

FOR INFORMATION ONLY

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

SITE STANDARD PRACTICE

SSP-8.50

RESTART TEST PROGRAM

Revision 4

QUALITY RELATED

PREPARED BY: KAYO PINSON

RESPONSIBLE ORGANIZATION: TECHNICAL SUPPORT

APPROVED BY: S. H. RUDGE

EFFECTIVE DATE: 12/21/93

VALIDATION DATE: N/A

FOR INFORMATION ONLY



0614166198
BFNP SSP
SSP-8.50
122193 4

Y380 6011 10 12 19

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 2 of 24
-----	----------------------	-----------------------------------

PAGES AFFECTED 5, 9

REVISION
DESCRIPTION

Incorporate a requirement to perform a system readiness assessment for testing performed prior to system Phase I SPOC, and to correct a typographical error.

FOR INFORMATION ONLY

THOMAS R. L. L. L.

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 3 of 24
-----	----------------------	-----------------------------------

TABLE OF CONTENTS

Page 1 of 2

Section	Title	Page
	TABLE OF CONTENTS	3
1.0	PURPOSE	5
2.0	SCOPE	5
3.0	INSTRUCTION	6
3.1	RTP Test Requirements Form	6
3.1.1	Test Requirement	6
3.1.2	Acceptance Criteria	6
3.1.3	Plant Instruction	6
3.1.4	Revision Required	7
3.1.5	Satisfactorily Completed Signature/Date	7
3.2	RTP Test Requirements Form Review and Approval	7
3.3	Completion of the RTP Test Requirements Form	8
3.4	RTP Test Results Package Preparation, Review, and Approval	10
3.4.1	Test Results Package Preparation	10
3.4.2	Test Results Package Review and Approval	11
3.4.3	Closure of Open RTP Test Exceptions	12
3.4.4	Completion of RTP Test Requirements During Power Ascension	12
3.5	Restart Test Program Closeout	13
3.6	Startup Manual	13
4.0	DOCUMENTATION RECORDS	13
4.1	QA Records	13
4.2	Non-QA Records	13
5.0	DEFINITIONS	14
6.0	REFERENCES	14
6.1	Source Documents	14
6.2	Developmental References	14

FOR INFORMATION ONLY



BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 4 of 24
-----	----------------------	-----------------------------------

TABLE OF CONTENTS

Page 2 of 2

Section	Title	Page
FORMS		
	RESTART TEST PROGRAM REVIEW TRANSMITTAL SHEET	16
	RESTART TEST PROGRAM TEST REQUIREMENTS	17
	RESTART TEST PROGRAM TEST RESULTS PACKAGE	19
APPENDIXES		
APPENDIX A:	DESIGN BASELINE VERIFICATION PROGRAM/BASELINE TEST REQUIREMENTS DOCUMENT LIST	21
SOURCE NOTES	24

FOR INFORMATION ONLY

YUNOKESTON 19.82

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 5 of 24
-----	----------------------	-----------------------------------

1.0 PURPOSE

This procedure specifies the requirements for the following activities of the Restart Test Program (RTP) for the Browns Ferry Nuclear Plant Units 1 and 3 and Common (Unit 0).

- A. RTP Test Requirements Format.
- B. RTP Test Requirements Review and Approval Process.
- C. RTP Test Results Package Contents, Review, and Approval Process.
- D. Startup Manual Content.

2.0 SCOPE

- A. This instruction applies to all RTP test requirements. RTP test requirements will be satisfied by use of approved plant instructions such as (but not limited to) Surveillance Instructions (SIs), Technical Instructions (TIs), Special Tests (STs), Maintenance Instructions (EMIs, MMIs), Operating Instructions (OIs), Post Modification Tests (PMTs), and Calibration Procedures. New tests needed to satisfy Design Baseline Evaluation Test Scoping Documents, and any testing activities needed to satisfy the applicable requirements of the System Test Specifications will also be incorporated. Testing shall be conducted in accordance with SSP-8.1, Conduct of Testing.
- B. The Restart Test Program is intended to confirm the safe and reliable operation of systems involved in the operation of Browns Ferry Units 3 and 1 and Common. This practice, as written, is specific to Restart Test Activities for Unit 3 and Common equipment only. As the recovery effort for Unit 1 is better defined this practice will be reviewed for possible revisions. All systems critical to safe shutdown of the plant will be included. Testing requirements are determined primarily by the Design Baseline Verification Program.
- C. The RTP is part of the integrated test plan established for the Browns Ferry Nuclear Plant (BFN) unit recovery effort. This plan is outlined by the System Test Specification (STS) for each system. The STS consists of a matrix containing all test requirements and corresponding test procedures required to return systems to service. The STS is administratively controlled by the Startup Manual 3-STM-001.
- D. This practice, in conjunction with the Startup Manual, establishes the program for execution of the integrated test plan described above.
- E. Systems covered in the Design Baseline Verification Program are listed in Appendix A, Design Baseline Verification Program/Baseline Test Requirements Document List.

FOR INFORMATION ONLY



BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 6 of 24
-----	----------------------	-----------------------------------

3.0 INSTRUCTION

3.1 RTP Test Requirements Form

An RTP Test Requirements Form (Form SSP-215) shall be completed for each Baseline Test Requirements Document (BTRD) issued by Nuclear Engineering (NE). This form consists of an approval cover sheet and a work sheet used to correlate each BTRD test requirement to a quantitative acceptance criteria, the plant instruction to be utilized to satisfy the test requirement, and completion verification signatures. The Technical Support Manager or his designee is responsible for assigning individuals to complete these forms. Instructions for completing the RTP test requirements form are detailed below.

3.1.1 Test Requirement

Each system BTRD mode having test criteria shall be listed as an RTP test requirement. Provide a clear descriptive narrative comparable to the wording of the BTRD for each test requirement.

3.1.2 Acceptance Criteria

Detailed acceptance criteria shall be developed for each test requirement. Quantitative values shall be specified where they are applicable as called for in the BTRD. If the acceptance criteria is qualitative in nature, it should be written such that positive correlation between the test results and the acceptance criteria can be easily established. The acceptance criteria should be segregated in a manner that provides easy comparison to the plant instruction intended to fulfill it. All acceptance criteria called for in the BTRD shall be addressed.

3.1.3 Plant Instruction

- A. List the plant instruction(s) and applicable sections to be utilized to satisfy each test requirement. Each plant instruction listed should be directly correlated to the test requirement/acceptance criteria it satisfies.
- B. Plant instructions used to satisfy RTP test requirements shall include, as applicable: A description of the test objective; instructions for performing the test; test prerequisites such as calibrated instrumentation, adequate test instrumentation including accuracy requirements; completeness of the items to be tested, suitable and controlled environmental conditions, provisions for data collection and storage, and qualified personnel; provisions to assure test prerequisites have been met; mandatory inspection hold points; acceptance or rejection criteria; methods of recording, documenting, and reviewing test data and results; and provisions for assuring that adverse conditions are corrected, or evaluated and determined not to adversely impact testing.

FOR INFORMATION ONLY

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml (A), 10⁷ cells/ml (B), 10⁸ cells/ml (C), and 10⁹ cells/ml (D). The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml (A), 10⁷ cells/ml (B), 10⁸ cells/ml (C), and 10⁹ cells/ml (D). The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml (A), 10⁷ cells/ml (B), 10⁸ cells/ml (C), and 10⁹ cells/ml (D). The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml (A), 10⁷ cells/ml (B), 10⁸ cells/ml (C), and 10⁹ cells/ml (D).

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 7 of 24
-----	----------------------	-----------------------------------

3.1.4 Revision Required

If an existing plant instruction must be revised or if a new plant instruction must be written to satisfy the RTP test requirement, Y or Yes should be indicated in this column. If the existing plant instruction is adequate to satisfy the RTP test requirement, N or No should be indicated in this column. The Technical Support System Engineer (TSSE) is responsible for ensuring that new instructions and revisions to existing instructions required to satisfy RTP test requirements are prepared and approved in support of return to service (RTS) testing.

3.1.5 Satisfactorily Completed Signature/Date

Provide a signature/date line for each acceptance criteria. This signature will be used to document that the test results obtained by performance of the listed plant instruction adequately satisfy the stated RTP acceptance criteria.

3.2 RTP Test Requirements Form Review and Approval

NOTE The RTP Manager or Engineers may act as the Joint Test Group (JTG) Secretary when necessary.

- A. Following initial preparation, the Form SSP-215 shall be reviewed by an individual qualified as an Independent Qualified Reviewer (IQR) as defined in SSP-2.3. The IQR should ensure that the RTP test requirements form complies with the requirements of this SSP, conforms to the applicable BTRD, and that the specified acceptance criteria is clear, understandable, and adequately satisfies the RTP test requirement.
- B. It is recognized that at the time of initial review the plant instructions specified on the Form SSP-215 may not be written or appropriately revised as needed to satisfy the RTP test requirements. The adequacy of plant instructions specified on Form SSP-215 to meet RTP test requirements is not considered part of the initial review scope. This will be verified during the completion review.
- C. The IQR shall resolve any review comments with the assigned Technical Support Engineer. Form SSP-3 may be used to document review comments and resolution. Upon completion of review and satisfactory resolution of comments, the IQR shall denote concurrence by signature on Form SSP-215.
- D. Following IQR signature, the systems supervisor and the RTP Manager shall sign Form SSP-215 noting that the RTP test requirements form is ready for JTG Review, and forward to the JTG Secretary.
- E. Copies of the RTP Test Requirements Form shall be made and distributed with Review Transmittal Sheet, Form SSP-214, and a Comment Control Form, Form SSP-3, to each member of the cognizant JTG by the JTG Secretary. The JTG Secretary shall note on the review transmittal sheet, the review deadline and date transmitted. The system test specification, if applicable, shall be submitted in conjunction with the RTP test for information.

FOR INFORMATION ONLY

[illegible]

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 8 of 24
-----	----------------------	-----------------------------------

3.2 RTP Test Requirements Form Review and Approval (Continued)

- F. JTG membership is identified in Standard Practice SSP-12.10, Plant Operations Review Committee. Each reviewing member of the JTG should review RTP Test Requirements as applicable to their cognizance. Review comments should be made on comment control form(s), Form SSP-3. Each JTG reviewer will sign and date the Comment Control Form and Review Transmittal Sheet, and check the appropriate box denoting With Comments or Without Comments and return to the JTG Secretary when the review is completed. The JTG Secretary shall distribute the comments to the assigned Technical Support Engineer for resolution.
- G. Technical Support Engineers shall notify the JTG Secretary upon resolution and incorporation of all review comments. Review comments that remain unresolved shall be handled in accordance with Step 3.2.H. The JTG Secretary should schedule and notify the JTG members of a meeting to approve the RTP Test Requirements Form (Form SSP-215).
- H. The JTG shall have authority to resolve review comments by majority vote at JTG meetings. The JTG Secretary shall note when this occurs in the JTG Meeting Minutes. The JTG Secretary shall maintain a file of Comment Control Forms until the review package is approved by the JTG.
- I. The JTG Secretary shall present the original Form SSP-215 to the JTG Chairman for review at the scheduled JTG meeting. The JTG Chairman shall note the review by signature and date in the appropriate space on the RTP Test Requirements Form Cover Sheet Form SSP-215.
- J. The JTG Secretary, or other responsible RTP representative, shall deliver the original JTG reviewed RTP Test Requirements Form to the Technical Support Manager for approval. Disapproved forms shall be returned to the RTP Manager for comment resolution. Disapproved RTP Test Requirement Forms shall be resubmitted to the JTG after resolution of the reasons for disapproval.
- K. The JTG Secretary shall note RTP Test Requirement Form review and recommended approval in the meeting minutes and submit the minutes for review by Plant Operations Review Committee (PORC) in accordance with SSP-12.10, Plant Operations Review Committee.
- L. The approved original RTP Test Requirements Form shall be returned to the RTP Manager. The JTG Secretary shall issue to the Technical Support Engineer a copy of the approved original.
- M. The JTG Secretary shall maintain a copy of the original approved RTP Test Requirements Form and forward the original to RM.

3.3 Completion of the RTP Test Requirements Form

- A. Following JTG approval, changes or revisions to the RTP Test Requirements Form shall be approved in the same manner as the original form. Approval shall be documented by generating a new RTP Test Requirements Form Cover Sheet, Form SSP-215. The approval date of this form serves as the record of revision.

FOR INFORMATION ONLY



[Faint handwritten notes at the bottom of the page]

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 9 of 24
-----	----------------------	-----------------------------------

3.3 Completion of the RTP Test Requirements Form (Continued)

- B. The Technical Support Engineer shall coordinate all changes to the RTP test requirements form with the RTP Manager any required changes or revisions should be approved prior to final RTP test results package assembly. However, with RTP Manager concurrence, approval may be accomplished in conjunction with JTG approval of the RTP test results package.
- C. Plant instructions used to satisfy RTP test requirements which are performed prior to completion of the Phase I System Preoperability Checklist (SPOC) of the Affected System (SSP-12.55) require a system readiness for testing assessment to be performed in accordance with 3-STM-001.
- D. The TSSE is responsible for ensuring that new plant instructions and revisions to existing plant instructions needed to satisfy RTP test requirements are prepared and approved in support of System Phase I SPOC.
- E. Return to service testing conducted following Phase I SPOC is governed by the System Test Specification (STS) for each system. 3-STM-001 provides details of the STS.
- F. Technical Support is responsible for ensuring that testing specified by the STS is scheduled for performance. Test performance is the responsibility of the plant organization normally responsible for performing the instruction.
- G. The assigned Technical Support Engineer shall review the test results of plant instructions specified on Form SSP-215 for adequacy as RTP test results and perform the following:
 - 1. Ensure the test performance date is after the Phase I SPOC date for the affected system, or a system readiness for testing assessment is completed in accordance with 3-STM-001 and attached to the instruction.
 - 2. Ensure that the test results satisfy the applicable RTP acceptance criteria, that there are no open test deficiencies which affect the RTP acceptance criteria, and that any closed test deficiencies relative to the RTP acceptance criteria have been satisfactorily dispositioned with no impact on the RTP test requirements.
 - 3. Obtain a copy of all test deficiencies associated with RTP test requirements and/or acceptance criteria and forward them to the RTP Manager for trending purposes.
 - 4. Retain a copy (or the original) of the test results for inclusion in the RTP test results package.
- H. The assigned Technical Support Engineer shall sign the applicable acceptance criteria on Form SSP-215 upon determination that the reviewed test results adequately satisfy the RTP test requirement.

FOR INFORMATION ONLY



1. The first part of the document is a list of names and addresses. The names are: John Doe, Jane Doe, and John Doe. The addresses are: 123 Main St, 456 Main St, and 789 Main St.

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 10 of 24
-----	----------------------	------------------------------------

3.3 Completion of the RTP Test Requirements Form (Continued)

- I. The RTP Manager is responsible for trending all test deficiencies associated with RTP test requirements and providing periodic reports to the Technical Support Manager.

3.4 RTP Test Results Package Preparation, Review, and Approval

3.4.1 Test Results Package Preparation

After completion of testing activities and as determined by the RTP Manager, a Test Results Package shall be prepared for JTG approval per format given on Form SSP-217. The Test Results Package shall provide a synopsis of system status with respect to modification completion, major maintenance problems or conditions, as well as the results of testing conducted under the RTP Test Requirements Form.

- A. A Test Summary Report shall be written for each completed RTP Test Requirements Form. The Technical Support Engineer should include the following items in the Test Summary:
 1. Results – State whether the test objectives and acceptance criteria were met. Include significant problems encountered during the conduct of the test. Only pertinent facts should be discussed. Provide a detailed explanation of any open items and their pending resolution.
 2. Test Deficiencies – Provide a brief summary of test deficiencies associated with the RTP test requirement and their disposition. Include specific detail for any design documentation or other corrective action required beyond the work order process used to disposition the test deficiency.
 3. System Configuration – List any design changes and major maintenance that affect the tested system from the time the system was Phase 1 SPOC'd until testing completed. Any differences shall be evaluated for impact on test results.
 4. Conclusion – This section should be used to add information to the record which the Technical Support Engineer feels should be discussed concerning system operation or test conduct. Observations or recommendations concerning system or equipment operation which might be useful for further operation should be addressed here.
- B. A System Punchlist will be included in the Test Results Package (if applicable). Punchlist items shall be entered into the Site Master Punchlist (SMPL). Test deficiencies, items requiring engineering resolution, and any other items which the Technical Support Engineer feels are important to document for resolution shall be entered on the punchlist.
- C. Applicable portions of the System Test Specification shall be included in the Test Results Package.
- D. The completed RTP Test Requirements Form (SSP-215) shall be included in the Test Results Package.

FOR INFORMATION ONLY

W. H. H. H.

W. H. H. H.

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 11 of 24
-----	----------------------	------------------------------------

3.4.1 Test Results Package Preparation (Continued)

- E. Applicable test data from plant instructions used to satisfy RTP test requirements shall be included in the test results package. A copy of the Procedure Review Cover Sheet shall be included with the test data. Each plant instruction attached should be individually listed on Form SSP-217. Use a continuation sheet if necessary to account for all test data.

3.4.2 Test Results Package Review and Approval

- A. The Technical Support Engineer shall compile the Test Results Package and review it for completeness and accuracy. The review is for verifying that all acceptance criteria are satisfied, test deficiencies have been resolved, and all steps have been completed or properly documented. The Technical Support Engineer and his systems supervisor shall then sign the Test Package Cover Sheet attesting to the review. An Independent Qualified Reviewer shall review the Test Results Package. This review shall ensure compliance with the requirements of this SSP, that the latest revision and change notice status of the BTRD is consistent with the RTP Test Requirements form, that the test data contained within the test results package supports the RTP acceptance criteria, and that all applicable documentation is included within the test results package. After resolution of concerns, the Independent Qualified Reviewer shall sign in the appropriate space on Form SSP-217 and forward to the RTP Manager for signature.
- B. Following IQR review, the JTG secretary shall complete the contents verified column of Form SSP-217 and distribute the Test Results Package to the JTG for review. Copies of the completed procedure review cover sheets may be transmitted for JTG Review in lieu of copying the entire instruction. Form SSP-214 may be used for the review transmittal. Reviewer comments may be documented using Form SSP-3. The JTG Secretary should schedule and notify the JTG members of a meeting to approve the RTP test results package.
- C. The JTG shall review the package and if approved, the JTG chairman and Technical Support Manager will sign Form SSP-217. For unresolved JTG comments, the package shall be returned to the Technical Support Engineer for resolution prior to Results Package approval.
- D. The JTG Secretary shall document the approval and record any comment/resolutions discussed by the JTG for test results package approval. Following JTG recommendations for approval of the meeting minutes, the minutes shall be forwarded to PORC in accordance with SSP-12.10. The JTG Secretary shall forward the results package to RM within 30 days for permanent records retention and sign and date Form SSP-217 noting transmittal.

FOR INFORMATION ONLY

YOUNG, M. H. 1961

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 12 of 24
-----	----------------------	------------------------------------

3.4.3 Closure of Open RTP Test Exceptions

NOTE This section applies to test exceptions generated by previous revisions of SSP-8.50. Under the new program there will be no RTP test exceptions.

- A. RTP test exceptions which remain open after this program change becomes effective will be packaged as stand alone test packages for review and closure following disposition.
- B. Form SSP-217 shall be used as a cover sheet denoting the test instruction and test exception number.
- C. Any retesting required to disposition the test exception shall be accomplished via plant instructions and included in the test exception closure package.
- D. The completed test exception package shall be reviewed and approved in the same manner as the RTP test results package as outlined in Section 3.4.
- E. The approved test exception package shall be transmitted to RM for permanent retention.

3.4.4 Completion of RTP Test Requirements During Power Ascension

NOTE Some RTP test requirements depend on plant conditions which cannot be established until power ascension. It may be desirable to obtain approval of the RTP test results package in support of an earlier plant milestone with these test requirements open. In such cases the RTP test results package shall be amended as follows.

- A. Annotate on Form SSP-215 the test requirements, acceptance criteria, and associated plant instruction to remain open. This may be done by placing an asterisk beside the affected items with an explanatory note. The acceptance criteria block will remain unsigned.
- B. On the title block of Form SSP-217, state Partial Test Results for System.....
- C. Specify the open test requirement(s) in the test summary report prepared per Paragraph 3.4.1.A.
- D. Submit the test results package for review and approval per Section 3.4. Following approval, a copy of Form SSP-215 shall be placed in the RTP test results package. The original shall be maintained by the RTP Manager for inclusion in the final RTP test results package.
- E. The open RTP test requirements may be integrated with other power ascension test requirements and tied to test plateaus within the PAT program.

FOR INFORMATION ONLY

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 13 of 24
-----	----------------------	------------------------------------

3.4.4 Completion of RTP Test Requirements During Power Ascension (Continued)

- F. Following completion of testing activities associated with the open RTP test requirements the final RTP test results package shall be prepared and approved in accordance with Section 3.4. The original Form SSP-215 shall be included in this package, with applicable acceptance criteria signed off. The system test specification and system punchlist may be excluded from this package.
- G. Following approval the final RTP test results package shall be transmitted to RM for permanent retention.

3.5 Restart Test Program Closeout

- A. Prior to placing the Mode Switch to the Startup position an interim Restart Test Program Summary Report will be prepared and submitted to the JTG. This report will consist of all testing to date, the results and any open items requiring resolution such as RTP test requirements to be completed during power ascension.
- B. Upon completion of Power Ascension Phase of the Restart Test Program a final Summary Report will be submitted to the JTG for approval. This report will consist of all testing completed, the results and any remaining open items.

3.6 Startup Manual

- A. The Startup Manual (STM) contains departmental instructions and guidelines necessary for execution of the integrated test plan for unit recovery.
- B. The STM is controlled in accordance with SSP-2.3, Administration of Site Procedures.

4.0 DOCUMENTATION RECORDS

4.1 QA Records

- A. Completed RTP test results are QA records and will be maintained by Records Management as part of the plant's lifetime records.
- B. Form SSP-215 is a lifetime record.
- C. Form SSP-217 is a lifetime record.

4.2 Non-QA Records

- A. Form SSP-3, retain until review is complete.
- B. Form SSP-214, retain until review is complete.

FOR INFORMATION ONLY

1950-1951

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 14 of 24
-----	----------------------	------------------------------------

5.0 DEFINITIONS

- A. **Design Baseline Test Requirements Document** – A design document that identifies the functional testing required on a system to demonstrate the safe shutdown design requirements for that system.
- B. **Design Baseline Verification Program** – A program established by Nuclear Engineering to confirm the safe shutdown capability of the plant. The DBVP generates testing requirements via baseline test requirement documents.
- C. **Joint Test Group** – A group of personnel acting as a Subcommittee of the PORC with authority to review STSs and RTP tests as described in SSP-12.10.
- D. **Restart Test Program** – Administrative program established by TVA to restart BFN Units 1 and 3.
- E. **RTP Manager** – The manager responsible for the coordination and execution of the BFN Restart Test Program.
- F. **RTP Test Requirements Form** – A document which correlates BTRD testing requirements to specific acceptance criteria, the plant instruction to be utilized to satisfy the test requirement, and verification signatures.
- G. **Technical Support Engineer** – The person cognizant for assigned RTP test activities.
- H. **Technical Support System Engineer** – Engineer Designated as the plant technical expert for specific plant system and acts as single point contact for assigned system.
- I. **System Test Specification** – A document specifying the required testing to be performed on selected systems for return to service.

6.0 REFERENCES

6.1 Source Documents

- A. BFN Final Safety Analysis Report.
- B. BFN Technical Specifications.
- C. NP STD-1.3, Training of Personnel.
- D. NP STD-1.4, Qualification of Personnel.
- E. NP STD-2.9, Records Management.
- F. NP STD-8.2, Surveillance Test Program.

6.2 Developmental References

- A. 3-STM-001, Startup Manual.
- B. SSP-2.1, Site Procedures Program.

FOR INFORMATION ONLY

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 15 of 24
-----	----------------------	------------------------------------

6.2 Developmental References (Continued)

- C. SSP-2.3, Administration of Site Procedures.
- D. SSP-2.7, Document Control.
- E. SSP-2.9, Records Management.
- F. SSP-3.4, Corrective Action Program.
- G. SSP-3.6, Problem Evaluation Report.
- H. SSP-8.1, Conduct of Testing.
- I. SSP-8.3, Postmodification Testing.
- J. SSP-9.3, Plant Modification and Design Change Control.
- K. SSP-12.1, Conduct of Operations.
- L. SSP-12.10, Plant Operations Review Committee.
- M. SSP-12.50, Unit Separation.
- N. SSP-12.55, System Preoperability Checklist.

END OF TEXT

FOR INFORMATION ONLY

SECRET

BFN	RESTART TEST PROGRAM	SSP-8.50 08/24/93 Page 16 of 24
-----	----------------------	---------------------------------------

FORM SSP-214
Page 1 of 1

RESTART TEST PROGRAM REVIEW TRANSMITTAL SHEET

Document: _____ BTRD No.: _____

Title: _____

Review must be completed by the review deadline date indicated. Attach comments on Comment Control Form SSP-3.

NOTE The Responsible Section Reviewer should sign and date the Review Transmittal Sheet and check the appropriate box when returning his/her comments.

Reviewing Section (Joint Test Group Members)

Review Deadline _____

Operations

Date

Date Transmitted _____

Quality Assurance

Date

☐ Without Comments

Technical Support

Date

☐ With Comments

Site Engineering

Date

Maintenance

Date

NSSS Vendor Representative

Date

FOR INFORMATION ONLY

Responsible Organization: RTP Manager

Retention Period: Completion of Review



BFN	RESTART TEST PROGRAM	SSP-8.50 08/24/93 Page 17 of 24
-----	----------------------	---------------------------------------

FORM SSP-215
Page 1 of 2

RESTART TEST PROGRAM TEST REQUIREMENTS
COVER SHEET

BTRD No.: _____

Page 1 of _____

Revision: _____

Title: _____

Prepared by:

Technical Support Engineer

Date

Reviewed by:

Independent Qualified Reviewer

Date

Reviewed by:

Systems Supervisor

Date

Ready for JTG Review

RTP Manager

Date

JTG Review

JTG Chairman

Date

Approval

Technical Support Manager

Date

FOR INFORMATION ONLY

Responsible Organization: RM

Retention Period: Lifetime

VIOLATION - 11/17/77

FN

RESTART TEST PROGRAM

SSP-8.50
08/24/93
Page 18 of 24

FORM SSP-215
Page 2 of 2

FORM

BTRD No.: _____ Rev. _____ Page _____ of _____

TEST REQUIREMENT	ACCEPTANCE CRITERIA	PLANT INSTRUCTION	REVISION REQUIRED?	SATISFACTORILY COMPLETED SIGNATURE/DATE
FOR INFORMATION ONLY				

Responsible Organization: RM

Retention Period: Lifetime

12. 10. 1964

BFN	RESTART TEST PROGRAM	SSP-8.50 08/24/93 Page 19 of 24
-----	----------------------	---------------------------------------

FORM SSP-217
Page 1 of 2

RESTART TEST PROGRAM TEST RESULTS PACKAGE

BTRD No.: _____

Revision: _____

Title: _____

<u>Results Package Contents</u>	<u>Pages</u>	<u>Contents Verified</u>
1. RTP Test Summary Report	_____	_____
2. RTP Test Requirements Form	_____	_____
3. System Test Specification	_____	_____
4. System Punchlist	_____	_____
5. Test Data (List individual test instructions below. Use Continuation sheets if necessary)		
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

RTP Test Results Review and Approval

_____ Technical Support Engineer	_____ Date	_____ Independent Qualified Reviewer	_____ Date
_____ Systems Supervisor	_____ Date	_____ RTP Manager	_____ Date
RTP Tests Results Reviewed by JTG		_____ Joint Test Group Chairman	_____ Date
RTP Tests Results Approved		_____ Technical Support Manager	_____ Date
Results Package Transmitted to RM for Permanent Plant Record Retention		_____ JTG Secretary	_____ Date

Responsible Organization: RM

Retention Period: Lifetime

FOR INFORMATION ONLY

CONTINUATION SHEET

BTRD No.: _____

Revision: _____

Test Data

Pages

Contents

Verified

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Population (millions)	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5
GDP (trillion USD)	45.0	48.0	51.0	54.0	57.0	60.0	63.0	66.0	69.0	72.0	75.0	78.0	81.0	84.0	87.0	90.0	93.0	96.0	99.0	102.0	105.0
Life expectancy (years)	75.0	75.5	76.0	76.5	77.0	77.5	78.0	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0
Urban population (%)	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0	72.0	73.0	74.0	75.0
Renewable energy (%)	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0
Carbon emissions (Gt CO2e)	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
Forest cover (%)	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0
Water stress (%)	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
Healthcare expenditure (USD/billion)	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0	190.0	200.0	210.0	220.0	230.0	240.0	250.0	260.0	270.0	280.0	290.0	300.0
Education expenditure (USD/billion)	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0
Research & Development (USD/billion)	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0
Trade share (%)	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0
Government debt (%)	60.0	62.0	64.0	66.0	68.0	70.0	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0	90.0	92.0	94.0	96.0	98.0	100.0
Unemployment (%)	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0
Income inequality (Gini index)	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	54.0	55.0
Digital connectivity (%)	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0	100.0	100.0
Climate resilience index	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0

Responsible Organization: RM

Retention Period: Lifetime

~~FOR INFORMATION ONLY~~



1954

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 21 of 24
-----	----------------------	------------------------------------

APPENDIX A
Page 1 of 3

**DESIGN BASELINE VERIFICATION PROGRAM/BASELINE TEST REQUIREMENTS
DOCUMENT LIST**

SYSTEM NO	DESCRIPTION	BTRD NUMBER
01	MAIN STEAM	3-BFN-BTRD-001
02	CONDENSATE/DEMINERALIZERS	3-BFN-BTRD-002/005
03	REACTOR FEEDWATER	3-BFN-BTRD-003/046
05	EXTRACTION STEAM	3-BFN-BTRD-002/005
10	BOILER DRAINS AND VENTS	2/3-BFN-BTRD-010
18	FUEL OIL	3-BFN-BTRD-018
23	RHR SERVICE WATER	2/3-BFN-BTRD-023
24	RAW COOLING WATER	2/3-BFN-BTRD-024
25	RAW SERVICE WATER	2/3-BFN-BTRD-025/026
26	HIGH PRESSURE FIRE PROTECTION	2/3-BFN-BTRD-025/026
27	CONDENSER CIRCULATING WATER	2/3-BFN-BTRD-027
30	DIESEL/REACTOR BUILDING VENTILATION	2/3-BFN-BTRD-030
31	CONTROL BAY VENTILATION	2/3-BFN-BTRD-031
32	CONTROL AIR	3-BFN-BTRD-032
43	SAMPLING AND WATER QUALITY	3-BFN-BTRD-043
46	FEEDWATER CONTROL	3-BFN-BTRD-003/046
47	TURBINE/GENERATOR CONTROL (EHC)	3-BFN-BTRD-047
50	SODIUM HYPOCHLORITE	2/3-BFN-BTRD-067/050
57-1	DIESEL 125V DC	2/3-BFN-BTRD-57-1
57-2	120V AC INST. AND CONTROL POWER	2/3-BFN-BTRD-57-2
57-3	250V DC DISTRIBUTION	2/3-BFN-BTRD-57-3
57-4	480V AC DISTRIBUTION	2/3-BFN-BTRD-57-4
57-5	4KV DISTRIBUTION	2/3-BFN-BTRD-57-5
57-6	500KV/161KV OFFSITE & MISC DISTR.	2/3-BFN-BTRD-57-6

FOR INFORMATION ONLY

Journal of Management Studies, 19(6), 701-718.

APPENDIX A

Page 2 of 3

SYSTEM NO	DESCRIPTION	BTRD NUMBER
63	STANDBY/LIQUID CONTROL	3-BFN-BTRD-063
64A	PRIMARY CONTAINMENT	3-BFN-BTRD-064A
64B	CONTAINMENT VENTILATION	2/3-BFN-BTRD-064B
64C	SECONDARY CONTAINMENT	2/3-BFN-BTRD-064C
65	STANDBY GAS TREATMENT	3-BFN-BTRD-065/066
66	OFFGAS/RECOMBINER/CHARCOAL	3-BFN-BTRD-065/066
67	EMERGENCY EQUIPMENT COOLING WATER	2/3-BFN-BTRD-067/050
68	REACTOR WATER RECIRCULATION	3-BFN-BTRD-068
69	REACTOR WATER CLEANUP	3-BFN-BTRD-069
70	REACTOR BLDG CLOSED COOLING WATER	3-BFN-BTRD-070
71	REACTOR CORE ISOLATION COOLING	3-BFN-BTRD-071
73	HIGH PRESSURE COOLANT INJECTION	3-BFN-BTRD-073
74	RESIDUAL HEAT REMOVAL	3-BFN-BTRD-074
75	CORE SPRAY COOLING	3-BFN-BTRD-075
76	CONTAINMENT INERTING	3-BFN-BTRD-076
77	RADWASTE	3-BFN-BTRD-077
78	FUEL POOL COOLING & CLEANUP	3-BFN-BTRD-078
79	FUEL HANDLING	3-BFN-BTRD-079
82	STANDBY DIESEL GENERATOR	2/3-BFN-BTRD-082
84	CONTAINMENT AIR DILUTION	3-BFN-BTRD-084
85	CONTROL ROD DRIVE	3-BFN-BTRD-085
86	DIESEL STARTING AIR	3-BFN-BTRD-086
90	RADIATION MONITORING	3-BFN-BTRD-090
92	NEUTRON MONITORING	3-BFN-BTRD-092

FOR INFORMATION ONLY

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 23 of 24
-----	----------------------	------------------------------------

APPENDIX A
Page 3 of 3

SYSTEM NO	DESCRIPTION	BTRD NUMBER
94	TRAVERSING INCORE PROBE	3-BFN-BTRD-094
96	REACTOR RECIRC. FLOW CONTROL	3-BFN-BTRD-096
99	REACTOR PROTECTION	3-BFN-BTRD-099
244	COMMUNICATIONS	2/3-BFN-BTRD-244

FOR INFORMATION ONLY



THE UNIVERSITY OF CHICAGO
LIBRARY

BFN	RESTART TEST PROGRAM	SSP-8.50 Rev 4 Page 24 of 24
-----	----------------------	------------------------------------

SOURCE NOTES

Page 1 of 1

IMPLEMENTING STATEMENT

All
3.2.A, 3.4.2.A
4.0
3.1 - 3.4
All
All

REQUIREMENTS DOCUMENT

SSP-2.2
BFQ-870534
NP STD-2.9
NQAP
TVA Letter to NRC
R08 910109 997
NPP Volume III Section 8.0

REQUIREMENTS STATEMENT

Appendix E
Recurrence Control 3.B
3.1.B.2
9.4.2
Enclosure 3
All

FOR INFORMATION ONLY

YACHTS

A

7