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Repair and Replacement Applications Center: Self Assessment Checklist – Revision 1

1013556

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Technical Update, December 2006

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ABSTRACT

The primary goal of this activity was to provide the utility with an approach and guidance for determining if their Repair and Replacement (R&R) Plan is current and sufficient or whether updates and changes are warranted. The self assessment should include investigation of processes, procedures and activities associated with the Repair and Replacement Program.

This update incorporates newer revisions to later editions of the ASME Code.

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1
INTRODUCTION

The development of a proper repair and replacement program in an operating nuclear power plant has been mandated by both the Nuclear Regulatory Commission (NRC) and Section XI of the ASME Boiler and Pressure Vessel Code. While the NRC maintains ultimate jurisdiction, ASME in conjunction the plant licensee and the insurance company all have a vested interest in the reliable and safe operation of the plant.

This document was developed to provide a means of verifying the integrity of an owners existing R&R plan.

Following the Self Assessment Checklist are some supporting references. One of these documents (located in the appendix) is an excellent Self Assessment Guideline developed by TVA. This assessment document is all inclusive and addresses several areas for investigation as opposed to just the R&R plan.

Also, included as an appendix, is a recent assessment of an R&R plan at a domestic nuclear power plant. A significant portion of this document was developed from this effort.

2
SELF ASSESSMENT

In order to determine the best approach for assessing the integrity of an R&R plan, it would be best to advise the participating members to prepare by obtaining all necessary documents and outlining a plan of attack. An outline of the key steps in performing this assessment is presented below.

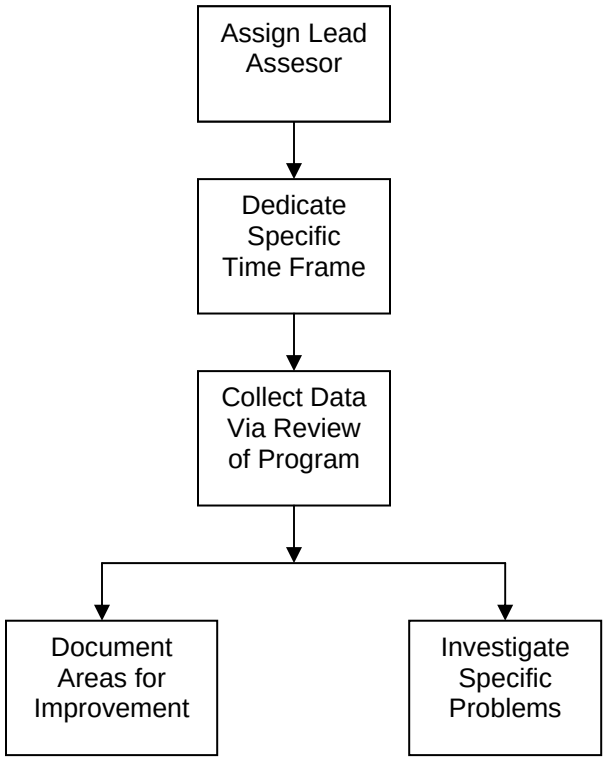

Figure 2-1

2.1 Assessment specifics:

The following tasks should be considered the major goals of the assessment team. During the course of the assessment these tasks should be addressed by reviewing the appropriate documents that are listed. Any discrepancies between the assessment results and the R&R checklist should be evaluated for determination of either; 1) a violation of ASME or NRC requirements or 2) a potential area for improvement that might be considered a best practice.

Review the plant site implementing procedure for Section XI of the ASME Boiler and Pressure Vessel Code.

Review any requests for relief submitted by the plant to NRC for relief from the requirements of Section XI for R&R activities and subsequent NRC responses to these requests including all Safety Evaluation Reports (SERs).

Review the plant maintenance procedures to determine that Section XI repair and replacement requirements are correctly included in work packages. Specifically identify how materials used in R&R activities is determined to meet original construction and site design requirements, and how suitability evaluations are performed on replacement of failed components.

Review the plant design change procedures to determine that Section XI replacement requirements are correctly included in design change packages.

Review the procurement procedures for Section XI Code items including design specifications, Certificates of Compliance and Certified Material Test Reports (CMTRs).

Review procurement procedures for dedication process of commercial grade materials as replacements in Code systems.

Perform a review of completed and in process maintenance and design workplans to ensure the effectiveness of the plant R&R program. Specifically review the workplans for material requirements, post-work NDE requirements, welder qualifications, and ANII notification.

Verify that the ANII is kept informed of Code R&R activities to allow completion of duties as required by the ASME Code.

Review the plant corrective action program for the identification of recent problems associated with the Section XI R&R program.

Perform a comparison of the plant R&R program to these of other nuclear utilities.

2.2 Documents for review

Ownership of the program:

To ensure the success of an R&R program, support will always be required from several departments (Design Engineering, Procurement, Maintenance, etc…). Identifying a single person as the custodian of the R&R Program would simplify the location process when performing a self assessment. Section XI specifically states:

Duties of the Authorized Nuclear Inservice Inspector include the following:

a) witnessing the pressure testing;

b) reviewing nondestructive examination procedures and **Repair/Replacement Programs and Plans**;

c) verifying that the visual examinations and tests on pumps and valves have been completed and the results recorded.

Section XI differs from Sections VI & VII in that the latter two sections are recommended practices but the requirements for the ANII in Section XI are mandatory. Since the ANII may not be an employee of the utility, true ownership of the plan/program should reside with an appropriate plant engineer/manager.

The R&R Plan must identify the following:

- Applicable Code Edition, Addenda, and Cases of Section XI
- Construction Code Edition, Addenda, Cases, and Owners Requirements used for the following:
  - Construction of the item to be affected by the R&R plan
  - Construction of the item to be installed by the R&R activity
  - Performance of the R&R activities
- The following items, when applicable to the specific R&R activity, shall be documented.
  - A description of any flaws and NDE examination methods used to detect those flaws
  - The flaw removal method, the method of measurement of the cavity created by removing a flaw, and, when required by IWA-2600, requirements for reference points
  - The applicable weld procedure, heat treatment, NDE examination, tests, and material requirements
  - The applicable examination, test, and acceptance criteria to be used to verify acceptability

- Description of the R&R activities to be performed;
- Intended life of the item after completion of the R&R activity, when less than the remainder of the previous design life of the item;
- Whether application of the ASME Code Symbol Stamp is required in accordance with IWA-4143;
- Documentation in accordance with IWA-4180 and IWA-6000.
    - The R&R Program, plans and evaluations required by IWA-4160 shall be subject to review by enforcement and regulatory authorities having jurisdiction at the plant site.

2.3 Addition documents needed for review:

- Plant ASME Section XI Inservice Inspection Program
- Work Request Initiation and Work Package Control
- Work Request Evaluation/Planning
- Inspection Planning and Verification Program
- Post Maintenance Testing
- Plant Equipment Equivalency Replacement Evaluation
- Control of Welding Consumables
- Inspection of Welds
- Repair of Welds
- Nuclear Procurement and Storage Manual
- Corrective Action Report
- Material Suitability Evaluation

2.4 Code Case Acceptability

Use of ASME Code Cases for justifying repairs or replacements are routine procedures at most nuclear power plants. Identifying the appropriate Code Case for a given application requires the notification by the utility to the NRC of the intent to either invoke a particular Code Case or to submit a relief request for use of a Code Case that is not generally accepted for that application. Referencing Code Cases that are not accepted by the NRC for use in a Section XI R&R plan could constitute a violation.

Listed below are the Code Cases currently (1995 Edition with 1996 addenda) accepted by the NRC for use in Inservice Inspection, ASME Section XI, Division 1 applications.

Numerical listing of accepted Code Cases			
N-98	N-409-3	N-463-1	N-498-1
N-113-1	N-415	N-465	N-503
N-211	N-416-1	N-471	N-504-1
N-235	N-427	N-472	N-509
N-236-1	N-429-1	N-473	N-512
N-307-1	N-432	N-479-1	N-514
N-311	N-435-1	N-481	N-515
N-335-1	N-437	N-485-1	N-516
N-355	N-448	N-489	N-517
N-356	N-449	N-490-1	N-521
N-389-1	N-457	N-491-1	N-522
N-401-1	N-458	N-494-2	N-524
N-402-1	N-460	N-495	N-537
N-408-3	N-461	N-496-1	N-541

2.5 Self Assessment Checklist

This list was generated from the review of several utility R&R plans that were provided to the RRAC. In addition, Section XI of the ASME Boiler and Pressure Vessel Code was used extensively as a guideline. Many of these questions are required tasks as set forth by ASME and the NRC. Others are simply a good practice.

As mentioned earlier, the Self Assessment should be performed in conjunction with members of other departments that are familiar with the appropriate sections of this checklist. This assessment has been simplified to allow the reviewer to evaluate the integrity of a plan by investigating the question of interest and responding yes or no.

2.5.1 Scope

- ❑ Does the program identify the applicable code of record?

2.5.2 References

- ❑ Does the program appropriately reference ASME & NRC?
- ❑ Does the program appropriately reference internal documents?

2.5.3 Definitions

- ❑ Does the program define key personnel?
- ❑ Does the program define components/component support?
- ❑ Does the program define repair versus replacement?
- ❑ Does the program define code versus non-code?

2.5.4 Administration

- ❑ Does the program identify the owner/custodian?
- ❑ Does the program require applicable changes if Technical Specifications are changed?
- ❑ Does the program list reference documents to verify there are no conflicts when making proposed program changes?
- ❑ Does the program require that a Safety Assessment be prepared if program changes are made?
- ❑ Does the program designate the appropriate personnel required for approval of any program changes?

2.5.5 General Program Requirements

- Does the program provide attachments or Code references for determining the applicable Code Class for the R&R activity?
- ***Does the program require that each R&R activity be performed to a written plan? (IWA-1400)***
- Does the program specifically state that the ANI/ANII be formally notified for an R&R activity?
- Does the program state which group/personnel are to review the proposed R&R activity?
- Does the program require that an NIS-2 form be prepared for each work request?
- Does the program designate the appropriate Procurement & Storage manual as a means for materials control?
- Does the program designate the appropriate NUCLEAR WELDING PROGRAM manual as a means for welding control?
- Does the program and/or NUCLEAR WELDING PROGRAM specify welder qualifications in accordance with ASME Section IX and where applicable Sections III and XI?
- Does the program and/or NUCLEAR WELDING PROGRAM provide controls for welding and brazing procedure qualification, selection and suitability?
- Does the program and/or NUCLEAR WELDING PROGRAM provide controls for thermal removal processes?
- Does the program require that welders employed by a service contract operate under an approval QA plan?
- Does the program reference the appropriate documents for a suitability evaluation prior to the authorization of a work request?

2.5.6 ASME Class 1, 2, or 3 Repairs

- Does the program designate which items are exempt from Section XI repair requirements?
- Does the program require that repairs be made in accordance with a specified code of record?
- Does the program require identification of the NDE method that revealed the flaw and a description of the flaw?
- ***Has the program been updated to CP-189, 1995 Edition for ASME Section XI examinations? (Table IWA-16001-, IWA-2300)***
- ***Did the program consider a request for relieve to allow VT-1 technicians qualified to IWA-2300 to perform Construction code visual examinations provided they have received additional training required by IWA-4511? (IWA-4511 of the 2003Addenda)***
- ***Does the program prohibit the use of IWA-2240? (10 CFR 50.55a(b)(xix))***
- Does the program require a description of the flaw removal method and dimensioning for reference points?
- Does the program require specification of weld procedures and post weld heat treatment to be used?
- Does the program require consideration of the cause of the failure prior to authorizing the repair?

- ***Does the program allow an item which has completed Construction Code but not yet installed to be repaired to either the Construction Code or Section XI? (IWA-1200)***

2.5.7 Defect Removal

- Does the program specify that if defect removal is below the calculated minimum thickness that the repair be made in accordance with IWA-4000?
- Does the program require that the cavity be ground smooth to allow for suitable welding access?
- Does the program require MT or PT once the cavity is prepared?
- Does the program state that indications detected as a result of the excavation that are not associated with the defect being removed be evaluated in accordance with IWA-3000?

2.5.8 Half Bead Welding

- Does the program reference the NUCLEAR WELDING PROGRAM manual and the appropriate ASME sections when the R&R activity requires a half bead weld procedure?
- Does the program specify the frequency of MT examination during welding?
- Does the program require NDE examination of the repair area and the applicable band around the repair after the appropriate length of time?
- Does the program specifically require PT as a means of detection of H_2 cracking?

2.5.9 ASME Class 1,2, or 3 Replacements

- Does the program designate which items are exempt from Section XI replacement requirements?
- Does the program require that replacements be made in accordance with a specified code of record?
- Does the program specifically state that the ANI/ANII be formally notified for an R&R activity?
- Does the program state which group/personnel are to review the proposed R&R activity?

2.5.10 Code Applicability

- Does the program require that replacement of items be performed in accordance with the Edition and Addenda of Section XI as stated in the owners Inservice Inspection Program?
- Does the program require that items to be replaced meet the requirements of the applicable Construction Code to which the original item was constructed?
- Does the program require that items to be replaced meet existing design requirements?
- Does the program state that items may meet all or part of later editions of the Construction Code or Section III provided that requirements affecting the design, fabrication and

examination of the item to be used for replacement are reconciled with the Stress Analysis report, Design Report or other suitable method that demonstrates the item is satisfactory for the specified design and operating conditions?

- Does the program state that items may meet all or part of later editions of the Construction Code or Section III provided that mechanical interfaces, fits, and tolerances are compatible with system and component requirements?
- Does the program reference the owners Nuclear Procurement and Storage manual?

2.5.11 Verification of Acceptability

- Does the program require that an evaluation of suitability be performed prior to authorizing the installation of the item to be replaced?
- Does the program state that if an item is being replaced due to failure, an evaluation of the cause of the failure be considered?
- Does the program state that if the cause of the failure is a result of a deficiency in the specification of the original component, the specification for the replacement shall reflect appropriate corrective provisions?
- Does the program state that any corrective provisions be consistent with the Construction Code or Section III?
- Does the program state that the report of the evaluation shall be made part of the record?

2.5.12 Documentation Requirements

- Does the program require the following reports and records be maintained by the owner when applicable?
  - Certified design specification
  - Certified design report
  - Design report
  - Overpressure protection report
  - Manufacturers data report
  - Material certification
  - Evaluation report required by IWA-7220
  - Completed owners report for repairs or replacements, Form NIS-2

2.5.13 Pressure Testing

- Does the program require a hydrostatic test of the system in accordance with IWA-5000, prior to resuming service after a repair or replacement is made?
- Does the program identify items that may be exempt from system hydrostatic testing?
- Does the program state that where a repaired or replaced component is isolatable within a portion of a system, only that portion needs to be tested?

- Does the program require that a visual examination VT-2 be performed on the repaired or replaced component as well as on the connections of the existing system?
- Does the program require that repairs or modifications to the pressure retaining boundary or replacement of Class MC or Class CC components shall be subject to a pneumatic leakage test in accordance with the requirements of 10CFR50, Appendix J, Paragraph IV.A as applicable?
- Does the program identify minor repairs or modifications that may have leakage tests deferred until the next scheduled leakage test?

2.5.14 Preservice Examination

- Does the program require that prior to returning a component to service it shall receive a preservice examination in accordance with one of the following:
  - IWB-2200
  - IWC-2200
  - IWD-2200
  - IWE-2200
  - IWL-2200
  - IWF-2200
  - Code Case N-491
- Does the program require that the examination shall include the method that detected the flaw?
- ***Does the program establish for VT-1, VT-2, and VT-3 examinations the requirements of IWA-2210 and Table IWA-2210-1 for resolution, lighting and proximity (IWA-2210); OR, does the program substitute the requirements of Code Case N-686?***
- Does the program state that a preservice examination for a Class MC component may be conducted prior to installation if the examination is conducted after pressure testing?
- Does the program state that a preservice examination for a Class MC component may be conducted prior to installation if the examination is conducted under conditions and with equipment and techniques equivalent to those employed for inservice inspections?

2.5.15 Pump and Valve Testing

(Deleted section on Pump and Valve Testing)

2.5.16 Records and Reports

- Does the program state that after repairs and replacements the NIS-2 form shall be prepared in accordance with IWA-6000?
- Does the program identify the responsible engineer that will prepare the NIS-2 form?
- Does the program identify the use of the NIS-2 form from the appropriate code of record?
- Does the program specify the appropriate length of time require for submittal of the NIS-2

form to the NRC?

- Does the program state that an NIS-2 form shall be completed for each work request?
- Does the program state that all NIS-2 forms shall be transmitted to Records Management for retention?
- Does the program state that the following records and reports shall be maintained for replacements?
- Certified design specification
- Certified design report
- Design report
- Overpressure protection report
- Manufacturers data report
- Material certification
- Evaluation report required by IWA-7220
- NIS-2 Forms

2.5.17 Non-Code Temporary Repairs

- Does the program state that any non-Code repair on a Class 1, 2, or 3 system must require specific written relief granted by the NRC?
- Does the program designate the length of time that a temporary non-Code repair may be used for?
- Does the program state that if a flaw is detected during a scheduled shutdown, a Code repair must be implemented?
- Does the program provide guidance for engineering analysis for Class 3 piping and augmented examination of the repaired area in accordance with Generic Letter 90-05?
- Does the program outline considerations for the preparation of a relief request for temporary non-Code repairs such as the following:
  - Root cause determination for the piping degradation
  - System interactions such as flooding or spraying water on surrounding equipment
  - Potential loss of flow to the system
  - Characterization of the flaw geometry
  - Flaw evaluation in accordance with Generic Letter 90-05
  - Evaluation of the temporary repair or replacement for design loading conditions such as dead weight, thermal expansion and loads
  - Provisions for assessment of structural integrity of the temporary non-Code repair or replacement utilizing volumetric methods.

2.5.18 Repair or Replacement of Class MC and CC Components

- Does the program identify the applicable code of record and Code Cases used to construct the item?

- Does the program identify the applicable code of record and Code Cases to repair or replace the item?
- Does the program require a description of the flaw and the NDE method used to detect the flaw?
- Does the program require a description of the flaw removal method, method of measuring the cavity and requirements for reference points for a repair?
- Does the program require a description of the work to be performed on the item?
- Does the program require identification of the applicable weld procedure, heat treatment, NDE method, tests, and material requirements?
- Does the program require a description of the applicable examination, test and acceptance criteria to be used to verify acceptability?
- Does the program require an analysis of the intended life of the item when less than the remainder of the design life of the item?
- Does the program require an ASME stamp for a replacement in accordance with IWA-4920?
- Does the program specify documentation in accordance with IWA-4900 and IWA-6000?
- Does the program require that temperbead repairs for Class MC and metal liners of Class CC pressure retaining components and attachments be performed in accordance with IWA-4540 of the code of record and the NUCLEAR WELDING PROGRAM manual?
- Does the program require the appropriate visual examinations for the repair of concrete containment?
- Does the program require a VT-1 examination if defect removal exposes structural steel?
- Does the program identify the responsible engineer for approving the acceptability of the exposed structural steel?
- Does the program require that the repair material shall be chemically, mechanically and physically compatible with the existing concrete?
- Does the program identify procedures for detensioning and retensioning of prestressed tendons?
- Does the program specify that repair materials are to be selected to minimize stress and strain incompatibilities with the existing concrete?

A
APPENDIX: TVA SELF ASSESSMENT

1.0 PURPOSE

This Standard Program & Process (SPP) describes TVAN's Self-Evaluation Program and provides the requirements and controls for the program. The Self-Evaluation Program is established to provide self-critical evaluations and assessments of TVAN performance with the intent of identifying strengths, weaknesses, and areas for improvement. A learning organization consistently reviews and evaluates its performance as a means to improve its overall efficiency and effectiveness.

This procedure addresses the various elements of the self-evaluation process and presents them as an integrated program. Taken in total, these elements will result in an effective means for assessing organizational performance, programs and processes, and individual kNuclear Welding Programledge and performance.

2.0 SCOPE

This SPP delineates requirements and responsibilities of the TVAN Self-Evaluation Program and is applicable to all TVAN sites and all TVAN employees. It also applies to other TVA organizations supporting TVAN, such as Procurement, as determined by TVAN management. The Self-Evaluation Program is an integrated program with elements that address organizational, programs/process, and individual self-evaluations. It addresses requirements for self-evaluation reports, team self-assessments which evaluate programs and processes, and individual self-evaluations and coaching as part of the Excellence in Performance Program.

3.0 INSTRUCTION

The TVAN Self-Evaluation program consists of three elements which, when taken in total, will 1) result in effective self-evaluations and assessment of TVAN performance, 2) identify performance trends, and 3) identify areas for improvement.

The three fundamental elements of the TVAN self-evaluation program and a brief description of each is given below. Individual sections of this SPP prescribe the controls and requirements for each element.

Performance Area Self-Evaluations - Key organizations responsible for day-to-day operation of TVAN's operating facilities will perform critical self-evaluations on a periodic basis to assess their performance. The intent of these evaluations is to identify performance trends, areas of weakness, strengths, and to identify causes and actions to be taken to address any identified problems. Evaluation reports are prepared and reviewed and evaluated by Site Management in order to identify potential generic issues or problems across all site organizations. (See Section 3.1)

Self-Assessments - Self-Assessments are planned activities to assess performance and identify strengths and weaknesses in TVAN Programs and processes. Self-Assessments are typically conducted using teams which assess specific processes or activities as determined by management. These assessments may be within a department or may be cross-functional assessments affecting multiple organizations. The assessments are planned and scheduled on a yearly basis, with schedules adjusted to reflect ongoing activities, industry experience, or management focus areas. Results of Self-Assessments are reviewed by appropriate management and are used by Department managers as input to the Performance Area Self-Evaluations described above. (see Section 3.2)

Individual Self-Evaluations and Coaching (Excellence in Performance) - The Excellence in Performance Program has been established to provide a mechanism for individual employees in organizations critical to the safe and efficient operation of the plant to evaluate their kNuclear Welding Programledge of key processes and performance expectations established by management. This program also provides for coaching and feedback by supervisors to employees on their performance of these activities/processes.

Results of these self-evaluations and coaching sessions will be used to identify 1) weaknesses in performance of specific processes with respect to management expectations, 2) areas where expectations may not be clearly understood or not reinforced, and 3) areas where processes may be improved. The Excellence in Performance results will also be used as input to the Performance Area Self-Evaluations described above. (See Section 3.3)

In addition to the above three elements, Nuclear Assurance provides independent internal oversight of nuclear activities/processes. The Nuclear Assurance organization performs regulatory-required internal and external audits to confirm compliance with the TVA nuclear quality assurance program in accordance with NADP-2, "Audits". Nuclear Assurance also performs assessments to evaluate nuclear programs, management decision-making, change management, corrective action, and self-evaluation programs; and to ensure focus on nuclear safety, regulatory compliance, and world-class performance. These assessments are performed in accordance with NADP-1, "Conduct of Quality Assessment and Inspection". Line organizations evaluate findings and other audit results as input to the overall self-evaluation process. This process provides additional data and input, independent of the line organization, to assist in the overall evaluation of performance.

3.1 Performance Area Self-Evaluations and Site Trend Evaluation

NOTE Section 3.1 requirements are applicable only to TVAN Plant Sites (i.e., BFN, SQN, WBN).

This element of the TVAN Self-Evaluation Program is used to evaluate the overall performance of TVAN using key internal (corrective action program, self-assessment results, human performance, etc.) and external (INPO evaluations, NRC inspections/issues, etc.) performance indicators. Area Leaders prepare periodic Performance Area Self-Evaluation reports which are used as the basis for assignment of colors to pre-identified performance windows established by TVAN Senior Management and the Site Vice Presidents.

A cornerstone of these performance windows is INPO 97-002, "Performance Objectives and Criteria For Operating Nuclear Electric Generating Stations" performance criteria. These criteria are used to self-identify strengths, weaknesses, and areas where performance can be improved. Additional performance areas may be assigned based on industry or plant specific operational issues, or management areas of emphasis.

These self-evaluations are reviewed and evaluated quarterly by senior management in order to identify and focus attention on areas needing improvement.

3.1.1 Identification and Assignment of Site Performance Windows

3.1.1.1 Each INPO 97-002 performance area is assigned an overall window. A listing of the INPO 97-002 performance areas is given in Appendix A. Areas have been identified as departmental or cross-functional as indicated on the Appendix.

3.1.1.2 Additional areas not specifically addressed in INPO 97-002 may be identified by the Vice President based on specific issues or focus areas.

3.1.1.3 Each performance area contains windows which address each INPO performance objective associated with the area (e.g., RP.1, RP.2, RP.3, etc.). Additional windows may be assigned for areas by management. See examples of typical additional window assignments in Appendix A.

3.1.1.4 The VP assigns a senior manager (usually Department Head level or higher) as the Area Leader for each of the identified performance areas.

3.1.2 Area Leader Responsibilities

3.1.2.1 Area Leaders are responsible for evaluating performance of their assigned areas and preparing a Performance Area Self-Evaluation Report for the quarter as described in Section 3.1.3 below.

3.1.2.2 Area Leaders should utilize checklists to address each of the INPO 97-002 sub-criteria for their assigned area. The intent of these checklists is to serve as an aid to ensure that specified performance criteria are observed and evaluated during the reporting period. These checklists are used as input in evaluating individual performance windows/objectives.

3.1.2.3 The Area Leader is responsible for presenting his/her analysis and proposed rating to the Senior Management Team on a quarterly basis.

3.1.3 Preparation of Performance Area Self-Evaluation Reports

3.1.3.1 Area Leaders assigned responsibility for INPO performance areas and other areas as assigned by the VP, shall prepare a written Self-Evaluation Report, as a minimum, each quarter.

3.1.3.2 The following inputs should be evaluated and considered in preparation of the report, as applicable:

- Corrective Action Program issues (PERs, effectiveness of CAP)
- Self assessment results (see Section 3.2)
- Nuclear Assurance items (Assessments, Audit findings, etc.)
- NRC items/issues, including NRC Performance Indicators
- INPO items/issues and INPO Warning Flags

- Line or management observations/Performance Objective checklist results
- Human Performance issues & Excellence in Performance results
- Event investigation results
- Material condition issues
- Business Plan Indicators
- System Health Information
- Long standing issues
- Benchmarking
- Appendix B questions
- ANII findings

3.1.3.3 The Performance Area Self-Evaluation Report shall follow the format presented in Appendix D. Section I of the report provides analysis/evaluation of the performance objectives and a proposed overall windows color for the performance area. Section II provides analysis/evaluation and a proposed window color for each performance objective.

3.1.3.4 Improvements needed that are identified by the self-evaluation shall be documented and addressed using the Corrective Action Program.

3.1.3.5 Area Leaders shall ensure that all sub-criteria items on the INPO performance objective checklists are addressed during each fiscal year.

3.1.3.6 Area Leaders analyze the performance area using the performance objective analyses (Section II of report format) and the questions provided in Appendix B, and assign an overall proposed rating to the area. Guidance is provided in Appendix C to assist the Area Leader in assigning the rating.

3.1.3.7 The Performance Analysis Manager will review plant trend data which may impact proposed windows ratings and provide concurrence with the proposed rating or comments to the Area Leader prior to presentation to Senior Management. These concurrences/comments shall be indicated on the windows rating page. He will present his comments to Senior Management if agreement on the proposed ratings can not be reached.

3.1.3.8 The Nuclear Assurance Manager, as part of his/her oversight role, will review proposed windows ratings and provide comments to the Area Leader prior to presentation to Senior Management. He will present his comments to Senior Management if agreement on the proposed ratings can not be reached with the Area Leader.

3.1.4 Assignment of Ratings/Colors for Performance Windows

3.1.4.1 The Area Leader presents his analysis and basis for the proposed ratings to the Senior management team, who approves the rating/color for each of the performance objectives windows and for the overall performance area.

3.1.4.2 B&WP Performance Analysis Group will consolidate all analyses, organization self-evaluation reports, and prepare the executive Summary for the Site Level 1 Trend Report. A copy of the Report along with the quarterly System Health Report, will be provided to Corporate for inclusion in the TVAN Level 1 Trend Report.

3.2 Self-Assessment of TVAN Programs, Processes, and Activities

For purposes of this section, the Corporate organization is considered as a site. A Self-Assessment Coordinator will be named and a yearly plan will be developed. Additionally, Corporate personnel are expected to support site self-assessments.

Self-assessments are performed on programs, processes, and work activities. These self-assessments are planned and scheduled on an annual basis and are performed using teams of employees kNuclear Welding Programledgeable of the processes being assessed. Self-assessments may be conducted within an individual department or may be scoped to assess sitewide processes or programs. Results of assessments are reviewed by plant management, Findings/Areas for Improvement are identified, and corrective actions prepared and tracked to ensure they are appropriately addressed.

3.2.1 Development of the Annual Self-Assessment Plan

3.2.1.1 Responsible Department managers shall develop and approve an annual self-assessment plan for each section or unit within their department. The approved department self-assessment plan shall be submitted to the Site Self-Assessment Coordinator, using Appendix E, in order to support preparation of the overall site self-assessment plan.

3.2.1.2 When developing the plan, department managers should ensure that the areas to be assessed are consistent with the priorities of the department and the site. The following items should be considered when establishing the scope of the assessment plan:

- Processes critical to the functioning of the organization
- Identified problem areas or industry wide issues or areas of focus
- Topics or processes important to plant safety or reliability
- Weak areas as noted by internal or external groups (e.g., Corrective Action Program, INPO, NRC, Nuclear Assurance, ANII etc.)
- New or recently revised programs and processes
- Management areas of emphasis
- Work management processes(e.g., contractor control, work orders, clearances, maintenance work control, etc.)
- Personnel training, kNuclear Welding Programledge, and certification
- Identified problem areas or issues from other TVAN plants

- Risk informed NRC baseline inspections program, (NRC inspectable areas) including scheduled upcoming inspections
- Declining trends in NRC Performance Indicators
- Other site Self-Evaluation and Self-Assessment Team Reports (good practices, areas needing improvement)

3.2.1.3 The frequency of self-assessments should be determined based on the size and needs of the department, but it is recommended that at least one per quarter be performed.

3.2.1.4 The individual department plans shall be integrated into a site self assessment plan by the Self-Assessment Coordinator. The integrated plan will be submitted to and approved by the Plant Manager for plants, and Senior VP, Nuclear Operations for Corporate.

3.2.1.5 Each self-assessment in the integrated self-assessment plan shall be assigned a tracking number by the self-assessment coordinator as follows:

WWW-XXX-YY-ZZZ

Where: WWW= Site Abbreviation
(BFN, SQN, WBN, CRP)

XXX = Department abbreviation
(E.g., M&M, OPS, ENG, etc.)

YY = Last two digits of the fiscal year
(e.g., 96, 97, etc.)

ZZZ = Sequential number of the number of the department assessment
(e.g., 001, 002, 003, etc.)

3.2.1.6 Approved annual plans and schedules will be entered in a database maintained by the Self-Assessment Coordinator.

3.2.1.7 The annual plan should be evaluated quarterly and assessed for necessary changes based on plant performance indicators, industry events, or current areas of management attention or focus.

3.2.1.8 Changes to the annual plan require the responsible Department Manager and Plant Manager or Senior VP, Nuclear Operations approval. Changes will be submitted to the Self-Assessment Coordinator for entry in the database.

3.2.2 Preparing for the Self-Assessment

3.2.2.1 A Lead Assessor shall be appointed before the scheduled start of the assessment by the department manager, in order to have sufficient time developing the specific assessment plan.

3.2.2.2 It is recommended that the lead assessor should have:

- Served as a team member on an INPO evaluation, or
- Nuclear Assurance assessment, experience/training, or
- Attended other self-assessment training.

3.2.2.3 The Lead Assessor is responsible for the planning and performance of the self-assessment. In this role, he/she is responsible for:

- Coordinating the development of the self-assessment outline/plan
- Leading the assessment team and acting as facilitator during the assessment to ensure the plan is followed.
- Coordinating team member activities during the assessment
- Preparing the final report in a timely manner using conclusions and recommendations developed by the team during the assessment
- Debriefing the Responsible Manager during the performance of the assessment and presenting the results to the Responsible Manager following completion of the assessment

3.2.2.4 The assessment outline should be prepared in the format presented in Appendix F. Specific performance objectives and criteria for the assessment should be defined as well as the expected scope, duration, and personnel involved.

3.2.2.5 The manager responsible for the topic being assessed should assist in defining the assessment objectives and scope. Self-assessments of topics that cross departmental boundaries should be coordinated with the other departments involved or affected by the assessments.

3.2.2.6 The self-assessment outline should be completed and approved by the department manager in sufficient time to allow the Lead Assessor time to assemble the team and prepare for the conduct of the assessment. It is recommended that the assessment outline be approved at least two weeks prior to the assessment.

3.2.2.7 The Lead Assessor and the department managers involved shall identify members of the assessment team. As a minimum, the team should consist of two or more persons kNuclear Welding Programledgeable of and involved in the area or topic being assessed. Team members may come from the section/unit, other departments, other TVAN nuclear plants or organizations, or other nuclear sources outside of TVA (e.g., INPO, other utilities/plants). Corporate personnel are expected to support self-assessment in their areas of expertise/responsibility.

3.2.2.8 The department manager and the lead assessor should brief the assessment team prior to starting to ensure that all team members understand the scope and expectations of the assessment.

3.2.2.9 The department manager should forward a copy of the approved self-assessment outline to the Site Self-Assessment Coordinator upon approval.

3.2.2.10 Department managers and Lead Assessors should consider the need for conducting benchmarking activities prior to conducting the assessment. Appendix H has been provided as an aid to conducting such benchmarking activities.

3.2.3 Performing the Self-Assessment

3.2.3.1 The Lead Assessor will use the assessment outline/plan to stay focused on the purpose and scope of the assessment. However, he should remain aware of conditions and work activities which may affect the assessment or require a change in scope. Sometimes problems outside the scope of the assessment that need immediate attention or further evaluation are discovered during performance. Changes in the outline/plan should be identified and coordinated with the responsible manager.

3.2.3.2 Assessments should be performed on a dedicated full-time basis. A typical assessment should be completed within a two day to two week period, dependent upon the scope.

3.2.3.3 The self-assessment shall be completed by the assessment due date specified in the self-assessment annual plan unless approved extensions are made.

3.2.3.4 Information and data should be collected through reviews of program procedures and work documents, observations of work activities or processes, interviews with personnel, and inspection of plant conditions. This information should be assessed against management expectations and appropriate standards, with weaknesses or inefficiencies noted, as well as strengths. Specific examples of problems should be evaluated to determine if a broader overall issue exists.

3.2.3.5 Areas for improvement should be performance based, meaning the actual effects or significance of the deficiencies should be identified.

3.2.3.6 As specific problems or broader issues are identified, the assessor should focus on the cause(s) or the failed barrier(s) that contribute to the issue. This is key to performing an effective assessment. (The assessor should strive to answer the question, “Why”).

3.2.3.7 The Lead Assessor will periodically brief the responsible manager as required during the performance of the assessment to confirm progress and direction of the assessment.

3.2.3.8 Potential findings should be communicated as soon as practical to the organization responsible in order that actions can be taken immediately when applicable.

If a problem is immediately detrimental to personnel or to the safe or reliable operation of the plant, notify and discuss noted problems with supervision, and initiate a PER.

3.2.4 Reporting and Review of Results and Documentation of Findings

3.2.4.1 The department manager and lead assessor should conduct debriefings with the affected departments as required throughout the performance and prior to issuing a written report. The site Self-Assessment Coordinator should be notified in advance of the debriefing times.

3.2.4.2 The debrief should summarize potential strengths, findings, and areas of improvements.

3.2.4.3 The Lead Assessor shall submit a written report to the responsible department manager for approval. This should be done in sufficient time to allow approval within 30 days following completion of the assessment.

3.2.4.4 The report shall be constructed in a format similar to that shown in Appendix G.

3.2.4.5 Each finding shall be documented in accordance with the Corrective Action Program (CAP) process. (see SPP-3.1)

3.2.4.6 Each area for improvement shall be documented either on a PER or as an action under the ID assigned to the self-assessment number and tracked in EMPAC or TROI, unless the item is corrected on the spot. (The report should identify issues corrected on the spot).

3.2.4.7 Upon department manager approval, the report should be distributed and scheduled for review by Senior Level Management or the Self-Assessment Committee by the Self-Assessment Coordinator.

NOTE The Self-Assessment Committee is composed of kNuclear Welding Programledgeable management personnel from key organizations as identified by the Site VP and the Self-Assessment Coordinator. The committee is chaired by the Self-Assessment Coordinator and reviews those assessments not reviewed by Senior Level Management.

3.2.4.8 The Self-Assessment Coordinator should ensure that assessment results are appropriately communicated to site employees and to other TVAN sites for information. Significant issues or problems identified during the assessment should be verbally communicated to their counterparts as soon as possible.

3.2.5 Oversight of the Self-Assessment Program

3.2.5.1 The Self-Assessment Coordinator, through the Self-Assessment Committee, is responsible for monitoring and evaluating the overall effectiveness of the self-assessment program.

3.2.5.2 Activities associated with this responsibility include:

- Development of the site integrated assessment plan
- Chairing the Self-Assessment Committee
- Maintaining the self-assessment database
- Conducting periodic assessments of the self-assessment process
- Reviewing problems identified by outside organizations to see why self-assessments did not identify
- Distribution of completed assessment reports and the integrated plan.

3.2.5.3 The Self-Assessment Committee is responsible for:

- Monitoring the effectiveness and timeliness of organizational assessment per the approved integrated plan
- Review of completed assessments not presented to the Senior Management Team
- Providing feedback to department managers on the quality and effectiveness of completed assessments

3.3 Individual Self-Assessments and Coaching (Excellence in Performance Program)

3.3.1 The Excellence In Performance Program is a structured approach to enhance personnel understanding of and performance to expectations that result in operational excellence. It provides a methodology to communicate and reinforce performance expectations for day-to-day conduct of key processes/activities performed in plant operation.

3.3.2 The program is targeted to personnel in key organizations responsible for day-to-day operation of TVANs nuclear plants. It provides a mechanism for employees to self-evaluate their kNuclear Welding Programledge of performance expectations related to their key processes, and a mechanism for management to communicate performance expectations and monitor performance to them. The goal of the program is to provide leading indicators which identify weaknesses that can predict future problems before they result in operational events.

3.3.3 The program is designed to provide:

- A method for individuals to evaluate their kNuclear Welding Programledge of key processes and performance expectations
- A means to measure our collective kNuclear Welding Programledge of key processes and performance expectations
- A mechanism for identifying areas where expectations may not be clearly communicated or understood
- A mechanism to give feedback on kNuclear Welding Programledge of key processes and performance expectations

- Leading indicators to identify weaknesses that predict future problems

3.3.4 Performance expectations are developed and are communicated through a computer based system which allows self-evaluation of kNuclear Welding Programledge and performance by first line employees and their supervisors. Data and results obtained as a result of the self-evaluations and performance observations are monitored and trended to identify areas where understanding of or performance to expectations are weak. These results are then shared to identify opportunities for improvement.

3.3.5 Program data is also used by line management to evaluate and identify areas which need improvement before they result in plant operational events. Data is analyzed and used as an input to the Performance Area Self-Evaluation reports described in section 3.1, and may also be used to focus team self-assessments described in section 3.2 on potential areas of weakness.

4.0 RECORDS

4.1 QA Records

None

4.2 Non-QA Records

Approved Performance Self-Evaluation Reports
Approved Self-Assessment Reports
Approved Level 1 Trend Reports

5.0 DEFINITIONS

Area for Improvement - An area where the site is operating adequately but there is an opportunity to improve the process or program

Benchmarking - Management expectations and station processes and performance compared with other high performance organizations to identify options for solving problems and improving performance and opportunities to emulate best practices

Finding - A deviation from an applicable internal or external standard or other appropriate expectations which is required to be documented under the corrective action program

Lead Assessor - The individual assigned to lead the self-assessment team as well as actively participate in team activities

Self-Assessment - The critical evaluation of an activity, process, or program performed by the organization accountable for it

Self-Assessment Team - Individuals assigned to collectively perform the assessment

Strength - A condition or activity that clearly results in a performance that exceeds established expectation or clearly exceeds industry standards

APPENDIX A
Page 1 of 2

INPO 97-002 PERFORMANCE AREAS

SC SAFETY CULTURE (CROSS-FUNCTIONAL)

OR ORGANIZATIONAL EFFECTIVENESS (CROSS-FUNCTIONAL)

SE SELF-EVALUATION AND CORRECTIVE ACTION (LEARNING ORGANIZATION) (CROSS-FUNCTIONAL)

OE OPERATING EXPERIENCE (CROSS-FUNCTIONAL)

HU HUMAN PERFORMANCE (CROSS-FUNCTIONAL)

OP OPERATIONS (DEPARTMENTAL)

PS PLANT STATUS AND CONFIGURATION CONTROL (CROSS-FUNCTIONAL)

WM WORK MANAGEMENT (CROSS-FUNCTIONAL)

MA MAINTENANCE (DEPARTMENTAL)

EQ EQUIPMENT PERFORMANCE AND MATERIEL CONDITION (CROSS-FUNCTIONAL)

EN ENGINEERING (DEPARTMENTAL)

TR TRAINING (CROSS-FUNCTIONAL)

RP RADIOLOGICAL PROTECTION (DEPARTMENTAL)

CY CHEMISTRY(DEPARTMENTAL)

EXAMPLES OF ADDITIONAL WINDOWS ASSIGNMENTS

FP FIRE PROTECTION

SA SECURITY

EP EMERGENCY PREPAREDNESS

ES DOCUMENT CONTROL

PERFORMANCE AREA ANALYSIS QUESTIONS

The following questions should be evaluated and answered by the Area Leader and used as the basis for developing Analysis Summary and proposed assignment of performance area ratings. The responses should summarize performance to the questions in the area.

1. What has been identified that is new in the area?

2. Has progress been made on previously identified items?

3. Have you added any new long or short term issues?

4. Have any previous long or short term issues been closed?

5. Have assessments been performed for effectiveness of any corrective actions identified in the Corrective Action Program?

6. What are the three top items (Human Performance for one) that self-assessments have identified and what progress has been made on these items?

7. (Third quarter report only). Are there any sub-criteria that have not been addressed and evaluated in the first nine months of this fiscal year? If yes, explain and provide a schedule date for their address.

8. How has the self-assessment process improved site performance in the area?

9. What actions at the leadership level would improve performance in the area?

10. Are expectations for performance in this area defined and reinforced?

APPENDIX C
Page 1 of 2

PERFORMANCE WINDOW COLOR ASSIGNMENT GUIDANCE

The following guidelines have been established to assist Area Leaders in assigning ratings to the performance windows to be included in the Site Trend Report and the TVAN Level 1 Trend Report.

1. Color Criteria for Windows are as follows:

Green - Significant Strength

Performance for the area exceeds standards and expectations and compares favorably with industry benchmarks and goals.

White - Satisfactory

Performance for the area meets current standards and is on target with identified goals and indicators.

Yellow - Improvement needed

Performance for the area is less than desired and additional management attention is required. Corrective actions for improvement must be developed and implemented.

Red - Significant Weakness

Performance for the area is unsatisfactory and immediate management attention is required. Corrective actions must be defined, implemented, and monitored.

2. Additional details for windows

Up & Down Arrows - Arrows are used to indicate the trend in performance in the area to show if it is improving or declining.

Sub-windows - Sub-windows are annotated with a color to designate specific organizations which contributed to an area window being designated as green, yellow, or red. Arrows are not used for sub-windows.

3. Management Expectations

- Performance windows should only be “yellow” for a maximum of four consecutive quarters. If performance needs improvement for more than four consecutive quarters, it is indicative of significant weakness in the area (red). If significant improvements have been noted after four consecutive quarters, then the window should be changed to “White”.

- Performance windows should only be “green” for a maximum of four consecutive quarters. If performance remains strong for an extended time, expectations should be raised, and the performance re-baselined (White).

PERFORMANCE WINDOW COLOR ASSIGNMENT GUIDANCE

- Rating of the Management and Leadership window should be tied closely to the other windows in the performance area. Too many yellow (or red) windows for one quarter, or for consecutive quarters, should be evaluated to determine if it indicates a need for improvement in management. This would be appropriately reflected as a “yellow” window.

- The “Surveillance Program” window should indicate a significant weakness (red) if one (or more missed surveillances occurred during the quarter.

APPENDIX D
Page 1 of 4

PERFORMANCE AREA SELF-EVALUATION FORMAT

Listed below is the content to be addressed in the Performance Area Self-Evaluation Report. Pages 2-4 of this Appendix provide an example of the report format.

SECTION I - Performance Area Analysis (Appendix D, Page 2 of 4)

I. Analysis Summary- A paragraph summary developed by analyzing information from each of the following inputs.
- ⇒ **Individual Organizational Self-Evaluation Reports**
- ⇒ **Effectiveness of CAP**
- ⇒ **Long Standing Issues**
- ⇒ **Performance Window Analysis Questions (Appendix B)**
- ⇒ **Benchmarking**

II. Assign Window Rating

III. Concurrences

SECTION II - Performance Objective Analysis (Appendix D, Pages 3/4 of 4)

I. INPO 97-002 Performance Objective

II. Positives

III. Improvement Needed

IV. Precursors/Indicators

V. Analysis - A paragraph summary developed by analyzing information from each of the following inputs in addition to the Positives, Improvements Needed, and Precursors/Indicators section.
- ⇒ **INPO 97-002 Individual Criteria**
- ⇒ **NA Assessments & Audits**
- ⇒ **NRC Inspection Reports and Issues**
- ⇒ **INPO Issues (E&A Findings)**
- ⇒ **CAP Trend Information**
- ⇒ **Excellence in Performance Data**
- ⇒ **Self-Assessment Team Reports**
- ⇒ **Observations/Checklists**
- ⇒ **Performance Indicators (Including NRC Indicators and INPO Warning Flags)**
- ⇒ **System Health Information**
- ⇒ **New Problems Identified**

VI. Actions

VII. Proposed Window Rating

RADIOLOGICAL PROTECTION
AREA LEADER: (JOHN COREY)

PERFORMANCE AREA WINDOW

↓	Y	Y	Y↑
RADIOLOGICAL PROTECTION			

RP.1	RP.2	RP.3	RP.4	RP.5
RP.6	RP.7			

ANALYSIS SUMMARY

Performance Analysis Comments or Concurrence:

BFN RADIOLOGICAL PROTECTION

PERFORMANCE AREA LEADER: JOHN COREY

PERFORMANCE OBJECTIVE WINDOWS

↓		↓	

RADIOLOGICAL PROTECTION MANAGEMENT AND LEADERSHIP
(RP.1)

RC	TR	ENG	OP	HR
EN				

↓	↓		

RADIOLOGICAL PROTECTION PERSONNEL KNUCLEAR WELDING PROGRAMLEDGE AND SKILLS
(RP.2)

RC	TR			

			Y

RADIATION DOSE CONTROL
(RP.3)
Y

RC	MA	OP	CY	ENG

Y	Y	Y↑	

RADIOACTIVE CONTAMINATION CONTROL
↓
(RP.4)

RC	TR	MA	EN	OP

CONTROL OF RADIOACTIVE MATERIAL
Y
(RP.5)

RC				

↓			

RADIOLOGICAL PROTECTION MEASUREMENTS
(RP.6)

RC	OSC			

↑	↑	↑	

RADIOACTIVE WASTE
Y
(RP.7)

RC	EN	ENG	CY	OP
MA				

Supporting Departments are shown beneath each window.

R	Significant Weakness	Y	Improvement Needed		Satisfactory	G	Significant Strength	B	Insufficient Data		New Window

1st	2nd	3rd	4th

Previous Quarters

↑ Improving ↓ Declining

FIRST QUARTER FY99 RATING: SATISFACTORY

Review period: October 1, 1998 - Dec. 31, 1998 NRC SALP RATING 1 PERIOD OF 9/8/96 - 4/18/98

PERFORMANCE OBJECTIVE WINDOWS ANALYSIS
March 1999

RADIOLOGICAL PROTECTION PERSONNEL KNUCLEAR WELDING PROGRAMLEDGE AND SKILLS (RP.2)	**PERFORMANCE OBJECTIVE** **Radiological protection personnel are trained and qualified to possess and apply the kNuclear Welding Programledge and skills needed to implement radiological protection activities that support safe and reliable plant operation.**

POSITIVES	**IMPROVEMENTS NEEDED**
1. Began monthly overview of systems by initiating "System of the Month" program. Established Subject Matter Experts for ADHR System 2. Technician Continuing Education exam scores during the first quarter of 1999 averaged 90%. 3. CRC responsive to training needs identified by the conduct of self-assessments.	1. Identified problems with OJT/TPE administration and progress. 2. Lack of technician confidence in issuing dosimetry 3. Technician system kNuclear Welding Programledge level, with focus on radiological hazards.

PRECURSORS/INDICATORS

1. Training No Shows: 0
2. Average Continuing Education Exam Scores: 90.3%
3. Job hold ups attributed to task qualification/proficiency: 1
4. PCEs/PERs attributed to technician *kNuclear Welding Programledge based* error: 0
5. Insufficient number of qualified Technicians available to perform task: 0
6. Job incumbents or RCSSs not represented at CRC meeting: 0
7. Training Effectiveness Evaluation Report rated yellow or less: Rating Yellow
8. Unqualified/unsupervised individual assigned to perform task without qual card issued/enrollment in OJT: 0
9. Training is not considered in the strategy for improving plant performance: N/A

ANALYSIS

RadCon is performing adequately in the area of personnel kNuclear Welding Programledge and skills. Test scores from continuing training indicate technicians capabilities and aptitudes meet established criteria for their assigned positions. One job hold-up was noted when back shift personnel were unable to issue extremity dosimetry. The technician has been crossed trained in this task; however, due to the infrequent performance of this task was unable to issue the dosimetry in a timely manner.
An ongoing assessment of the RadCon OJT/TPE process indicates that formal OJT/TPE is performed on an infrequent basis.

ACTIONS

1. Complete self-assessment of RadCon OJT/TPE program. Action Item 981102 ECD 4/30/99
2. Review infrequently performed tasks of cross-trained personnel to determine if additional proficiency training is needed. Action Item 990301. ECD 4/30/99.

APPENDIX E
Page 1 of 1

SELF-ASSESSMENT ANNUAL PLAN - _____
YEAR

DEPARTMENT: _____

Assessment Number	Start Date	[1] Due Date	Lead Assessor	Assessment Area / Purpose

[1] The assessment due date is the date the self-assessment is to be completed. The Self-assessment Report is due 30 days after the assessment due date specified above.

Approvals: _____ / _____
Department Manager Date

Distribution made by the Self Assessment Coordinator:

Site Vice President
Plant Manager

APPENDIX F
Page 1 of 2

SELF-ASSESSMENT OUTLINE

A Self-Assessment Outline should be prepared utilizing the following elements as a minimum:

- **The activities, processes, or program(s) to be assessed:** This could be an entire program such as the "Work Control Program," or "Clearance Program" or specific elements of an activity such as Radiation Work Permit usage.

- **Purpose of self-assessment:** Each self-assessment has one or more primary reasons for being conducted and is provided in order to guide the assessors when conducting observations and data analysis.

- **Lead assessor:** The individual who is responsible for the conduct of the self-assessment.

- **Assessment Tasks / Objectives:** A listing of elements of the area to be assessed and the specific activities that should be observed in these elements.

  The list should not be considered as all-inclusive, in that during the course of a self-assessment, information obtained could cause new assessment tasks to be indicated.

- **Approval:** the Lead Assessor and the Department Manager responsible for the self-assessment should approve the outline. This action provides input to and kNuclear Welding Programledge of the planning and preparation process and allows the responsible manager to ensure the planned assessment activities are comprehensive.

- **Assessor(s):** List identifies the team member by name if Nuclear Welding Program, or the organization including other TVAN personnel and outside peers.

An example self-assessment outline is provided on the following pages of this appendix.

EXAMPLE
SELF-ASSESSMENT OUTLINE

Assessment No.: (WWW-XXX-YY-ZZZ)

Topic: Snubber Program

Purpose of Assessment:

Evaluate the implementation of the snubber inspection program based on the existing program documents / procedures and licensing requirements.

Lead Assessor:

Assessor(s): (Name(s))

Assessment Period: (Scheduled performance start and finish dates)

Assessment Tasks / Objectives:

(1) Review Technical Specification and Licensing Basis requirements to determine upper-tier program requirements and:

a. Evaluate compliance of the program document with requirements
b. Determine any need changes to licensing basis or program documents

(2) Examine a selective sample of work performed during Unit 1 Cycle 8 and assess

a. Technical adequacy of problem disposition
b. Documentation of deviations
c. Proper LCO entry for snubber removal
d. Equipment calibration records
e. Sample selection and sample expansion
f. Personnel qualifications
g. Database maintenance

(3) Examine the effectiveness and interface of the Design Control program with the Snubber program by a sample review of snubber DCNs issued and installed during the prior 12 months.

Approvals: _____ / _____
Lead Assessor Date

Approvals: _____ / _____
Department Manager Date

Distribution: Site Self-assessment Coordinator

APPENDIX G
Page 1 of 2

SELF-ASSESSMENT REPORT

Assessment Number _____ Dates of Assessment _____

Topic of Assessment _____

☐ Check if follow up assessment.

Lead Assessor _____ Other Assessors _____

OBJECTIVES AND SCOPE

(Discuss purpose of assessment, identify specific performance objectives and criteria, and describe overall scope and methods used to perform assessment. Attach the Self-Assessment Outline.)

SUMMARY

(Summarize the results of the assessment and any issues. Discuss the implications of the issues with regard to the effectiveness of the programs or area assessed.)

STRENGTHS

1. (Discuss good performance areas noted.)

2.

3.

FINDINGS

(Provide explanatory comments for each assessment task in the outline with a problem which is required to be documented using the PER process.)

1. (Describe each Finding in concise statements. Add examples as supporting sub-paragraphs. List PERs generated.)

2.

3.

SELF-ASSESSMENT REPORT

AREAS FOR IMPROVEMENT

(Provide explanatory comments for each assessment task in the outline needing improvement.)

1. (Describe each Area for Improvement in concise statements. Add examples as supporting sub-paragraphs. List PERs generated.)

2.

3.

AREAS FOUND ACCEPTABLE

1. (Provide brief comments for each assessment task in the outline not needing improvement.)

2.

3.

Benchmarking Information (If Used of Available)

KEY PERSONNEL CONTACTED

(List names, titles. Not every person has to be listed.)

REVIEW AND APPROVAL

/	
Lead Assessor	Date
/	
Department Manager	Date

Distribution: Site Self-Assessment Coordinator
Site Vice-President

GUIDE ON BENCHMARKING

1.0 PURPOSE

This guide provides direction for an efficient benchmark evaluation. It should be used for guidance in choosing a benchmark subject, evaluation and implementation.

Benchmarking will compare products, services, and practices against companies recognized as industry leaders. The key to the benchmark process is to generate insight, not just data. The insight you are seeking is the best practices used by the best-in-class companies, and appropriate targets that will help TVA achieve world class performance.

Our goal is to strive for continual improvement. An integrated and systematic approach to plan, execute, evaluate, and implement industry best practices through benchmarking is a key tool for achieving this goal.

Benchmarking provides a way to discover and understand methods that can be applied to your process to affect major improvement. Benchmarking not only tells you how good you need to be but also reveals the best practices that will help you get there.

The value of following a process while conducting a benchmarking study is that it helps to ensure the appropriate critical success factors are properly identified. With proper identification, the benchmarking will result in quality data for analysis that will be valuable for incorporating best practices.

2.0 DISCUSSION

This guide is set up into four distinct phases necessary for producing an effective benchmark evaluation. These phases are recognized in the industry for benchmarking.

1) Determination of what to benchmark. Define the process or service to benchmark.

2) Understanding your own process. Understand your process/activity before attempting to understand others.

3) Identification of companies with recognized best practices to benchmark.

4) Collection and analysis of benchmark data and identify performance gaps. Actual collection and analysis of information collected from the companies benchmarked.

There are three types of benchmarking. Internal, competitive, and functional/universal.

Internal - Focuses on other areas within your own company that have proven best practices that you can learn from.

GUIDE ON BENCHMARKING

Competitive - Focuses on your company's direct competition.

Functional/Universal - Focuses on a key business process and compares this process against companies regardless of industry.

3.0 PHASE 1 - WHAT TO BENCHMARK

3.1 Determine What to Benchmark

3.1.1 Establish the purpose of the benchmark.

3.1.2 Define the benchmark target or process to be benchmarked.

3.1.3 Determine the deliverables.

3.2 Prepare a Benchmarking Plan

3.2.1 Activities

3.2.2 Resources

3.2.3 Schedule

3.2.4 Responsibilities

4.0 PHASE 2

4.1 Understand Your Process

4.1.1 Purpose is to fully understand your Process/activity prior to attempting to understand others.

4.2 Deliverables

4.2.1 Process map.

4.2.1.1 Outline your entire process. Including customer requirements, interfaces and activities within. This will allow you to understand how you are/aren't meeting your customers needs.

4.2.1.2 Identify the requirements needed for each service you provide, and the measures of success for providing that service.

4.2.2 Gap analysis for your process

4.2.2.1 Where you are and where do you need to be.

4.2.2.2 Determine the Quantitative measures - how much, how many, how often (Number of employees, cost, duration, etc.).

4.2.2.3 Determine the Qualitative measures - explains the reason for the gap, how, what, why (methodology, philosophy, focus, procedural detail, effectiveness of an operation).

5.0 PHASE 3 - IDENTIFY COMPANIES TO BENCHMARK

5.1 Purpose

5.1.1 Identify companies with recognized best practices for the processes you are benchmarking.

5.2 Deliverables

5.2.1 List of proposed companies including location and contact persons.

5.3 Activities

5.3.1 Select Type of benchmarking.

5.3.1.1 Internal.

5.3.1.2 Competitive.

5.3.1.3 Functional/combination.

5.3.2 Identify screening criteria.

5.3.2.1 Select companies.

5.3.2.2 Rank the companies selected.

5.3.3 Obtaining benchmarking information.

5.3.3.1 Benchmarking databases (some help may be needed from OE, INPO, and the public library to access these databases).

a. The Benchmark Exchange (TBE), International Benchmarking Clearinghouse, American Productivity & Quality Center (APQC), The Strategic Planning Institute Associations, Encyclopedia of Associations, Internet WWW sites, E-mail discussion groups, Local libraries.

5.3.4 Obtain the participation of potential benchmarking partners. Anticipate being told NOT INTERESTED.

5.3.5 Be prepared to answer the following questions.

5.3.5.1 What you hope to gain from your partner(s).

5.3.5.2 Why was the partner(s) selected?

5.3.5.3 What are the problems you are attempting to address.

5.3.5.4 What are your performance measures?

5.3.5.5 Who else are you benchmarking? Get permission prior to disclosing any information you get from any other company.

5.3.5.6 What is in it for them? This is an exchange of information. Be prepared to provide the same information you are asking for. They could benefit from your program.

6.0 PHASE 4 - Collection and Analysis of Benchmarking Data and Identify Performance Gap

6.1 Determine the method of collecting benchmarking information.

6.1.1 Phone survey/interview

6.1.2 Questionnaire

6.1.3 Review of policies, procedures, documents

6.1.4 Site visit

6.1.5 Factors to be considered when determining which method should be used.

- How much time is available.
- How complex is the information to be gathered.
- Are you looking for general trend or hard data.
- Will you need to ask follow up questions for clarification.
- How much you are willing to commit in terms of resources.
- What form is most agreeable to the benchmark partner.

GUIDE ON BENCHMARKING

6.2 Determine the information to be collected.

6.3 Develop specific questions to gather information.

6.4 Site Visits

6.4.1 Have the site you are visiting provide as much information as possible prior to visit.

6.4.2 Study the material and kNuclear Welding Program the differences in progress/processes before arriving on site.

6.4.3 Develop questions that will reveal the information you are seeking. Ask only those questions TVAN is willing to provide reciprocate answers.

6.4.4 Complete as much of the requirements for plant access badging as possible prior to site visit.

6.4.5 Assure team assignments are made and understood prior to visit.

6.4.6 Clearly communicate the objectives of your visit.

6.4.7 Maintain an open mind. Give comparisons only when asked.

6.4.8 Take good notes. Don't rely on memory.

6.5 Analysis

6.5.1 Notes should be transcribed into a report as soon as possible.

6.5.2 Identify best practices.

6.5.3 Make recommendation of best practices to be implemented.

B
APPENDIX: CRYSTAL RIVER ASSESSMSENT

ASSESSMENT REPORT

Dates of Assessment **DECEMBER 14-18, 1998**

Topic of Assessment **CRYSTAL RIVER 3 NUCLEAR POWER PLANT (CR3) ASME SECTION XI REPAIR & REPLACEMENT PROGRAM**

Lead Assessor Shane Findlan, Electric Power Research Institute (EPRI)
Other Assessors Jerry McClanahan, Tennessee Valley Authority
Rich Corbit, GPU Nuclear

OBJECTIVE:

To assess the procedures and implementation of the Crystal River 3 Nuclear Plant (CR3) ASME Section XI Repair and Replacement (R&R) Program.

SCOPE:

This assessment included the program processes, procedures and activities associated with the Repair and Replacement Program performed in accordance with the requirements of 10 CFR 50.55a(f) and the Section XI of the ASME Boiler and Pressure Vessel as established for the third inspection interval.

SUMMARY

The assessment was performed by the Electric Power Research Institute (EPRI) Repair & Replacement Application Center utilizing personnel from other nuclear utilities. The assessment personnel possessed extensive ASME Code, Section XI, Repair and Replacement Program experience. Utilizing these personnel provided a kNuclear Welding Programledgeable and unbiased review of the CR3 R&R Program. The assessment consisted of a review of the Repair & Replacement Program, implementing instructions, supporting procedures, active work packages, personnel training and records, and personnel interviews. In addition to the CR-3 assessment, Repair & Replacement Programs from other utilities (TVA, Southern Nuclear, Wolf Creek, Omaha Public Power, and New York Power Authority) were used for comparison.

Based on this assessment the CR-3 Repair & Replacement Program is in compliance with ASME Code Section XI in all areas assessed with the exception of one item. The one potential non-compliance item identified was the Nuclear Operations Welding Manual (NUCLEAR WELDING PROGRAM) which has not been updated to the 1989 Edition of Section XI of the ASME Code in compliance with the CR3 R&R program submittal to the NRC.

Another area that must be addressed to ensure the success of the R&R Program at CR3 is ownership of the program. The R&R Program requires support from several departments, but ownership for the total program could not be identified during the assessment. This function appears to belong in the Engineering Programs area and this department has been the driving force in the improvement of this

program. However, the personnel resources in the Engineering Programs department appear to be insufficient to continue the necessary administration of the R&R Program.

SUMMARY (continued)

The implementing procedures for the Section XI Repair & Replacement Program have been revised to meet the Section XI 1989 Edition requirements. These procedures are well-detailed and provide clear instructions. However, due to the changes in the R&R requirements proper training of personnel required to utilize these procedures is needed. To ensure compliance with the R&R Program procedures and to evaluate their effectiveness, we strongly recommend that periodic self-assessments of the R&R Program be performed.

FINDINGS:

1. The Nuclear Operations Welding Manual (NUCLEAR WELDING PROGRAM) has not been updated to current, approved ASME Code, Section XI, 1989 and, therefore, does not meet current Section XI commitments by CR3 Repair and Replacement Program. For example, the references used in this manual are not consistent with NWP# 1 "Preparation and Control of the Nuclear Operations Manual" referring to ASME Section XI Latest Edition and Addenda and NWP#13 referring to ASME Section XI 1983 through summer 1983 Addenda.

2. Ownership of the ASME Section XI Repair and Replacement Program could not be identified. Portions of the program reside in Design Engineering, Procurement Engineering, Engineering Programs, Maintenance, Projects and Licensing. Based on our experience the most effective R&R programs have a specified program owner who is assigned the responsibility for the implementation of the program. The R&R program owner must possess the experience to adequately support the coordination and oversight of the program.

AREAS FOR IMPROVEMENT

1. The Authorized Nuclear Inservice Inspector (ANII) is not utilized solely as a third party inspector as required by ASME Section XI. We were unable to interview the ANII, however, we did discuss the day-to-day activities and responsibilities assigned to the ANII with kNuclear Welding Programledgeable personnel. From the discussions it appears that much of the ANII's time is expended performing quality assurance type duties to the extent that his responsibility of ensuring compliance with ASME Section XI requirements may be impeded. This is supported by the major revisions required by the large number of examinations required to complete the CR3 second ten-year inspection interval.

2. The Repair & Replacement Program should require formal notification of the Site Welding Engineer (SWE), if a weld repair is required. This would allow the SWE to be involved in the selection and planning of welding related repairs and processes. Currently, he is notified after Planning has completed the weld traveler and repair work package and performs approval of these packages.

3. The Repair & Replacement Program should not include procedural details and instructions. These should be included in the correct Procedure Manuals. For example, the Half-Bead Weld Technique should only be referenced to the correct Code (IWA-4500) and FPC's Half-Bead welding procedure (NWP#-13). This will permit changes/modifications in other procedures without requiring significant changes in the Repair & Replacement program.

4. Design reconciliation for repair/replacement parts and components should be performed prior to procurement. Current practice is for Design Engineering to perform reconciliation prior to component installation/application. Design Engineering staff recommended that a single point of contact should be identified to effectively coordinate reconciliation. Current practice is to use any available Design Engineering staff member which was reported to be disruptive since it frequently involved reassignment of staff with minimal notification. *Additional staff comment:* Design engineering staff recommended that reconciliation

Areas for Improvement (cont.)

activities should be moved to Plant Engineering so that staff familiar with project, program, and plant issues would review work requests and be involved in planning.

Design engineering staff offered that current procurement procedure refers to 1992 Edition of ASME Code and that this places a burden to reconcile parts to the 1989 Edition. Procurement should specify that manufacturers/suppliers provide items in accordance with 1989 Code.

5. Training on the Repair and Replacement Program should be provided to all involved engineering personnel. This training should consist of: 1) familiarization with Section XI Code Repair & Replacement program requirements, 2) CR-3 Repair & Replacement Program and implementing instructions, and 3) the individual program responsibilities of CR-3 staff members.

6. A self-assessment program is needed to periodically evaluate the effectiveness of the R&R Program in meeting Code requirements. Assessment subsequent to refueling outages would be beneficial to evaluate the application of the Repair & Replacement Program to a wide range of applications.

OTHER OBSERVATIONS

1. The Nuclear Operations Welding Manual, procedure NWP-6 “Control of Welding Consumables for CR-3”, references NWP-17 “Welding Consumables Specifications”, which does not exist. This omission should be corrected.

2. The title of NEP-229, “Section XI Repair and Replacement Program” should be changed to reflect the scope of this document, which is guidance for implementation and use of Repair & Replacement documents. Currently, it shares the same title as the “Repair & Replacement Program” document.

3. Close-out of work packages was expressed as a concern by CR-3 Programs staff. Currently requires review/approval of all CMTRs and CoCs by ANII. Prior to close-out of work packages, all QA and PMT must be completed. Since the plant can be returned to service without completion of the PMT, close-outs can be delayed for extended periods. CR-3 staff should evaluate current process/workload to determine areas for improvement.

4. NDE requirements for repair welds are detailed in NWP- 11, which was developed and approved by Projects (SWE reports to projects). Since NDE requirements may influence serviceability of a repair weld (weld strength reduction factors, etc.) it may be worthwhile for Design Engineering to review/approve these requirements. Generally, Design Engineering selects/approves NDE requirements for many utilities. One of the Design Engineering staff (Bob Reynolds) believed that the NDE requirements were reviewed by DE, so it may be a simple matter to formally approve these requirements.

5. There is concern by the review team regarding timely updating, revision, and approval of the NUCLEAR WELDING PROGRAM prior to the next scheduled outage. This is due to the apparent workload of the SWE (which includes oversight of personnel qualifications for fossil and nuclear welding activities). FPC may want to review this area to determine if additional resources are necessary to support revision of the NUCLEAR WELDING PROGRAM.

6. Discussion with Programs consulting engineer (Ken Mayer) highlighted the fact that repairs do not require reconciliation to design requirements, but replacements require reconciliation based on CR-3 procedures. A visiting consultant (R. Reedy) apparently expressed an opinion that both repairs and

replacements required reconciliation to maintain Appendix B. FPC should evaluate this area and determine if this is an action item.

AREAS FOUND ACCEPTABLE

1. Interface between Repair & Replacement/ISI specialist (contractor) with Maintenance Planning, Design Engineering, Site Welding Engineer and other Engineering Program functions is excellent. This has been key to the current success of this program.

2. Interface between Maintenance Planning Department and Site Welding Engineer is excellent.

3. Electronic document control (MACS – maintenance activity control systems) system is very effective and ensures issuance of work packages with proper approvals. Engineering staff considers this to be a "major improvement" in processing repair & replacement work packages.

4. Section XI training program was provided by a consultant with coordination by Crystal River training department. Training was on overall Section XI Code with emphasis on Repair & Replacement programs. However, during a telephone interview with the Training Coordinator (B. Komara) to discuss recent Section XI training activity at CR-3, he indicated that there was limited attendance by Design Engineering Staff. A comprehensive training program for all staff that is responsible for Repair & Replacement program activities is needed to ensure effective R&R implementation.

5. The Repair & Replacement program adequately addresses the implementation of temporary, non-Code repairs in compliance with the guidance from NRC GL-90-05.

6. PEERE , NP-254, provides effective guidance and control for evaluation/reconciliation of replacement equipment and parts.

7. Procurement: Latest revision of the Nuclear Procurement and Storage Manual includes a rewrite of Manual Section 7, "Nuclear Supplier Evaluation", based on EPRI Guidelines for Commercial Grade Items. Utilization of Fully Integrated Materials Information System (FIMIS) was reported to provide excellent coordination of purchase specification/order to receipt inspection.

7. Weld Inspection Plan, included in Nuclear Operations Welding Manual, NWP #11, was considered an excellent practice which provides clear NDE/verification requirements.

8. CIMS – Component Information Management System was reported to be an effective tool for identification of ASME safety Class 1,2 & 3 components and assisted in determining Section XI applicability. FPC effectively utilizes information technology to address work package planning and tracking. However, CR-3 staff expressed concern regarding implementation of new "impact" software system, and whether it will offer the same control of the R&R process.

9. Work Package flow chart and plan in CP-113A is excellent and clearly establishes proper path for work activities.

Editorial Items:

1. Several items are referenced in the Repair & Replacement Program Document - Revision 8, but are not included in the reference section, including:
   - NRC Regulatory Guide 1.147, referenced on page 5.
   - AI-1100, Retention of Plant Operating Records, referenced on page 6
   - ASME Section XI 10 Year NDE program, referenced on page 21
   - ASME Section XI Component and Piping Support Manual, referenced on page 21
   - NEP-308, referenced on page 25.

KEY PERSONNEL CONTACTED

Jack Curham, Nuclear Engineering Programs Supervisor
Ken Mayer, ISI Specialist
Pat Peterson, Senior Nuclear Regulatory Specialist
Jeff Finnell, Site Welding Engineer
Robert Reynolds, Senior Nuclear Projects Specialist
Tom Salute, Design Engineering
Lennie Price, Procurement Engineer
Missy Johnson, Maintenance Planning
Bud Epps, Nuclear Engineering Programs Consultant
Bernie Komara, Training
Steve Roe, Programs

REVIEW

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Lead Assessor Date

CONCURRENCE

_____

Engineering Programs Manager Date

APPROVAL

_____

Engineering Manager Date

REFERENCES:

1. Title 10, Part 50, Code of Federal Regulations Paragraph 50.55a
2. Title 10, Part 50, Code of Federal Regulations Appendix B
3. American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code Section XI - 1989 Edition

DOCUMENTS REVIEWED DURING SELF-ASSESSMENT

I. Program Documents Reviewed

Document Number	Document Description
	Crystal River Unit 3, ASME Section XI Inservice Inspection Program, Interval 3
	Crystal River Unit 3, ASME Section XI Repair/Replacement Program, Interval 3
CP-113A	Work Request Initiation and Work Package Control
CP-113B	Work Request Evaluation/Planning
CP-113C	Inspection Planning and Verification Program
CP-113D	Post Maintenance Testing
NEP 229	ASME Section XI Repair/Replacement Program
NEP 254	Plant Equipment Equivalency Replacement Evaluation
NWP-01	Preparation and Control of the Nuclear Operations Welding Manual
NWP-06	Control of Welding Consumables for CR-3
NWP-11	Inspection of Welds
NWP-13	Repair of Welds
Copy #47	Nuclear Procurement and Storage Manual

II. Other Documents Reviewed

LER-98-008-00	Licensee Event Report - Personnel Error Results in a Condition Prohibited by Technical Specifications
LER-98-007-01	ASME Code Section XI System Pressure Tests Were Not Performed Due to Personnel Error
3-C98-3160	Corrective Action Process Precursor Card Report
3-C98-3132	Corrective Action Process Precursor Card Report
0355092	Work Package
0356870	Work Package
0348365	Work Package
0353945	Work Package
0355417	Work Package
0355238	Work Package
0355192	Work Package
0355359	Work Package

ATTACHMENT 1

ASSESSMENT PLAN

Assessment No.: Crystal River Nuclear Plant

Topic: ASME Section XI Repair & Replacement Program

Purpose of Assessment:

Assess the Crystal River nuclear plant (CRNP) inservice Repair and Replacement program to compliance with requirements of Section XI of the ASME Boiler and Pressure Vessel Code.

Lead Assessor: Shane Findlan, Electric Power Research Institute

Assessors: Jerry K. McClanahan, Tennessee Valley Authority Nuclear Corporate Engineering

Rich Corbit, GPU Nuclear

Assessment Period: December 14 - 18, 1998

Assessment Tasks/Objectives:

1. Review the CRNP site implementing procedure for Section XI of the ASME Boiler and Pressure Vessel Code.

2. Review any requests for relief submitted by CRNP to NRC for relief from the requirements of Section XI for R&R activities and subsequent NRC responses to these requests including all Safety Evaluation Reports (SERs).

3. Review CRNP maintenance procedures to determine that Section XI repair and replacement requirements are correctly included in work packages. Specifically identify how materials used in R&R activities is determined to meet original construction and site design requirements, and how suitability evaluations are performed on replacement of failed components.

4. Review CRNP design change procedures to determine that Section XI replacement requirements are correctly included in design change packages.

5. Review the procurement procedures for Section XI Code items including design specifications, Certificates of Compliance and Certified Material Test Reports (CMTRs).

6. Review procurement procedures for dedication process of commercial grade materials as replacements in Code systems.

ATTACHMENT 1 (continued)

7. Perform a review of completed and in process maintenance and design workplans to ensure the effectiveness of the CRNP R&R program. Specifically review the workplans for material requirements, post-work NDE requirements, welder qualifications, and ANII notification.

7. Verify that the ANII is kept informed of Code R&R activities to allow completion of duties as required by the ASME Code.

8. Review the CRNP corrective action program for the identification of recent problems associated with the Section XI R&R program.

9. Perform a comparison of the CRNP R&R program to these of other nuclear utilities.

Approvals: _____/_____
Lead Assessor Date

_____/_____
Department Manager Date

C
10 CFR 50.55A

ASSESSMENT REPORT

Dates of Assessment **DECEMBER 14-18, 1998**

Topic of Assessment **CRYSTAL RIVER 3 NUCLEAR POWER PLANT (CR3) ASME SECTION XI REPAIR & REPLACEMENT PROGRAM**

Lead Assessor Shane Findlan, Electric Power Research Institute (EPRI)
Other Assessors Jerry McClanahan, Tennessee Valley Authority
Rich Corbit, GPU Nuclear

OBJECTIVE:

To assess the procedures and implementation of the Crystal River 3 Nuclear Plant (CR3) ASME Section XI Repair and Replacement (R&R) Program.

SCOPE:

This assessment included the program processes, procedures and activities associated with the Repair and Replacement Program performed in accordance with the requirements of 10 CFR 50.55a(f) and the Section XI of the ASME Boiler and Pressure Vessel as established for the third inspection interval.

SUMMARY

The assessment was performed by the Electric Power Research Institute (EPRI) Repair & Replacement Application Center utilizing personnel from other nuclear utilities. The assessment personnel possessed extensive ASME Code, Section XI, Repair and Replacement Program experience. Utilizing these personnel provided a kNuclear Welding Programledgeable and unbiased review of the CR3 R&R Program. The assessment consisted of a review of the Repair & Replacement Program, implementing instructions, supporting procedures, active work packages, personnel training and records, and personnel interviews. In addition to the CR-3 assessment, Repair & Replacement Programs from other utilities (TVA, Southern Nuclear, Wolf Creek, Omaha Public Power, and New York Power Authority) were used for comparison.

Based on this assessment the CR-3 Repair & Replacement Program is in compliance with ASME Code Section XI in all areas assessed with the exception of one item. The one potential non-compliance item identified was the Nuclear Operations Welding Manual (NUCLEAR WELDING PROGRAM) which has not been updated to the 1989 Edition of Section XI of the ASME Code in compliance with the CR3 R&R program submittal to the NRC.

Another area that must be addressed to ensure the success of the R&R Program at CR3 is ownership of the program. The R&R Program requires support from several departments, but ownership for the total program could not be identified during the assessment. This function appears to belong in the Engineering Programs area and this department has been the driving force in the improvement of this

program. However, the personnel resources in the Engineering Programs department appear to be insufficient to continue the necessary administration of the R&R Program.

SUMMARY (continued)

The implementing procedures for the Section XI Repair & Replacement Program have been revised to meet the Section XI 1989 Edition requirements. These procedures are well-detailed and provide clear instructions. However, due to the changes in the R&R requirements proper training of personnel required to utilize these procedures is needed. To ensure compliance with the R&R Program procedures and to evaluate their effectiveness, we strongly recommend that periodic self-assessments of the R&R Program be performed.

FINDINGS:

3. The Nuclear Operations Welding Manual (NUCLEAR WELDING PROGRAM) has not been updated to current, approved ASME Code, Section XI, 1989 and, therefore, does not meet current Section XI commitments by CR3 Repair and Replacement Program. For example, the references used in this manual are not consistent with NWP# 1 "Preparation and Control of the Nuclear Operations Manual" referring to ASME Section XI Latest Edition and Addenda and NWP#13 referring to ASME Section XI 1983 through summer 1983 Addenda.

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AREAS FOR IMPROVEMENT

7. The Authorized Nuclear Inservice Inspector (ANII) is not utilized solely as a third party inspector as required by ASME Section XI. We were unable to interview the ANII, however, we did discuss the day-to-day activities and responsibilities assigned to the ANII with kNuclear Welding Programledgeable personnel. From the discussions it appears that much of the ANII's time is expended performing quality assurance type duties to the extent that his responsibility of ensuring compliance with ASME Section XI requirements may be impeded. This is supported by the major revisions required by the large number of examinations required to complete the CR3 second ten-year inspection interval.

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10. Design reconciliation for repair/replacement parts and components should be performed prior to procurement. Current practice is for Design Engineering to perform reconciliation prior to component installation/application. Design Engineering staff recommended that a single point of contact should be identified to effectively coordinate reconciliation. Current practice is to use any available Design Engineering staff member which was reported to be disruptive since it frequently involved reassignment of staff with minimal notification. *Additional staff comment:* Design engineering staff recommended that reconciliation

Areas for Improvement (cont.)

activities should be moved to Plant Engineering so that staff familiar with project, program, and plant issues would review work requests and be involved in planning.

Design engineering staff offered that current procurement procedure refers to 1992 Edition of ASME Code and that this places a burden to reconcile parts to the 1989 Edition. Procurement should specify that manufacturers/suppliers provide items in accordance with 1989 Code.

11. Training on the Repair and Replacement Program should be provided to all involved engineering personnel. This training should consist of: 1) familiarization with Section XI Code Repair & Replacement program requirements, 2) CR-3 Repair & Replacement Program and implementing instructions, and 3) the individual program responsibilities of CR-3 staff members.

12. A self-assessment program is needed to periodically evaluate the effectiveness of the R&R Program in meeting Code requirements. Assessment subsequent to refueling outages would be beneficial to evaluate the application of the Repair & Replacement Program to a wide range of applications.

OTHER OBSERVATIONS

10. The Nuclear Operations Welding Manual, procedure NWP-6 “Control of Welding Consumables for CR-3”, references NWP-17 “Welding Consumables Specifications”, which does not exist. This omission should be corrected.

11. The title of NEP-229, “Section XI Repair and Replacement Program” should be changed to reflect the scope of this document, which is guidance for implementation and use of Repair & Replacement documents. Currently, it shares the same title as the “Repair & Replacement Program” document.

12. Close-out of work packages was expressed as a concern by CR-3 Programs staff. Currently requires review/approval of all CMTRs and CoCs by ANII. Prior to close-out of work packages, all QA and PMT must be completed. Since the plant can be returned to service without completion of the PMT, close-outs can be delayed for extended periods. CR-3 staff should evaluate current process/workload to determine areas for improvement.

13. NDE requirements for repair welds are detailed in NWP- 11, which was developed and approved by Projects (SWE reports to projects). Since NDE requirements may influence serviceability of a repair weld (weld strength reduction factors, etc.) it may be worthwhile for Design Engineering to review/approve these requirements. Generally, Design Engineering selects/approves NDE requirements for many utilities. One of the Design Engineering staff (Bob Reynolds) believed that the NDE requirements were reviewed by DE, so it may be a simple matter to formally approve these requirements.

14. There is concern by the review team regarding timely updating, revision, and approval of the NUCLEAR WELDING PROGRAM prior to the next scheduled outage. This is due to the apparent workload of the SWE (which includes oversight of personnel qualifications for fossil and nuclear welding activities). FPC may want to review this area to determine if additional resources are necessary to support revision of the NUCLEAR WELDING PROGRAM.

15. Discussion with Programs consulting engineer (Ken Mayer) highlighted the fact that repairs do not require reconciliation to design requirements, but replacements require reconciliation based on CR-3 procedures. A visiting consultant (R. Reedy) apparently expressed an opinion that both repairs and

replacements required reconciliation to maintain Appendix B. FPC should evaluate this area and determine if this is an action item.

AREAS FOUND ACCEPTABLE

8. Interface between Repair & Replacement/ISI specialist (contractor) with Maintenance Planning, Design Engineering, Site Welding Engineer and other Engineering Program functions is excellent. This has been key to the current success of this program.

9. Interface between Maintenance Planning Department and Site Welding Engineer is excellent.

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12. The Repair & Replacement program adequately addresses the implementation of temporary, non-Code repairs in compliance with the guidance from NRC GL-90-05.

13. PEERE , NP-254, provides effective guidance and control for evaluation/reconciliation of replacement equipment and parts.

14. Procurement: Latest revision of the Nuclear Procurement and Storage Manual includes a rewrite of Manual Section 7, "Nuclear Supplier Evaluation", based on EPRI Guidelines for Commercial Grade Items. Utilization of Fully Integrated Materials Information System (FIMIS) was reported to provide excellent coordination of purchase specification/order to receipt inspection.

16. Weld Inspection Plan, included in Nuclear Operations Welding Manual, NWP #11, was considered an excellent practice which provides clear NDE/verification requirements.

17. CIMS – Component Information Management System was reported to be an effective tool for identification of ASME safety Class 1,2 & 3 components and assisted in determining Section XI applicability. FPC effectively utilizes information technology to address work package planning and tracking. However, CR-3 staff expressed concern regarding implementation of new "impact" software system, and whether it will offer the same control of the R&R process.

18. Work Package flow chart and plan in CP-113A is excellent and clearly establishes proper path for work activities.

Editorial Items:

2. Several items are referenced in the Repair & Replacement Program Document - Revision 8, but are not included in the reference section, including:
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Tom Salute, Design Engineering
Lennie Price, Procurement Engineer
Missy Johnson, Maintenance Planning
Bud Epps, Nuclear Engineering Programs Consultant
Bernie Komara, Training
Steve Roe, Programs

REVIEW

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Lead Assessor Date

CONCURRENCE

_____

Engineering Programs Manager Date

APPROVAL

_____

Engineering Manager Date

REFERENCES:

4. Title 10, Part 50, Code of Federal Regulations Paragraph 50.55a
5. Title 10, Part 50, Code of Federal Regulations Appendix B
6. American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code Section XI - 1989 Edition

DOCUMENTS REVIEWED DURING SELF-ASSESSMENT

I. Program Documents Reviewed

Document Number	Document Description
	Crystal River Unit 3, ASME Section XI Inservice Inspection Program, Interval 3
	Crystal River Unit 3, ASME Section XI Repair/Replacement Program, Interval 3
CP-113A	Work Request Initiation and Work Package Control
CP-113B	Work Request Evaluation/Planning
CP-113C	Inspection Planning and Verification Program
CP-113D	Post Maintenance Testing
NEP 229	ASME Section XI Repair/Replacement Program
NEP 254	Plant Equipment Equivalency Replacement Evaluation
NWP-01	Preparation and Control of the Nuclear Operations Welding Manual
NWP-06	Control of Welding Consumables for CR-3
NWP-11	Inspection of Welds
NWP-13	Repair of Welds
Copy #47	Nuclear Procurement and Storage Manual

II. Other Documents Reviewed

LER-98-008-00	Licensee Event Report - Personnel Error Results in a Condition Prohibited by Technical Specifications
LER-98-007-01	ASME Code Section XI System Pressure Tests Were Not Performed Due to Personnel Error
3-C98-3160	Corrective Action Process Precursor Card Report
3-C98-3132	Corrective Action Process Precursor Card Report
0355092	Work Package
0356870	Work Package
0348365	Work Package
0353945	Work Package
0355417	Work Package
0355238	Work Package
0355192	Work Package
0355359	Work Package

ATTACHMENT 1

ASSESSMENT PLAN

Assessment No.: Crystal River Nuclear Plant

Topic: ASME Section XI Repair & Replacement Program

Purpose of Assessment:

Assess the Crystal River nuclear plant (CRNP) inservice Repair and Replacement program to compliance with requirements of Section XI of the ASME Boiler and Pressure Vessel Code.

Lead Assessor: Shane Findlan, Electric Power Research Institute

Assessors: Jerry K. McClanahan, Tennessee Valley Authority Nuclear Corporate Engineering

Rich Corbit, GPU Nuclear

Assessment Period: December 14 - 18, 1998

Assessment Tasks/Objectives:

1. Review the CRNP site implementing procedure for Section XI of the ASME Boiler and Pressure Vessel Code.

2. Review any requests for relief submitted by CRNP to NRC for relief from the requirements of Section XI for R&R activities and subsequent NRC responses to these requests including all Safety Evaluation Reports (SERs).

3. Review CRNP maintenance procedures to determine that Section XI repair and replacement requirements are correctly included in work packages. Specifically identify how materials used in R&R activities is determined to meet original construction and site design requirements, and how suitability evaluations are performed on replacement of failed components.

4. Review CRNP design change procedures to determine that Section XI replacement requirements are correctly included in design change packages.

5. Review the procurement procedures for Section XI Code items including design specifications, Certificates of Compliance and Certified Material Test Reports (CMTRs).

6. Review procurement procedures for dedication process of commercial grade materials as replacements in Code systems.

7. Perform a review of completed and in process maintenance and design workplans to ensure the effectiveness of the CRNP R&R program. Specifically review the workplans for material requirements, post-work NDE requirements, welder qualifications, and ANII notification.

10. Verify that the ANII is kept informed of Code R&R activities to allow completion of duties as required by the ASME Code.

11. Review the CRNP corrective action program for the identification of recent problems associated with the Section XI R&R program.

12. Perform a comparison of the CRNP R&R program to these of other nuclear utilities.

Approvals: _____/_____
Lead Assessor Date

_____/_____
Department Manager Date

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