

Public Service
Electric and Gas
Company

R. Edwin Selover
Vice President and
General Counsel

80 Park Plaza, Newark, NJ 07101 201-430-6450 Mailing Address: P.O. Box 570, Newark, NJ 07101

July 22, 1983

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
EW/W359
Washington, D. C. 20555

Re: Notice of Violation and Proposed
Imposition of Civil Penalties
Docket Nos. 50-272, 50-311,
License Nos. DPR-70, DPR-75
EA 83-24

Dear Mr. DeYoung:

This is to supplement the Company's July 6, 1983 response to the letter from the NRC dated May 5, 1983 transmitting a Notice of Violation and Proposed Imposition of Civil Penalties in the aggregate amount of \$850,000, relating to events which occurred on February 22 and February 25, 1983 at Unit No. 1 of the Salem Generating Station.

We respectfully submit that the NRC's Generic Letter 83-28, dated July 8, 1983, entitled "Required Actions Based on Generic Implications of Salem ATWS Events" reinforces the appropriateness of the relief requested in the Company's July 6, 1983 letter, in several respects:

1. Generic Letter 83-28 reconfirms that the

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major items dealt with in the Notice of Violation are industry-wide; indeed, it requires all holders of operating licenses to take remedial measures to deal with such matters.

2. All the major elements of the Action Program set forth in Generic Letter 83-28 had already been taken or committed to by the Company prior to the issuance of the Notice of Violation, so that the proposed civil penalty is not necessary to accomplish its stated purpose, namely, "to assure that PSE&G will fully implement lasting corrective actions that address the violations identified in [the Notice of Violation]".

3. Many elements of the Action Program set forth in Generic Letter 83-28 were either developed by the Company alone or by the Company and the NRC Staff together, demonstrating the Company's initiative in this regard.

4. The comprehensiveness of PSE&G's responses to the Salem incident is demonstrated by the fact that the Action Program set forth in Generic Letter 83-28 does not include any major item applicable to the Salem units which has not already been taken or committed to

by the Company. We are undertaking a detailed review of Generic Letter 83-28 to determine what, if any, further action may be required by the Company in response thereto. However, the principal requirements have been addressed, and the NRC's safety evaluation for the restart of Salem 1 (NUREG-0995) specifically adopts the Company's corrective action plan as the basis for permitting the plant to be restarted, which seems to confirm the adequacy of the Company's plan in addressing these issues.

5. The promptness of the Company's response to the Salem incidents is demonstrated by the fact that the Company is able to provide an initial response to Generic Letter 83-28 within two weeks of its date, rather than within 120 days (or possibly later) as contemplated by Generic Letter 83-28.

Specifically, and as more fully discussed in the Company's response to the Notice of Violation, including the Company's letters to the NRC submitted in conjunction with the restart of Salem 1 after the February events which are incorporated by reference in such response and which form the basis for our preliminary reply to Generic Letter 83-28 for Salem (copy attached), the Company has taken or

committed to the following actions, which address virtually all of the requirements of Generic Letter 83-28. References to the Company's letters incorporated by reference in the original response to the Notice of Violation are indicated where applicable. In addition, the Company's letter to the NRC dated April 8, 1983 in conjunction with the restart of Salem 1 is referred to below. Reference to such letter and to the Company's letter dated April 13, 1983, was inadvertently omitted from our original response, and such letters are hereby also incorporated by reference in this matter.

1. The Company has established a formal post trip review procedure. See the Company's letters to the NRC dated March 8 and 14 and April 7, 8 and 28, 1983. (Action 1.1 of Generic Letter 83-28.)

2. The Company has a sequence of events recorder installed at Salem 1 which is capable of correctly sequencing and timing plant events leading to unscheduled reactor trips and indicating the proper actuation of safety-related equipment. The recorder is driven by the plant computer and powered from a vital bus. A report describing the data and information capability for unscheduled reactor shutdowns will be

submitted to the NRC not later than November 7, 1983, in compliance with Generic Letter 83-28. (Action 1.2.)

3. The Company has reviewed those components whose functioning is required to trip the reactor, has verified that they are identified as safety-related on the Master Equipment List, which is used in classification of work orders and procurement documents, and is implementing a continuing program to insure that vendor information relating to the reactor trip system components is complete and maintained on a controlled-document basis. See the Company's letters to the NRC dated March 8, 14 and 23 and April 7, 8 and 28, 1983. (Action 2.1.)

4. The Company has committed to a program to assure that components of safety-related systems are so identified on the Master Equipment List. The Company is also implementing a continuing program to assure that vendor information for safety-related components is complete, current and maintained on a controlled-document basis. See the Company's letters to the NRC dated March 8, 14 and 23 and April 7, 8 and 28, 1983. (Action 2.2.)

5. The Company has strengthened its program with

respect to post-maintenance operability testing of safety-related components in the reactor trip system so as to assure that the equipment is capable of performing its safety functions before being returned to service. These procedures include current applicable vendor and engineering recommendations. Related Technical Specification changes were submitted for NRC approval on June 20, 1983. The Company is also engaged in a test program to determine the life cycle and replacement interval for the undervoltage trip attachments. See the Company's letters dated March 8 and 14 and April 7, 8 and 28, 1983. (Action 3.1.)

6. The Company is establishing a program to extend its test and maintenance procedures to assure post-maintenance operability testing of safety-related equipment, consistent with vendor and engineering recommendations. See the Company's letters dated March 8 and 14 and April 7, 8 and 28, 1983. (Action 3.2.)

7. The Company has obtained new undervoltage trip attachments from Westinghouse which have been verified as including all current modifications. See the Company's letters dated April 7, 8 and 28, 1983. (Action 4.1.)

8. The Company has implemented a comprehensive preventative maintenance and surveillance program to assure reliable reactor trip breaker operation. See the Company's letters dated March 8 and 14 and April 7, 8 and 28, 1983. The life testing program for the reactor trip breakers is described in a letter to the NRC dated May 31, 1983. (Action 4.2.)

9. The Company has committed, by a letter to the NRC dated July 15, 1983, to incorporate the shunt trip attachments to the reactor trip breakers into the automatic trip system. (Action 4.3.)

10. Action 4.4 applies only to B&W reactors and is therefore inapplicable.

11. The Company has strengthened its on-line testing procedures for the reactor trip system. See the Company's letters to the NRC dated March 8 and 14 and April 7, 8 and 28, 1983, and License Change Request, LCR 83-08, submitted June 20, 1983. (Action 4.5.)

In all of the above matters involving station procedures, personnel have been re-educated in the importance of strict adherence thereto to assure that the procedures accomplish their intended results. Upon completion of our review of

Generic Letter 83-28, we will advise the NRC of further actions, if any, which may be necessary or appropriate with respect to Salem. However, as mentioned above, it is apparent that the Company's corrective action program comprehensively addresses the matters in Generic Letter 83-28, which is relevant to the determination of the amount of any civil penalties.

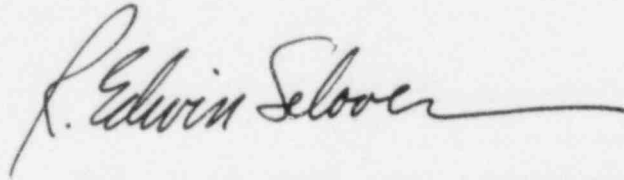
In the light of this record of prompt, comprehensive response to what the Commission has repeatedly characterized as a generic problem, and the adoption by the Company of a program before the issuance of the Notice of Violation that is now virtually embodied in the Commission's Generic Letter 83-28, we submit that the imposition of the proposed civil penalties cannot reasonably be viewed as serving a remedial purpose.

We again confirm to the Commission our commitment to safe nuclear operations and our dedication to strong remedial measures with respect to the equipment responsible for the February failures, the related operating and maintenance procedures, and the execution of such procedures by personnel. For the reasons set forth above and in our July 6, 1983 response, we respectfully request that the

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proposed civil penalties in the Notice of Violation be eliminated or mitigated substantially.

Respectfully submitted,

A handwritten signature in cursive script, reading "R. Edwin Selover", followed by a horizontal line.

Vice President and General Counsel

cc: Dr. Thomas E. Murley, Regional Administrator
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pa. 19406

STATE OF NEW JERSEY)
 SS.
COUNTY OF SALEM)

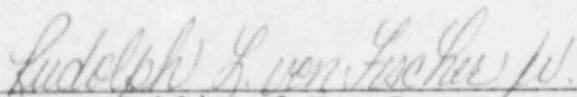
RICHARD A. UDERITZ, being duly sworn according to law
deposes and says:

I am a Vice President of Public Service Electric and Gas
Company, and as such, I find the matters set forth in the
attached supplemental response to the NRC's Notice of
Violation and Proposed Imposition of Civil Penalties, Docket
Nos. 50-272, 50-311, License Nos. DPR-70, DPR-75, EA83-24,
are true to the best of my knowledge, information and
belief.



RICHARD A. UDERITZ

Subscribed and sworn to before me
this 22nd day of July, 1983.



Notary Public of New Jersey

RUDOLPH L. von FISCHER JR.
Notary Public of New Jersey
My Commission Expires Sept. 10, 1986
My Commission expires _____



Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038

Nuclear Department

July 22, 1983

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch 1
Division of Licensing

Gentlemen:

RESPONSE TO GENERIC LETTER 83-28
NO. 1 AND 2 UNITS
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

PSEG hereby submits its response with respect to Salem Generating Station, to Generic Letter 83-28, dated July 8, 1983, concerning required actions based on generic implications of the Salem reactor trip breaker failures on February 22 and February 25, 1983.

1.1 POST-TRIP REVIEW (PROGRAM DESCRIPTION & PROCEDURES)

The Salem post-trip review program is described in our letters to the NRC of March 8, 14 and April 7 and 8, 1983, submitted in conjunction with the restart of Salem 1 after the February events. The detailed instructions are provided in Administrative Directive AD-16, which was submitted with our letter of March 14, 1983. The latest revision of AD-16 is enclosed.

1.2 POST-TRIP REVIEW (DATA & INFORMATION CAPABILITY)

The Salem units have an existing sequence of events recorder installed which is capable of correctly sequencing and timing plant events leading to unscheduled reactor trips, and indicating the proper actuation of safety related equipment. The sequence of events recorder is driven by the plant computer and powered from a vital bus.

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PDR The Energy People

2.1 EQUIPMENT CLASSIFICATION & VENDOR INTERFACE
(REACTOR TRIP SYSTEM COMPONENTS)

Equipment classification and vendor interface programs are described in our letters of March 8, 14, 23 and April 7 and 8, 1983.

2.2 EQUIPMENT CLASSIFICATION & VENDOR INTERFACE
(PROGRAMS FOR ALL SAFETY-RELATED COMPONENTS)

Equipment classification and vendor interface programs are described in our letters of March 8, 14, 23 and April 7 and 8, 1983.

3.1 POST-MAINTENANCE TESTING (REACTOR TRIP SYSTEM COMPONENTS)

Actions 3.1.1 and 3.1.2 of this position have been implemented as described in our letters of March 8, 14, and April 7 and 8, 1983.

3.2 POST-MAINTENANCE TESTING (ALL OTHER SAFETY RELATED COMPONENTS)

Actions 3.2.1 and 3.2.2 of this position have been implemented as described in our letters of March 8, 14 and April 7 and 8, 1983.

4.1 REACTOR TRIP SYSTEM RELIABILITY (VENDOR-RELATED MODIFICATIONS)

Vendor-recommended reactor trip breaker modifications have been implemented as described in our letters of April 7 and 8, 1983.

4.2 REACTOR TRIP SYSTEM RELIABILITY (PREVENTATIVE MAINTENANCE AND SURVEILLANCE PROGRAM FOR REACTOR TRIP BREAKERS)

Descriptions of the Salem preventative maintenance and surveillance programs have been provided in our letters of March 8, 14 and April 7 and 8, 1983. The life testing program for the reactor trip breakers is described in our letter of May 31, 1983.

4.3 REACTOR TRIP SYSTEM RELIABILITY (AUTOMATIC ACTUATION OF SHUNT TRIP ATTACHMENT FOR WESTINGHOUSE AND B&W PLANTS)

This item is addressed in our letter of July 15, 1983 (attached).

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4.4 REACTOR TRIP SYSTEM RELIABILITY (IMPROVEMENTS IN
MAINTENANCE AND TEST PROCEDURES FOR B&W PLANTS)

This item does not apply to Salem.

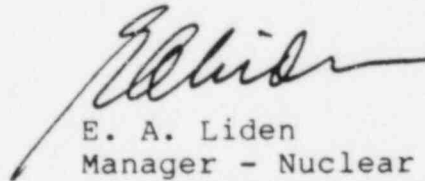
4.5 REACTOR TRIP SYSTEM RELIABILITY (SYSTEM FUNCTIONAL
TESTING)

On-line functional testing is described in our letters of March 8, 14 and April 7 and 8, 1983, and in our License Change Request, LCR 83-08, submitted on June 20, 1983.

This response provides our current status of conformance with the positions described in Generic Letter 83-28. Acceptance of our corrective action program is documented in your safety evaluation (NUREG-0995), transmitted with your letter of April 29, 1983, authorizing restart of the Salem units. We are undertaking a detailed review of Generic Letter 83-28 to determine what, if any, further actions may be required. The results of this review will be submitted for your review no later than November 7, 1983.

Should you have any questions, do not hesitate to contact us.

Sincerely,



E. A. Liden
Manager - Nuclear
Licensing and Regulation

Attachments


CC: Mr. Donald C. Fischer
Licensing Project Manager

Mr. Leif Norrholm
Senior Resident Inspector

STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

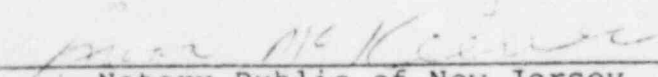
RICHARD A. UDERITZ, being duly sworn according to law deposes
and says:

I am a Vice President of Public Service Electric and Gas
Company, and as such, I find the matters set forth in our
response to Generic Letter 83-28, dated July 22, 1983,
concerning generic implications of the Salem ATWS events,
are true to the best of my knowledge, information and belief.



RICHARD A. UDERITZ

Subscribed and sworn to before me
this 22 day of July, 1983



Notary Public of New Jersey

My Commission expires on January 2, 1985

SALEM GENERATING STATION

OPERATIONS DEPARTMENT DOCUMENT APPROVAL COVER SHEET

Title: Post Reactor Trip/Safety Injection ReviewNo.: AD-16Unit: 1/2Rev.: 3

Remarks: eight pages of text, one - six page form, one - four page
form, one - two page table, revised to add documentation for General
Manager review, deleted startup approval requirements after controlled
shutdown, deleted I&C Supervisor signature on Sequence of Events.

Safety Related Review (Ref. AD-13): S/R yes xno

Author's Checklist Completed:

yes xAuthor William N. SchlegelDate 7-12-83SRO* rd/mtsDate 7-12-83Ops. Eng. [Signature]Date 7-12-83SOS+ rd/mtsDate 7-12-83Ops. Mgr. [Signature]Date 7-12-83QA** 11[Signature]Date 7/13/83SORC** [Signature]83-94Date 7-13-83General Manager** [Signature]Date 7-14-83

* required for SPM documents only

+ required for EOP validation acceptance only

** required for safety related documents and fire protection documents

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Salem Unit 1/2 PDR

AD-1-B-1

MASTER

Procedure

ADMINISTRATIVE DIRECTIVE - 16
POST REACTOR TRIP/SAFETY INJECTION REVIEW

1.0 PURPOSE

The purpose of this directive is to establish the requirements to perform a formal post trip review for all Reactor Trip and Safety Injection events. This directive also establishes the requirements and criteria that must be met prior to the startup of either unit following a trip event.

2.0 RESPONSIBILITIES

2.1 In the event of a Reactor Trip or Safety Injection, the Senior Shift Supervisor shall:

2.1.1 Ensure that a post trip review of the event has been performed in accordance with the specific directions in Section 3.0 of this directive. Form AD-16-A "Post Reactor Trip/Safety Injection Review Report" shall be used when performing this review. This report shall be completed and reviewed with the appropriate management personnel prior to leaving the Station or requesting approval to startup the affected unit.

2.1.2 Contact the Instrumentation and Controls Engineer and request assistance for the review of the Sequence of Events print out.

2.1.3 Evaluate the post trip review to determine if:

- a) All equipment and systems functioned as designed during the event.
- b) The cause of the event is clearly identified.

2.1.4 Notify the Operations Manager of the event and the subsequent findings of the report. (The Operations Manager may elect to conduct this review by telephone in direct conference with the Senior Shift Supervisor.)

2.2 The STA qualified Shift Supervisor shall assist and advise the Senior Shift Supervisor in the compiling of data and evaluation of the report.

2.3 In the event of a Reactor Trip or Safety Injection, the Operations Manager shall:

2.3.1 Perform the following prior to granting approval for startup:

- a) Review the post trip report with the Senior Shift Supervisor.
- b) Ensure that the report was properly prepared and evaluated.
- c) Ensure that the cause of the event has been properly identified.
- d) Ensure that all equipment and systems functioned as designed during the event and recovery actions.
- e) Evaluate the event to determine if there are any corrective actions required prior to the startup of the affected unit.
- f) As necessary, request additional technical support, to evaluate the event and ensure that the cause is clearly identified and the required corrective actions have been initiated.

2.3.2 Grant approval for startup in accordance with Section 4.0 of this directive if all of the requirements listed above are met satisfactorily.

2.3.3 Deny approval for startup if one or more of the requirements listed above is not satisfactorily met. If this is the case, direct the Senior Operations Supervisor to conduct a further investigation of the event.

2.3.4 Perform a follow up review of the report and recommend any corrective actions. Conduct interviews as necessary to determine the effectiveness of the procedures used, this directive and, in particular, of the report itself. Note any changes which may enhance the conducting or the review of the report. Sign and date the Followup Section of the report.

2.3.5 Forward the completed report to the Senior Operations Supervisor for additional processing.

2.4 The Senior Operations Supervisor shall:

- 2.4.1 Incorporate the event into the Reactor Trip/Safety Injection history trending system.
- 2.4.2 Make three complete copies of the report. These copies shall go to:
 - a) The Technical Department for assistance in preparing the Licensee Event Report or other reports as appropriate.
 - b) The General Manager - Nuclear Support in order to conduct an independent review of the trip event.
 - c) The Manager - Nuclear Training for appropriate disbursement to the training classes.
- 2.4.3 Maintain the original report on file for future reference.
- 2.4.4 Conduct an investigation of the event if the Operations Manager denies startup approval. Present the findings to the Station Operations Review Committee.
- 2.4.5 If approval for startup has been granted by the Operations Manager, present the report to the Station Operations Review Committee for review.
- 2.4.6 Prepare a summary report on the event and issue it to all pertinent Operations Department personnel in accordance with the Information Directives System.
- 2.4.7 Revise this document as necessary to incorporate any comments on improving the effectiveness of it as directed by the Operations Manager.

2.5 The Nuclear Support Department will perform an independent review of each Reactor Trip/Safety Injection. Upon completion of the review, Nuclear Support will make recommendations to the station for corrective actions which may prevent this type of event from re-occurring in the future.

- 2.6 The Instrumentation and Controls Engineer will designate a supervisory person to assist the Senior Shift Supervisor and the STA qualified Shift Supervisor in the review of the Sequence of Events print out for each Reactor Trip/Safety Injection Event.

3.0 TRIP EVENT REVIEW PROCESS

- 3.1 The Senior Shift Supervisor shall ensure that:

- 3.1.1 The required information on Form AD-16-A concerning the condition of the unit prior to the event is correct and has been recorded.
- 3.1.2 The evolutions in progress prior to the event that may be involved in the cause of event or could have contributed to the cause of the event have been recorded.

Examples:

- a. Unit startup was in progress, feedwater control was in manual control.
- b. Unit startup was in progress, problems were encountered with inservice equipment or control systems. (Steam Dump was in manual, Steam Generator Feed Pump controls were in manual, Atmospheric relief valves were being used to dump steam, etc.).
- c. A rapid reduction in unit load was required due to loss of circulators, condenser vacuum, condensate pump, heater drain pump, condensate strainers were partially clogged.
- d. Surveillance testing was in progress on the Reactor Protection System.
- e. Maintenance or trouble shooting was in progress.

- 3.1.3 All equipment that was out of service that could have contributed to the event has been identified and recorded.

Examples:

- a. Steam Dumps were not available.
- b. Number 11A and 11B circulators were out of service.
- c. The positive displacement charging pump was Cleared and Tagged for repairs.
- d. Feedwater heater string was bypassed or out of service for repairs.

- 3.1.4 The proper classification of the event, the time that the event was declared, the time that the event was terminated, and if all the necessary notifications were made is documented in the report. Attach the original copy of the Emergency Procedure to the report package.

- 3.1.5 The P-250 computer sequence of events printout has been reviewed and the Sequence of Events Checklist (Form AD-16-B) has been completed to verify the cause of the event and ensure that all equipment and systems performed as designed and in the proper and expected sequence. The subsequent alarms listed on the Sequence of Events Checklist are not listed in the order in which they should occur; this will vary with the event. In addition, all of the alarms listed on the checklist might not occur with every event. Table 1 contains the expected times at which the Subsequent alarms should print out. It should be noted that the times are only approximate and will be further refined as experience is gained. Attach the computer printout to the report package.

3.1.6 The following control room recorder charts have been reviewed for unexpected or unusual parameter changes during the event:

- a. Steam Generator Narrow Range Levels
LA-5048, LA-5049, LA-5050, LA-5051
- b. Pressurizer Level LA-5304
- c. Pressurizer Pressure PA-5305
- d. TAVE TA-5306
- e. Reactor Coolant Loop Th, Tc
TA-0014, TA-0016, TA-0036, TA-0038
- f. Nuclear Power Range NR-45 KA-5904
- g. Other charts as necessary

Have the Shift Technician remove these charts. Ensure that all tracings are identified on the charts and the time is clearly marked. Attach the original charts to the report package.

- 3.1.7 Any alarms received which were out of the ordinary for the event and alarms which should have been received but were not have been recorded. Include a review of the overhead alarms, console alarms, P-250 alarms and the Auxiliary Alarm typewriter. Attach the printout from the Auxiliary Alarm typewriter and the P-250 alarm printout.
- 3.1.8 Fact finding sessions are conducted with the appropriate personnel to determine the cause of the event, actions taken and observed sequence of events.
- 3.1.9 The explanation of the cause of the event is recorded.
- 3.1.10 The corrective actions taken during the event to mitigate the consequences of the event and bring the unit to a stable condition are recorded.
- 3.1.11 Any equipment out of service which would prevent the unit from being returned to service has been recorded.

3.1.12 All Technical Specification or Administrative Action Statements that are required to be terminated prior to reactor startup have been recorded. (Administrative Action Statements as identified in other Operations Department Directives, such as defined in OD-12.)

3.1.13 Any corrective actions that are required prior to the unit's return to service are recorded.

3.1.14 The names and assigned positions of all individuals involved in the event are recorded.

3.2 The Senior Shift Supervisor shall confer with the SCA qualified Shift Supervisor in order to review and evaluate the report. When both are satisfied with the conclusions, each shall sign and date the report.

3.3 The Operations Manager shall be briefed by the Senior Shift Supervisor on the report. At that time, a determination shall be made as to whether approval should be granted for startup as defined in Section 4.0 of this directive.

4.0 APPROVAL REQUIREMENTS FOR REACTOR STARTUP AFTER A REACTOR TRIP/SAFETY INJECTION

4.1 Prior to requesting approval to startup the reactor after any Reactor Trip or Safety Injection, the Post Trip Review must be completed and evaluated.

4.2 Upon satisfactory completion of the review and evaluation of the Post Trip Review, the Operations Manager may authorize the reactor startup as long as the evaluation of the trip event clearly indicates the cause of the event and that all equipment and systems functioned as designed.

4.3 If the Operations Manager-Salem Operations is not available, then the individuals who are authorized to assume the Operations Manager's responsibilities may authorize the reactor startup.

- 4.4 If the cause of the event has not been clearly determined or there is question concerning the proper performance of equipment or systems during the event, then an investigation shall be conducted and the results of the investigation shall be reviewed by the Station Operations Review Committee. Upon completion of the evaluation of the event by the Station Operations Review Committee, the Committee shall make recommendations to the General Manager-Salem Operations on reactor startup. Upon completion of the review and satisfactory determination that the unit can be restarted safely, the General Manager-Salem Operations may authorize the reactor startup.

END OF PROCEDURE

FINAL PAGE

ADMINISTRATIVE DIRECTIVE - 16
POST REACTOR TRIP/SAFETY INJECTION REVIEW REPORT

CONDITIONS PRIOR TO EVENT

Date of Event _____ Time of Event _____ Affected Unit _____

Unit Conditions Prior to the Event

Reactor Power _____ %

Personnel Assignments

SSS _____	SS _____
Board NCO _____	Desk NCO _____
Primary EO _____	Secondary EO _____
SSups _____	Shift Technician _____
Others _____	Shift Electrician _____
_____	(Relay Dept., I&C,
_____	Maint., Maplewood
_____	Lab etc.)

What evolutions were in progress at the onset of the event:

Surveillance Testing Yes _____ No _____
Trouble Shooting or Maintenance Yes _____ No _____
Unit Startup or Shutdown Activities Yes _____ No _____
Other Activities which could have contributed to the event
Yes _____ No _____

If the answer to any of the above questions is yes, describe the circumstances in detail.

Were any of the following out of service or inoperable at the onset of the event:

Major Equipment Yes _____ No _____
Protection Systems or Trains Yes _____ No _____
Control Systems Yes _____ No _____

If the answer to any of the above questions is yes, describe the circumstances in detail.

DESCRIPTION OF THE EVENT

Reactor Trip Initiation

Automatic Yes _____ No _____

If no, explain why. If yes, give the Reactor First Out Annunciator

Safety Injection Initiated Yes _____ No _____

If initiated, was it automatic Yes _____ No _____

If no, explain why. If yes, give the Reactor First Out Annunciator.

Attach ATT 1-1 from EI I-4.2 if Safety Injection occurred.

What is the classification of the event as defined in EP I-O?

Time Declared _____ Time Terminated _____

Were all of the required notifications made?

Yes _____ No _____

If no, explain why.

Attach Emergency Procedure to Report Package.

Does the Sequence of Events Printout from the P-250 agree with the Reactor First Out Annunciator which was received?

Yes _____ No _____

If no, explain which First Out was received and any apparent reasons for the discrepancy. (eg. Two alarm conditions actuated simultaneously)

Attach Printout to Report Package.

Do the recorder charts indicate any trends which may have contributed to the event?

Yes _____ No _____

If yes, explain in detail.

Attach Recorder Charts to Report Package.

Yes _____ No _____
If yes, explain in detail.

Yes _____ No _____
If yes, explain in detail.

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CORRECTIVE ACTIONS

Is there any equipment out of service which would prevent the unit from being returned to service?

Yes _____ No _____

If yes, explain in detail.

Are there any Technical Specification or Administrative Action Statements in effect which would prevent the unit from returning to service? (Administrative Action Statements are described in OD-12 or other Operations Department documents)

Yes _____ No _____

If yes, list below.

Tech Specs	_____	Admin.	_____
	_____		_____
	_____		_____
	_____		_____

Are there any corrective actions which should be performed before returning the unit to service, such as repairs which should be made?

Yes _____ No _____

If yes, explain. Provide specific recommendations as appropriate.

Report Prepared By _____ Date _____ Time _____

Report Reviewed With Operations Manager Date _____ Time _____

Approval for startup by Operations Manager:

Granted _____ Denied _____

Date _____ Time _____

STA Qualified Shift Supervisor

(Signature)

Date _____ Time _____

Senior Shift Supervisor Review

(Signature)

Date _____ Time _____

SORC AND GENERAL MANAGER REVIEW

This page will be used only when the initial approval for startup is denied by the Operations Manager and subsequent reviews of the event are required.

MAJOR FINDINGS OF SUBSEQUENT INVESTIGATIONS

Attach other sheets as necessary.

DETERMINATIONS BY SORC

Attach other sheets as necessary.

STARTUP APPROVAL

SORC Chairman _____ Date _____

General Manager-Salem _____ Date _____

OPERATIONS MANAGER FOLLOWUP

Corrective actions required to prevent reoccurrence of this event.

Note any changes to this document which may improve its effectiveness

Report Reviewed By Operations Manager

(signature) Date _____ Time _____

NOTE: This review is not required prior to authorizing startup.

SENIOR OPERATIONS SUPERVISOR FOLLOWUP

Copies of the report sent to:

Technical Department _____ Date _____

Nuclear Support Department _____ Date _____

Nuclear Training Department _____ Date _____

Station Operations Review Committee Review

Chairman _____ Meeting No. _____ Date _____

SEQUENCE OF EVENTS CHECKLIST DIRECTIONS

The information to be recorded on the Sequence of Events Checklist (pages AD-16-B-2 and AD-16-B-3) is to be a direct transfer of information from the Sequence of Events print out. Simply record the number of cycles at which the subsequent alarm occurred and the Sequence of Events start time in which it occurred.

The subsequent alarms listed on the Sequence of Events Checklist must be related to the initial Reactor Trip or Safety Injection signal associated with each trip. To perform this, the following guidelines should be used.

1. If the subsequent alarm occurred in the same sequence as the Reactor Trip or Safety Injection signal, simply subtract the number of cycles at which the Reactor Trip or Safety Injection signal was generated from the number of cycles at which the subsequent alarm was generated.
2. If the subsequent alarm occurred in a sequence separate from the Reactor Trip or Safety Injection signal, perform the following:
 - a. Subtract the Reactor Trip or Safety Injection signal sequence start time from the subsequent alarm sequence start time and multiply this number by 60.
 - b. From this number, subtract the number of cycles at which the Reactor Trip or Safety Injection signal was generated.
 - c. To this number, add the number of cycles at which the subsequent alarm was generated. This is the number of cycles at which the alarm was generated after the Reactor Trip or Safety Injection signal.

This information shall be recorded on page AD-16-B-4.

SEQUENCE OF EVENTS CHECKLIST

Reactor Trip or Safety Injection signal sequence start time:

_____:_____:_____

REACTOR TRIP SIGNAL INITIATED AT _____cycles

SAFETY INJECTION SIGNAL INITIATED AT _____cycles

Subsequent Alarms	# cycles into sequence	sequence start time in which alarm was initiated
REACTOR MAIN TRIP BKR A TRIP		_____:_____:_____
REACTOR MAIN TRIP BKR B TRIP		_____:_____:_____
REACTOR TRIP AUX1 BKR A TRIP		_____:_____:_____
REACTOR TRIP AUX1 BKR B TRIP		_____:_____:_____
REACTOR MAN TRP 1 TRIP		_____:_____:_____
REACTOR MAN TRP 2 TRIP		_____:_____:_____
TURBINE STOP VA 11(21) CLOSED		_____:_____:_____
TURBINE STOP VA 12(22) CLOSED		_____:_____:_____
TURBINE STOP VA 13(23) CLOSED		_____:_____:_____
TURBINE STOP VA 14(24) CLOSED		_____:_____:_____
TURBINE TRIP TRIP		_____:_____:_____
TURBINE REMOTE EMERG TRIP TRIP		_____:_____:_____

Subsequent Alarms	# cycles into sequence	sequence start time in which alarm was initiated
11(21) AUX FW PUMP START		____:____:____
12(22) AUX FW PUMP START		____:____:____
13(23) AUX FW PUMP TURBINE STOP VA NT CL		____:____:____
11(21) SGFP TURBINE HRH STOP VA CLOSED		____:____:____
12(22) SGFP TURBINE MS STOP VA CLOSED		____:____:____
12(22) SGFP TURBINE HPH STOP VA CLOSED		____:____:____
11(21) SGFP TURBINE MS STOP VA CLOSED		____:____:____

SEQUENCE OF EVENTS CHECKLIST SUMMARY

Subsequent Alarms	number of cycles after Reactor Trip/SI signal
REACTOR MAIN TRIP BKR A TRIP	
REACTOR MAIN TRIP BKR B TRIP	
REACTOR TRIP AUX1 BKR A TRIP	
REACTOR TRIP AUX1 BKR B TRIP	
REACTOR MAN TRP 1 TRIP	
REACTOR MAN TRP 2 TRIP	
TURBINE STOP VA 11(21) CLOSED	
TURBINE STOP VA 12(22) CLOSED	
TURBINE STOP VA 13(23) CLOSED	
TURBINE STOP VA 14(24) CLOSED	
TURBINE TRIP TRIP	
TURBINE REMOTE EMERG TRIP TRIP	
11(21) AUX FW PUMP START	
12(22) AUX FW PUMP START	
13(23) AUX FW PUMP TURBINE STOP VA NT CL	
11(21) SGFP TURBINE HRH STOP VA CLOSED	
12(22) SGFP TURBINE MS STOP VA CLOSED	
12(22) SGFP TURBINE HRH STOP VA CLOSED	
11(21) SGFP TURBINE MS STOP VA CLOSED	

SEQUENCE OF EVENTS STANDARDS FOR A REACTOR TRIP

Subsequent Alarms	Expected time to initiate after trip signal	
	cycles	seconds
REACTOR MAIN TRIP BKR A TRIP	4-6	0.06-0.1
REACTOR MAIN TRIP BKR B TRIP	4-6	0.06-0.1
REACTOR TRIP AUX1 BKR A TRIP	4-6	0.06-0.1
REACTOR TRIP AUX1 BKR B TRIP	4-6	0.06-0.1
REACTOR MAN TRP 1 TRIP	less than 300	less than 5
REACTOR MAN TRP 2 TRIP	less than 300	less than 5
TURBINE STOP VA 11(21) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 12(22) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 13(23) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 14(24) CLOSED	less than 90	less than 1.5
TURBINE TRIP TRIP	4-6	0.06-0.1
TURBINE REMOTE EMERG TRIP TRIP	less than 60	less than 1
11(21) AUX FW PUMP START *		
12(22) AUX FW PUMP START *		
13(23) AUX FW PUMP TURBINE STOP VA NT CL **		

* Should initiate within 10 cycles (0.2 sec) after any 1 Steam Generator Lo Lo Level valid trip signal.

** Should initiate within 100 cycles (1.7 sec) after any 2 Steam Generator Lo Lo Level valid trip signals.

SEQUENCE OF EVENTS STANDARDS FOR A SAFETY INJECTION

Subsequent Alarms	Expected time to initiate after SI signal	
	cycles	seconds
REACTOR MAIN TRIP BKR A TRIP	4-6	0.06-0.1
REACTOR MAIN TRIP BKR B TRIP	4-6	0.06-0.1
REACTOR TRIP AUX1 BKR A TRIP	4-6	0.06-0.1
REACTOR TRIP AUX1 BKR B TRIP	4-6	0.06-0.1
11(21) AUX FW PUMP START	less than 10	less than 0.2
12(22) AUX FW PUMP START	less than 10	less than 0.2
REACTOR MAN TRIP 1 TRIP	less than 300	less than 5
REACTOR MAN TRIP 2 TRIP	less than 300	less than 5
TURBINE STOP VA 11(21) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 12(22) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 13(23) CLOSED	less than 90	less than 1.5
TURBINE STOP VA 14(24) CLOSED	less than 90	less than 1.5
TURBINE TRIP TRIP	4-6	0.06-0.1
TURBINE REMOTE EMERG TRIP TRIP	less than 60	less than 1
(21) 11 SGFP TURBINE HRH STOP VA CLOSED	less than 90	less than 1.5
(22) 12 SGFP TURBINE HRH STOP VA CLOSED	less than 90	less than 1.5
(21) 11 SGFP TURBINE MS STOP VA CLOSED	less than 90	less than 1.5
(22) 12 SGFP TURBINE MS STOP VA CLOSED	less than 90	less than 1.5
13(23) AUX FW PUMP TURBINE STOP VA NT CL *		

* Should initiate within 100 cycles (1.7 sec) after any 2 Steam Generator Lo Lo Level valid trip signals.