step directs the operator to trip the P-2C Recirculation control switch. This switch is no longer installed, the function is now being performed by the P-2C Recirculation Controller.

(b) The P-2C pump's discharge temperature indicator TI-1311 is located ten feet above the walking deck and cannot be read with the current access.

ES-3.1: Post-SGTR Cooldown Using SG Backfill

1. Step 3.b, pg 3:
This step directs the adjustment only of EFW flow. There are conditions whereby Main Feedwater pumps may still be operating and the condition is not addressed.

2. Step 7, RNO a. and b, pg 5:
Reference to the note prior to Step 8 is missing.

3. Step 11.b, pg 8:
"PCO-103" is incorrect, should be "PIC-103".

4. Step 19, pg 13:
Section 4 is incorrect reference, should be 6.5.

5. Attachment B, Step 4, 9, and 14, pg 16:
No wrench is maintained in the locker along with the pressure gages that are instailed in this step. The wrench would facilitate the performance of this step.

ES-3.3: Post-SGTR Cooldown Using Steam Dumps

1. Step 1.a, pg 2:
The working of this step differs from the identical step in EOP ES-3.1. the working of this step should be consistent in these two procedures.

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

2. Step 12, RNO e, pg 10:
"9" is incorrect, should be "10".

3. Step 21.b.(1)(b), pg 15:
This step uses the term "HPSI header supply valve breakers" while EOP ES-3.1, Step 17.d.(1)(b), on page 13, uses the term "HPSI header isolation valve ACBs."

4. Step 23, RNO b, pg 17:
"18" is incorrect, should be "21".

5. Step 24, pg 17:
"Sect. 4" is incorrect, should be "Section 6.5" since that is the commencement of RHR recirculation.

FR-C.1: Inadequate Core Cooling

1. WOG Step 3:
The step is missing.

FR-C.2: Degraded Core Cooling

1. Attachment B, Step 6:
CH-A-156 is incorrect, should be CH-P-156.

F-0.3: Heat Sink Status Tree

1. The actual flow rates that define the "MINIMUM FOR DECAY HEAT REMOVAL" are not be entered in the top decision block.

2. The "1000 PSIG" value used in block #3 does not agree with the value specified in the referenced recovery procedure, FR-H.2.

FR-H.1: Loss of Secondary Heat Sink

1. Step 1, RNO a, pg 2:
This information would be more appropriate as a caution before the step.

2. ATTACHMENT A, Step (2), pg 20:
The installed tags on valves CD-26 and CD-27 are switched.

3. ATTACHMENT A, Step (3), pg 21:
Valve CD-123 is incorrectly identified twice in this step.

FR-H.2: Steam Generator Overpressure

No comments.

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

FR-H.3: Steam Generator High Level

No comments.

FR-H.4: Loss of Normal Steam Release Capabilities

1. Step 1, RNO c, pg 3:
The steps to start the AFW Pump (P-25B) are sequenced inefficiently. The steps require the operator to start the evolution on the second platform, then proceed to the first platform, then go to the third platform, and finally back to the first platform. A more efficient sequence of steps may be possible.

FR-I.2: Low Pressurizer Level

1. Step 6:
This step challenges the pressurizer heater interlock.

AOP 2-2: Loss of Condenser Vacuum

1. Step 4.4.2:
The correct title of OP 1-2-1 is Investigation and Evaluation for Recovery from an Unscheduled Reactor Trip.

AOP 2-3: High Energy Line Break (HELB) Isolation System Actuation

1. Section 2.0, pg 1:
There is important information contained in the discussion section. This information would be useful in the body of the procedure at the appropriate location.

AOP 2-7: Excess Steam Demand

1. Step 5.4.1:
This step does not appropriately direct a transition to E-0.

AOP 2-12: BUS 5 and/or BUS 6 Under Voltage

1. Step 4.2.4:
This step does not appropriately direct a transition to E-0.

AOP 2-21: Misaligned (Dropped) CEA

1. Several abbreviations are used in this procedure that are not defined in the Procedure Writers Guide (0-05-2) paragraph 6.1.18.b(4):

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

Step 2.6.3, pg 1, "KW/FT" and "FRT".
Step 2.8.1.a, pg 2, "S/O".
Step 5.2.1.c, pg 5, "SOT".
Step 5.2.9, pg 7, "MOD" and "RE".
Step 5.2.10, pg 7, "INCA".

2. Step 5.3.7. Caution and Note, pg 9:
The Caution and Note do not appear on the page which contains the step that they apply to in accordance with the Procedure Writers Guide, paragraph 6.1.10.b.(6).

AOP 2-23: Inoperable CEA

1. Step 4.1, pg 1:
The step specifies attempting withdrawal of the CEA as the first part of the immediate action. There are possible situations where inserting the CEA would be the more appropriate action.

AOP 2-25: High Radiation Levels

1. General Comment:
The physical condition of the procedure in the control room is poor and needs repair.

2. Step 6.8:
Reference to the BWST RMS should be deleted since the instrument has been removed.

AOP 2-27: Corrosive Contaminants in the Steam Generators

1. Step 5.5.4, pg 7:
There is confusion among operators as to the S/G levels that are referred to in this step. Some operators thought the 10% WR was supposed to be 10 inches not percent wide range and the 25% figure is not defined as wide range or narrow range.

2. ATTACHMENTS A, B, AND C, pg 11, 12, & 14:
These graphs do not conform to the Procedure Writer's Guide, paragraph 6.1.14.a.

AOP 2-33: Loss of PCC

1. General Comment:
An evaluation of the prompt isolation of some PCC loads may provide additional time to correct a PCC system problem, or may prevent a problem resulting from a loss of PCC cooling.

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

AOP 2-36: Response to Safeguards Annunciators, MCB and Diesel Generators

No specific procedural comments; see paragraph 5.4 of the report for comments relative to the use of the ARPs.

AOP 2-37: Non-Safeguards Annunciators

No specific procedural comments; see paragraph 5.4 of the report for comments relative to the use of the ARPs.

AOP 2-38: Response to PAB Annunciators

No specific procedural comments; see paragraph 5.4 of the report for comments relative to the use of the ARPs.

AOP 2-39: Response to Annunciators: Water Treatment, H2 Panel, Auxiliary Boiler, and P-2C Local Panel

No specific procedural comments; see paragraph 5.4 of the report for comments relative to the use of the ARPs.

AOP 2-43: Control Room Isolation

1. Step 5.2:
   Fan FN-15 is required to be checked locally, a separate step in the procedure appears warranted.

AOP 2-44: Control Room Evacuation

1. Discussion Section & Step 5.65:
   The discussion section states that the normal/alternate switches are to be left in normal; Step 5.65 directs the operator to select alternate on the PAB emergency panel power selector switch. The contradiction needs to be clarified.

2. Note after Step 3.0:
   Directs the operator to go to 2-90-1; a transition to ECA-0.0 appears warranted.

3. Step 5.5.5:
   The operator is directed to determine sub-cooling but is not given guidance as to how it should be accomplished.

4. Step 5.5.6:
   The breaker control power fuses are note conspicuously identified as to function; i.e., "closing power" or "trip power" vice "UC" or "UT."

ATTACHMENT 2 (CONT.)

DEFICIENCIES IDENTIFIED

5. Caution after Step 5.7.2:
Cautions should be located before the step.

AOP 2-90 SERIES:

1. Ventilation drawing attachments on all the 2-90 series AOP's are of poor quality.

AOP 2-90-0: Plant Fire Assessment

1 Step 6.1:
(a) Zone 12 does not show up on fire protection zone mimic.
(b) All of the zones shown on the fire protection zone mimic do not appear on the list in step 6.1.
(c) Some of the zones on the mimic are listed in the symptom sections of other 2-90 series procedures but are not on the list in step 6.1.

AOP 2-90-1: Plant Shutdown Plan for fire in Control Room, Control Room Cable Chase, Protected Cable Vault, Cable Tray Room (Protected), Protected Switchgear Room &/or Station Blackout

1. Step 6.4.15:
CPU-23 is not required to be checked because ECCS verifies alignment. The inspector found the valve positioned properly but the chain did not secure the valve properly and the valve handle was removable.

AOP 2-90-6: Plant Shutdown Plan for Fire in Emergency Feed Pump Room

1. Step 4.2: references figures which are not provided in this procedure.

AOP 2-90-8: Plant Cooldown from Alternate Shutdown Panel (ASP)

1. Section 2.0, bullet #5:
If the MS line flooding method is used and the lines are not pinned or supported, a warning about the possibility of line breakage appears warranted.

2. Step 5.1:
Instructions are not provided as to how head temperature is to be obtained.

3. Step 6.1.3:
It's not possible for operators outside the control room to tell if 3 out of 4 RCS pressure channels are less than 1685 PSIG.

5. Step 6.3.1:
This step is redundant to step 6.1.5.A.4.

ATTACHMENT 3

ABBREVIATIONS & ACRONYMS

AC	Alternating Current
ACRO	Assistant Control Room Operator
ADV	Atmospheric Dump Valve
AER	Action/Expected Response (left-hand column of EOPs)
AFW	Auxiliary Feedwater
AO	Auxiliary Operator
AOP	Abnormal Operating Procedures
ARP	Alarm Response Procedure
ATMOD	Assistant to the Manager, Operations Department
ATWS	Anticipated Transient Without Scram
BAST	Boric Acid Storage Tank
CE	Combustion Engineering
CEA	Control Element Assembly
CFR	Code of Federal Regulations
CRO	Control Room Operator
CRS	Control Room Supervisor
CS	Containment Spray
CST	Condensate Storage Tank
CV	Control Valve
DC	Direct Current
DCRDR	Detailed Control Room Design Review
EDG	Emergency Diesel Generator
EFCV	Excess Flow Check Valve
EFW	Emergency Feedwater
EOP	Emergency Operating Procedures (as described in RG 1.33)
EP	Emergency Procedures (includes EOPs/AOPs/referenced procedures)
ERG	Emergency Response Guidelines
ESF	Engineered Safeguards Feature
ESFAS	Engineered Safeguards Features Actuation System
F	Degrees Fahrenheit
F/m	Degrees Fahrenheit per minute
FRP	Functional Restoration Procedure (a subset of the EOPs)
FW	Feedwater
GTG	Generic Technical Guidelines
HPSI	High Pressure Safety Injection
I&C	Instrumentation & Control
INPO	Institute of Nuclear Power Operations
LCO	Limiting Condition of Operation
LOCA	Loss of Coolant Accident
LPSI	Low Pressure Safety Injection
MOV	Motor Operated Valve
NLO	Non-Licensed Operator
NRC	Nuclear Regulatory Commission
NRV	Non-Return Valve
NSE	Nuclear Safety Engineer

ATTACHMENT 3 (cont.)

ABBREVIATIONS & ACRONYMS

OG	Owners' Group
PAB	Primary Auxiliary Building
PGP	Procedure Generation Package
PORV	Power Operated Relief Valve
PSTG	Plant Specific Technical Guidelines
PSS	Plant Shift Supervisor
PZR	Pressurizer
QA	Quality Assurance
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RG	Regulatory Guide
RO	Reactor Operator
RNO	Response Not Obtained (right-hand column of EOPs)
RPS	Reactor Protection System
SER	Safety Evaluation Report
SFAC	Safety Function Acceptance Criteria
SOS	Shift Operating Supervisor
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
STA	Shift Technical Advisor
TBD	Technical Basis Document
TDB	Technical Data Book
TS	Technical Specifications
V&V	Validation & Verification
WG	Writers' Guide

ATTACHMENT 4

LIST OF WEAKNESSES IDENTIFIED AS NEEDING CORRECTION

Item No.	Description	Para. No.
50-309/89-81-01	Guidance that the EOPs and AOPs were not to be considered as verbatim compliance documents, but as a guide.	2.0
50-309/89-81-02	Clarification of relationship between ECA-0.0 and AOP 2-90-1.	4.2.b
50-309/89-81-03	Incorporation of harsh environment effects on instrumentation outside of the containment.	4.2.d
50-309/89-81-04	Resolution of generic procedural weaknesses identified within the text of the report and technical concerns identified in Attachment 2 of the report.	5.2
50-309/89-81-05	Correction of plant weaknesses identified during the procedure walkdowns; i.e., labeling deficiencies and control of operator aids.	5.3
50-309/89-81-06	Establishment of policy with respect to how the ARPs are to be entered and used.	5.4
50-309/89-81-07	Establishment of policy with respect to how the AOPs and EOPs are to be implemented concurrently.	6.3.c
50-309/89-81-08	Development of a procedure delineating the criteria for determining training requirements for revisions to EOPs.	6.3.e
50-309/89-81-09	Correction of weakresses identified in the Maine Yankee writer's guide.	7.2
50-309/89-81-10	Establishment of a program for that addresses the process for changes to procedures; including responsibility, mechanism for recommending changes, and system for issuance of pages with minor administrative errors.	7.3
50-309/89-81-11	Strengthening of the verification and validation program.	7.4