

Franke, Mark

From: Calloway, Joyce *KZ*
Sent: Tuesday, January 05, 2010 9:00 AM
To: Ninh, Son; Higgins, Patrick; Smith, Natasha; Sykes, Marvin; Chou, Rich; Carrion, Robert; Michel, Eric; Collins, Brendan; Franke, Mark
Subject: Crystal River 2009005 Inspection Input
Attachments: CR3 SGRP 2009005.Input.rcc.doc

The attached document was signed by M. Franke on 1/4/2010.

Thanks

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C-90

**QUARTERLY INTERGRATED REPORT INPUT
ENGINEERING BRANCH 3**

Site: Crystal River, Unit 3 Report No: 05000302/2009005 Dates: Sep. 14 – Dec.12, 2009

Inspector (First Initial & Last Name)	Title	Report Sections
R. Chou	Reactor Inspector (Team Lead)	4OA5.1
R. Carrion	Senior Reactor Inspector	4OA5.1
E. Michel	Senior Reactor Inspector	4OA5.1
B. Collins	Reactor Inspector	4OA5.1

IPs Used	Sample Size	Completion Status** <small>(for IPs use MC 306 status; for TIs use 'Closed' or 'More to Follow')</small>
50001	N/A	More to Follow (See Note)

Completion Status Definitions (MC 0306):

Complete - The minimum number of samples were inspected

Complete (minimum sample not available during the inspection cycle) - licensee did not perform minimum number of activities

Complete (opportunity to apply procedure not available during the inspection cycle) - used for inspections that are scheduled "as conditions require"

Complete (by reference) - one or more samples was completed during a different inspection such as SGRP or a TI

Incomplete - The minimum number of samples was not inspected

Note: The Licensee planned to combine the installation of the containment wall opening closure with the repair of the containment wall delamination. The IP 50001 will be closed when the licensee completes the wall opening closure, the repair of containment wall delamination, containment pressure testing, and post modification testing.

Branch Chief Approval: Original signed by M. Franke **Date:** 1/4/2010
Mark Franke, Chief, EB3, DRS

Emailed By: Joyce Calloway **Email Date:** 1/4/2010

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: Yes ACCESSION NUMBER: _____ SUNSI REVIEW COMPLETE

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRS		
SIGNATURE	RA	RA	RA	RA	RA		
NAME	R Chou	R Carrion	E Michel	B. Collins	M Franke		
DATE	12/30 /09	12/30 /09	12/30/09	12/30/09	1/4/2010		
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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DOCUMENT NAME: S:\DRS\ENG BRANCH 3\INPUTS\INPUTS 2009\CR3 SGRP

SUMMARY OF FINDINGS

A. Inspector-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

4OA5 Other Activities

.1 Unit 3 Steam Generator Replacement Inspection (IP 50001)

a. Inspection Scope

Design and Planning

The inspectors reviewed the following related to the licensee's steam generator replacement (SGR) project design and planning:

- scope and schedule
- Engineering Change (EC) packages
- 10 CFR Part 50.59 evaluation
- Quality Assurance Program and corrective actions
- preparations for the creation of a temporary containment wall opening
- applicable engineering design, modification, and analysis associated with lifting, rigging, and transporting of the steam generators (SGs)
- radiation protection program controls, planning, and preparation
- security considerations associated with vital and protected area barriers affected by the SGR activities
- controls to minimize any adverse impact the activities may have had on other systems.

The licensee used ASME Boiler and Pressure Vessel Code (ASME Code) Section III, 1998 Edition through 2000 Addenda, and Section XI, 2001 Edition through 2003 Addenda, for the design, fabrication, replacement, and installation of the new replacement SGs (RSGs) and systems. The licensee used ASME Code Section III for the design, fabrication, installation, and Nondestructive Examination (NDE) as the construction code for the following major component modifications: Reactor Cooling System (RCS) Primary Piping Connections; Main Steam, Feedwater, and Emergency Feedwater Piping Connections; and the Steel Containment Vessel. The inspectors reviewed and examined the SGR activities and compared them to the requirements of the ASME Code.

The inspectors reviewed EC 63038, Replacement Once Through Steam Generators (ROTSGs or RSGs), for Crystal River Unit 3. The EC 63038 included the design changes, analyses, evaluations, safety analyses, 10 CFR Part 50.59 Change Evaluation, configuration, materials, implementation, and post modification testing acceptance. The inspectors reviewed the following other major modification packages: EC 62500, RCS Hot Leg Cutting and Welding; EC 63016, Containment Opening; EC 63025, Main Feedwater Flow Accelerated Corrosion (FAC) Pipe Replacement; EC 63026, RCS Cold Leg Cutting and Welding; EC 63027, Secondary Side Large Bore Pipe Cutting and Welding; EC 63034, Structural Interferences; and EC 63039 Replacement Steam Generator Anchorage. The inspectors also reviewed other miscellaneous and temporary modifications.

The inspectors reviewed design calculations and analyses for design methods, assumptions, loadings, computations, and accuracies. The inspectors also selected work order (WO) packages prepared for the construction and implementation of the ECs for review to determine whether appropriate work processes and quality control hold points were implemented.

The inspectors reviewed the licensee's screening of selected ECs to determine whether the modifications were evaluated in accordance with 10 CFR Part 50.59, "Changes, tests, and experiments."

Removal and Replacement

The inspectors periodically reviewed radiation controls. The inspectors verified that the tendons were removed after shutdown and prior to the hydro demolition of concrete for the containment building wall opening located above the equipment hatch in order to transport the SGs out from or into the containment. The inspectors observed the hydro demolition process. The licensee identified some concrete cracks/separation issues. The concrete separations could be seen within the entire perimeter of the opening. An NRC Special Inspection Team (SIT) was formed to inspect the separation issues. The SIT's charter included review of the evaluation, root cause, and corrective actions to be implemented to ensure an operable containment structure. The SIT remained ongoing at the end of this inspection period.

The inspectors reviewed the cracks or delamination found on the exposed concrete around the containment building wall opening during and after the hydro demolition. The licensee evaluated the containment wall cracks to adjust Horizontal Transfer System (HTS) supporting structures. Prior to the removal of the original or old SGs (OSGs), the inspectors reviewed, observed, and evaluated the associated temporary and permanent modifications of the cutting, disconnecting, and the providing of temporary supports for the OSGs and cutoff piping. The inspectors observed: lifting, rigging, downending or upending, and transporting of the OSGs, RSGs, and associated equipment; machining and preparations of the existing piping for the connections to the RSGs; welding and NDE activities; and the radiological safety plan for the temporary storage and disposal building of the retired steam generators. The inspectors reviewed and observed the major structural modifications. The inspectors observed the licensee perform inspection of the steam generator hold down bolts to make sure that the bolts were acceptable to hold down the RSGs after the OSGs were moved out from the cubicles. During the SG removal and replacement, the inspectors observed licensee activities associated with controls for excluding foreign material, including the primary and secondary side of the steam generators and in the related RCS openings, and the establishment of operating conditions including defueling, RCS draindown and system isolation. The inspectors reviewed and inspected the status of security activities associated with vital and protected area plant or equipment changes required for the transportation of the OSGs and RSGs. The inspectors reviewed the installation, use, and removal of temporary services directly related to the steam generator replacement activities.

The inspectors observed and reviewed selected welding, NDE, preservice inspections, baseline inspections, and corrective action activities for the Class 1 and 2 piping and components of the RSGs.

The inspectors reviewed procedures, examination results, modification packages, and work order packages related to the modifications, including the construction hatch steel containment vessel (SCV) reinstallation, to ensure compliance with the requirements of the ASME Code.

This inspection remained ongoing at the end of this inspection period because the closure of the containment wall opening was not completed due to the cracks or delamination identified on the containment wall.

RSG Fabrication, Preservice Inspection, and Baseline Inspection

The inspectors reviewed records associated with the materials, fabrication, examination, and testing for the RSGs manufactured by Babcock & Wilcox Canada (BWC), and replacement hot leg piping subassemblies ("Candy Canes"), to verify compliance with the ASME Code.

The inspectors reviewed records and conducted interviews with appropriate plant personnel associated with the following RSG welds:

- W-22 (ASME Class 1, Lower Head to Lower Tubesheet Weld)
- W-65 (ASME Class 2, Lower Head to Shell Can #1)
- W-415 (Seal Weld Tube to Tubesheet Cladding)

The inspectors reviewed records associated with: Certified Material Tests; materials NDE, weld preparation, weld preheat treatment and post weld heat treatment, hydrostatic testing, and preservice inspection (post hydrostatic testing); ASME Certificates of Accreditation and Authorization; weld material qualification; weld control sheet and welder's records; and nonconformance reports. Other documentation reviewed included ASME Data Reports, ASME Design Specification, ASME Design Reports, and ASME repair/replacement documentation reconciliation of items, and the associated Engineering Change packages. The inspectors also walked down one RSG while stored on site, prior to movement into containment.

The inspectors reviewed documentation and interviewed plant personnel regarding the preservice and baseline testing of RSG tubing. All Preservice Inspection (PSI) or Baseline Inspection (BI) using Eddy Current Testing (ECT) for the RSG tubes was completed off-site by BWC in Cambridge, Ontario, Canada. Full length 100 percent bobbin inspections were performed, and 100 percent X-probe data was acquired, but only analyzed in areas of interest. Profilometry data was also collected in the tubesheet expansion region. The inspectors reviewed the licensee's Degradation Assessment, BWC ECT PSI report, ECT acquisition procedures, examination technique specification sheets, and data analysis procedures. In addition, the inspectors reviewed documentation regarding the manufacture of the RSG tubing by Sumitomo in Japan including heat treatment records and nonconformance reports.

The inspectors reviewed records and conducted interviews with plant personnel associated with the fabrication of the replacement hot leg piping subassemblies. Documents reviewed included the ASME Data Report, corrective action documents, the vendor ASME Certificate of Authorization, a self-assessment report, and the Engineering Change package. The inspectors also walked down both replacement hot leg piping subassemblies while stored on site, prior to movement into containment.

Welding

The inspectors reviewed a sample of welding activities associated with the installation of the RSGs to evaluate compliance with licensee/contractor procedures and the applicable ASME Code. The inspectors reviewed joint configuration drawings, welding procedures, welding specifications, welding procedure qualifications, welder qualification records, weld data records, Nuclear Condition Reports (NCRs), and post weld heat treatment procedures (where applicable) for the welds listed below.

- EF-00-041, SG A Emergency Feedwater Pipe-to-Elbow
- EF-00-042, SG A Emergency Feedwater Pipe-to-Elbow
- MS-00-024, SG A Main Steam East Elbow-to-Pipe
- MS-00-034, SG A Main Steam West Elbow-to-Pipe

In addition to the record review described above, the inspectors performed field observations either via video monitors located outside containment or by direct observation inside containment of the machine welding of the RCS hot leg and cold leg piping welds listed below.

- RC-00-189, SG A Hot Leg Flow Meter Pipe-to-Existing-Riser-Pipe
- RC-00-190, SG A Hot Leg Pipe-to-Nozzle
- RC-00-191, SG A Cold Leg A1 Elbow-to-Nozzle
- RC-00-192, SG A Cold Leg A2 Elbow-to-Nozzle
- RC-00-193, SG B Hot Leg Flow Meter Pipe-to-Existing-Riser-Pipe
- RC-00-194, SG B Hot Leg Pipe-to-Nozzle
- RC-00-195, SG B Cold Leg B1 Elbow-to-Nozzle
- RC-00-196, SG B Cold Leg B2 Elbow-to-Nozzle

The inspectors performed field observations by direct observation inside containment of the manual welding of the piping welds listed below.

- EF-00-044, SG B Emergency Feedwater Pipe-to-Pipe
- EF-00-047, SG B Emergency Feedwater Pipe-to-Pipe
- FW-00-069, SG B Feedwater Pipe-to-Elbow
- FW-00-072, SG B Feedwater Pipe-to-Pipe
- FW-00-076, SG B Feedwater Pipe-to-Elbow
- FW-00-079, SG B Feedwater Pipe-to-Elbow
- MS-00-053, SG B Main Steam West Nozzle-to-Elbow
- MS-00-055, SG B Main Steam West Pipe-to-Pipe

The inspectors also reviewed and verified a sample of welding machine settings for the weld equipment to verify that welding parameters were being maintained within the qualified procedure limits.

NDE

The inspectors reviewed the NDE procedures, calibration and examination reports, and NCRs, and observed in-process NDE examinations including Liquid Penetrant Examinations (PTs), Magnetic Particle Examinations (MTs), Radiographic Examinations (RTs), and Ultrasonic Examinations (UTs) for the following piping or component welds and compared them to the requirements of the procedures and the ASME Code for the construction, preservice, and baseline inspections:

PT – Construction

- RC-00-190, SG A Hot Leg Pipe-to-Nozzle
- RC-00-193, SG B Hot Leg Riser Pipe-to-Pipe
- RC-00-191, SG A Cold Leg A1 Pipe-to-Nozzle
- RC-00-196, SG B Cold Leg B2 Pipe-to-Nozzle
- RC-00-192, SG A Cold Leg A2 Pipe-to-Nozzle

MT - Construction

- MS-00-043, SG B Main Steam East Nozzle-to-Elbow
- MS-00-045, SG B Main Steam East Pipe-to-Pipe

RT – Construction

- FW-00-045, SG A Feedwater Header Pipe-to-Pipe Elbow
- FW-00-046, SG A Feedwater Pipe-to-Pipe Elbow
- FW-00-048, SG A Feedwater Pipe-to-SG Elbow
- MS-00-043, SG B Main Steam East Nozzle-to-Elbow
- MS-00-044, SG B Main Steam Pipe-to-Pipe
- MS-00-045, SG B Main Steam East Nozzle-to-Elbow
- EF-00-040R1, SG A Emergency Feedwater Pipe-to-Pipe
- EF-00-045C1, SG A Emergency Feedwater Pipe-to-Pipe
- EF-00-046C1, SG A Emergency Feedwater Pipe-to-Pipe

UT – Preservice and Baseline

- MS-00-043, SG B Main Steam East Nozzle-to-Elbow
- MS-00-045, SG B Main Steam East Pipe-to-Pipe

Containment Construction Hatch Opening and Closure - Steel and Concrete Containment

The inspectors reviewed the licensee's activities associated with the concrete removal and the removal and restoration of the steel containment liner plate (SCLP) for the

containment construction hatch opening, as detailed in the EC 63016, Containment Opening.

The inspectors reviewed the plans for the cutting and restoration of the SCLP for the construction hatch opening and compared post testing requirements to the applicable ASME Code. The inspectors observed the hydraulic cutting, hydro demolition, of concrete for the containment construction hatch opening and reviewed the work order packages for the cutting to verify the steps had been completed and documented.

The inspectors reviewed the welding procedures, procedure qualification records, and welder qualification records to confirm that the Code-required essential and supplemental essential welding variables were met. The inspectors reviewed the work order package including welding electrode receipt inspection, vacuum box leak testing, MT records, material certification records, and qualification and certification records for NDE personnel, equipment, and consumables.

The inspectors reviewed containment wall delaminations that were found next to the Hoop or Horizontal Tendons about 10 inches from the outside surface of the containment wall. The delaminations were identified on the exposed concrete wall surfaces around the opening of containment during and after the hydro demolition for the opening. The inspectors observed the licensee perform sonar impulse response examination as an NDE method to detect and scope the delamination areas.

The licensee planned to address the closure of the containment wall opening as part of the repair of the containment wall delamination.

Heavy Load, Rigging, Lifting, and Transporting Activities

The inspectors reviewed Progress Energy administrative procedures MNT-NGGC-0005, Control of Rigging and Temporary Loads, Revision 3 and Crystal River AL-650, Rigging, Lifting, and Material Handling Program, Revision 5. The inspectors reviewed the SG lifting preparation activities as described in the following EC Packages and Lifting Equipment Load Test Data to ensure that they were prepared in accordance with regulatory requirements, appropriate industrial codes and standards, and to verify that the maximum anticipated loads to be lifted would not exceed the capacity of the lifting equipment and supporting structures: EC 63020, Outside Erection Crane and Inside Auxiliary Crane, Revision 7; EC 63022, Steam Generator Rigging and Transport including the Outside Lift System (OLS), Hatch Transfer System (HTS), and Temporary Lifting Device (TLD), Revision 31; and EC 63023, OSG/RSG Haul Route, Revision 3.

The inspectors examined SGR project lifting, rigging, and transporting equipment including the polar crane, mobile crane, TLD, HTS including skid system, the down/up-ender device, OLS, and the Self-Propelled Modular Transporter (SPMT). The inspectors observed portions of rigging, lifting, transportation, and positioning of the original and replacement SGs.

The inspectors reviewed procedures, calculations, drawings, work packages, crane and equipment operator training and certificates, and load and function test records to determine whether they were in accordance with regulatory requirements and appropriate industrial codes and standards. The inspectors also reviewed polar crane and Containerized Winch System inspection and maintenance records.

The inspectors reviewed the licensee's analyses for buried piping located beneath the transport path as documented in Calculation S06-0019, Evaluation of Buried Utilities under Haul Route, Revision 0. The inspectors also reviewed calculations related to heavy load lifting systems, including: S06-0009, TLD Loads on Polar Crane Rail, Revision 0; S06-0012, Outside Lifting System East Foundation Design, Revision 3; and S06-0015, Seawater Room Wall Evaluation, Revision 1.

Quality Assurance (QA) Program and Corrective Actions

The inspectors conducted a review of the Quality Assurance Program and its implementation for the SG replacement to assess compliance with the requirements of 10 CFR Part 50, Appendix B. The inspectors reviewed Daily Quality Summaries, quarterly reports, QA audit procedures, audit reports, and QA personnel certifications, and conducted interviews with QA/QC personnel.

The inspectors reviewed the licensee's corrective action program (CAP). The inspectors reviewed the surveillance reports and nonconformance reports issued for the root cause analyses, evaluations, repairs, or disposition during the manufacturing of the RSGs. The inspectors also selected the Nuclear Condition Reports (NCRs) and Audit Reports for review during the implementation of the removal and reinstallation of the SGs. The review was to ensure that issues were being identified appropriately, entered into the CAP correctly, and dispositioned adequately. The inspectors also reviewed procedures associated with the training of personnel for the identification, disposition, and documentation of the NCRs.

Post Installation Verification and Testing

The inspectors reviewed the post installation verification and testing program to verify that the required post installation verification and testing, procedural changes, and the adjustment of the instruments were properly identified. The inspectors verified the modifications were completed in accordance with the design documents and reviewed the required post modification tests.

The inspectors reviewed the work packages to verify that the required NDE and preservice inspections were completed as designed and met code requirements for the major modifications of the SGs, structures, and piping.

The post modification or installation verification and testing related to RCS leakage testing, containment pressure leak testing, SG thermal and hydraulic performance testing, other instrument setting or testing were not completed during this quarter because the installation of the containment construction hatch opening closure and the

repair of the containment wall delaminations were delayed to the next year. Additionally, steam generator secondary side leakage testing had not been completed by the licensee at the conclusion of this inspection period.

All documents reviewed for IP 50001 are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

KEY POINTS OF CONTACT

Licensee Personnel Contacted

M. Bishara, SGR Design Engineering Manager
F. Dola, Nuclear Oversight Superintendent
J. Cravens, SGR Welding Engineer
R. Griffith, SGR Task Manager
K. Henshaw, SGR Rigging Supervisor
D. Herrin, Licensing Engineer
D. Jopling, SGR Civil Structural Supervisor
B. Kelley, RT Level III
D. Mayes, SGR Welding Engineer
W. Nielsen, SGR QC Supervisor
S. Powell, SGR Licensing engineer
J. Terry, SGR Project Manager
R. Vessley, SGR QC Supervisor

NRC

T. Morrissey, Senior Resident Inspector
Rogerio Reyes, NRC Steam Generator Replacement Manager

LIST OF ITEMS, CLOSED, AND DISCUSSED

Opened and Closed

None

LIST OF DOCUMENTS REVIEWED

Specifications and Procedures

SGR-012, Regulatory Selection Process for SGR Activities, Rev. 0
SP-5209, Specification for CR-3 Seismic Qualification, Rev. 0
PM-144, Check and Maintenance of Electrical Components of Cranes and Hoists, Rev. 0
PM-143, Check/Inspections and Maintenance of Whiting Cranes
SGRP Repair/Replacement Plan (Work Order 1305629 Task 18)
EPRI, Lifting, Rigging, and Small Hoist Usage Program Guide
NEI NUMARC 93-01, Industrial Guide for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Rev. 3
Mammoet Doc. 0010014168-000-D-P01, OLS Assembly, Rev. 02
Mammoet Doc. 0010014168-000-D-P02, OHTS Assembly, Rev. 03
Mammoet Doc. 0010014168-000-D-P03, Chip Platform, Rev. 04
Mammoet Doc. 0010014168-000-D-P04, IHTS Assembly, Rev. 05
Mammoet Doc. 0010014168-000-D-P05, TLD Assembly, Rev. 03
Mammoet Doc. 0010014168-000-D-P07, OSG Removal, Rev. 04
Mammoet Doc. 0010014168-000-D-P08, RSG Installation, Rev. 04
Mammoet Doc. 0010014168-000-D-P12, Adjustable OHTS Operating, Rev. 00
Mammoet Doc. 0010014168-P13, Test Procedure for Polar Crane, Rev. 01
Mammoet Doc. 0010000835-NL02-D-C29, Test Procedure of Various Lifting Structures
Mammoet Doc. 0010010023-M01, Project Manual for the Test Lifting Procedure and Assembly Procedure of the Lift System (LS) for Reactor at the ExxonMobil refining in Jodiet, Illinois
Precision Surveillance Corporation Manual N1013, Post Tension System Field and Quality Control Procedure for Crystal River SGRP
Shop Instruction Sheet ETS-080, Examination Technique Specification Sheet for Bobbin Exam, Rev 00
Shop Instruction Sheet ETS-082, Examination Technique Specification Sheet for X-Probe/Bobbin Combo Probe for Crystal River 3 Tube Examination, Rev 2
Shop Instruction Sheet 259604, Preservice Eddy Current Data Analysis Procedure of Alloy 690 Tubing for Crystal River 3 Replacement Steam Generators
Shop Instruction Sheet 259634, Inspection of Tube-to-Tubesheet Welds for Replacement Once Through Steam Generators, Rev 3
Shop Instruction Sheet 259584, Tube-to-Tubesheet Welding & Repairs for P43 Tubing to F43 Overlay, Rev 2
Certified Material Test Report, Japan Steel Works Job No. FN1-3031, Upper and Lower Tube Sheet Forging
Certified Material Test Report, Japan Steel Works Job No. BN4-3207, Lower Head Forging
BWC-150F-SR-01, Crystal River 3 Replacement Once Through Steam Generators Base Design Condition Report, Rev 1
NDEP-0101, Radiographic Examination, Rev. 19
NGGM-PM-0011, Appendix C NDE Radiographic Examination Acceptance Criteria Rev. 3
NDEP-0201, Liquid Penetrant Examination, Rev. 29
NDEP-0301, Dry Powder Magnetic Particle Examination, Rev. 17
NDEP-0437, Manual Ultrasonic Examination Procedure for Ferritic Pipe Welds (PDI), Rev. 3

Progress Energy NGGM-PM-0007, Quality Assurance Program Manual, Rev. 16
Progress Energy MCP-NGGC-0401, Material Acquisition (Procurement, Receiving, and Shipping), Rev. 26
Progress Energy MCP-NGGC-0406, Supplier Qualification, Surveillance, and Audits, Rev. 11
Progress Energy SGR-003A, SGR Fabrication Oversight, Rev. 1
Progress Energy SGR-003, Steam Generator Replacement Project Quality Assurance Plan – Fabrication (Canada Only), Rev. 2
Progress Energy SGR-004, Steam Generator replacement Project Quality Assurance Plan – Installation, Rev. 2
NOS-NGGC-0100, Nuclear Oversight Assessment Process, Rev. 4
PSC Procedure 6.0, Tendon Detensioning/Removal for Possible Reuse, Rev. 0
PSC Procedure 8.0, Plasma Cutting Tendon Detensioning (Data Sheets), Rev. 0
EPRI Technical Report, Lifting, Rigging, and Small Hoist Usage Program Guide
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Rev. 3
NEI 96-07, Guidelines for 10CFR50.59 Implementation, Rev. 1

NCRs (Nuclear Condition Reports or Nonconformance Reports)

NCR 296337, Form CAP-NGGC-0200-3-18, Adverse Condition Investigation Form, Factors contributing to misinterpretation of fabrication requirements of SGR hot leg elbow assemblies
Sumitomo Metal Ind, LTD NCR N5C-2, "Discoloration on FMA", 5/26/2006
Bacock & Wilcox, Canada (BWC), NCR 32005, W65 thickness does not meet drawing requirements
BWC, NCR 33777, Weld Profile for Weld 3 Was Lost
BWC, NCR 34033, W65 unacceptable PT indication
BWC, NCR 34053, Mechanical Damages on Primary Outlet Nozzles
BWC, Porosity Found During Mechanical Buffing in ID of Lower Head
NCR 366989, Preheat Temperature Violated on RCS Cold Leg Weld
NCR 367731, Weld EF 00 040 Rejected due to Indications
NCR 367786, Improper Preheat Temperature Listed on Weld Data Record
NCR 368100, Welds EFW-044 and EFW-047 Rejected due to Indications
NCR 368222, Weld EF 00 044R1 Rejected due to Indications
NCR 368224, Weld Indications Precluding ASME UT Examination
NCR 368470, PT Inspection Showed Rejectable Indication
NCR 368472, Welds SW-00-117/118 Rejected due to Indications
NCR 358724, CR3 SGR Hydrodemolition Exposed Cracks in the RB Concrete
NCR 286103, Assessment of Risks Associated with Erection and Use of the Outside Lift System
NCR 363745, Grout in OSG-A Anchor Bolt Holes Not Shown on Drawings
NCR 367286, RCS Post Weld Heat Treatment (PWHT) Temperatures
NCR 367467, Missing "QC" Hold Point on Bravo "B" Hot Leg Piping
NCR 365396, RT on FW Piping Welds Acceptable But Technique in Error
NCR 368659, PSI UT Rejected Indications on Welds EF-044 & 047
NCR 366140, Weld FW-062 Rejected due to Radiographic Indications
NCR 368389, Containment Wall Anomaly Identified Below Equipment Hatch
NCR 368060, Unacceptable Penetrant Test on SG A1 Cold Leg ID
NCR 370375, CR3 Radiographic Reports Collected Following NRC Review
NCR 369441, MT Rejected SG "B" Hold Leg Nozzle Lug Removal Areas

NCR 369477, Information Radiography and Ultrasonic Exams of RCS Piping Discrepancies
NCR 363745, TLD Reached the Lifting Limit of 460 Tons and Could Not Lift OSG "A"
NCR 246831, Six Tie-Rods for ROTSG #1 Was Not Installed Correctly
NCR 215563, Primary Outlet Nozzle #2 for ROTSG Was Incorrectly Machined
NCR 239826, Review and Trend the Bacoock & Wilcox, Canada (BWC) Nonconformance Reports (NCRs)
NCR 00219742, 10 CFR50.59 Evaluation for EC 63020, 63022, and 63023
NCR 00284225, Risk Assessment for EC 63020, Mobile Crane/Auxiliary Crane

Other

Engineering Change (EC) 62500, RCS Hot Leg Cutting and Welding, Rev. 3
EC 63016, Containment Opening, Rev. 32
EC 63020, Outside Erection Crane & Inside Auxiliary Crane, Rev. 7
EC 63022, Stem Generator Rigging and Transport, Rev. 31
EC 63023, OSG/RSG Haul & Route
EC 63025, Main Feedwater FAC Pipe Replacement, Rev. 3
EC 63026, RCS Cold Leg Cutting & Welding, Rev. 2
EC 63027, Secondary Side Large Bore Pipe Cutting & Welding, Rev. 3
EC 63034, Structural Interferences, Rev. 2
EC 63038, Replacement Once Through Steam Generators, Rev. 1
Calculation (Cal) S06-0004, Containment Shell Analysis for Steam Generator Replacement, Rev. 0
Cal S06-0008, Mammoet Computation Base, Rev. 0
Cal S06-0009, TLD Loads on Polar Crane Rail, Rev. 0
Cal S06-0012, Outside Lift System East Foundation Design, Rev. 3
Cal S06-0015, Seawater Room Wall Effective Width, Rev. 1
Cal S06-0019, Evaluation of Buried Utilities Under Haul Route, Rev.0
Cal S08-0005, Load Drop Analysis, Rev. 0
Cal S09-0047, Evaluation of Cracked Containment Shell for SGR Construction Activity Loads During Stage 1 Prestress, Rev. 0
Cal S09-0050, Steam Generator Access Opening Containment Wall Effective Width, Rev. 0
Mammoet Cal 0010014168-C08, OHTS Structural Calculation, Rev. 2
Mammoet Cal 0010014168-C12, IHTS Structural Calculation, Rev. 2
Mammoet Cal 0010014168-C15, TLD Structural Calculation, Rev. 3
Mammoet Cal 0010014168-C17, TLD Lifting Link Assembly, Rev. 0
Mammoet Cal 0010014168-C31, Chipping Platform Structural Calculation, Rev. 1
BWC NS-TR-09-004, Qualified Eddy Current Examination Techniques Crystal River Pre-Service Inspection, Rev. 00
BWC Report B&W-TR-2009-0013, Preservice Eddy Current Inspection, 7/8/2009
BWC Report 150F-SR-7, Once Through Steam Generator Replacement Project Crystal River 3, Tube-to-Tubesheet Joint Qualification: Program Summary Report, Rev 0
EC 63038, Att Z15, BWC Report Number 150F-LR-04, ASME Code Reconciliation Report, Rev 0
EC 63016, Att Z57, Containment Liner IWE Repair Plan for the Crystal River Unit 3 Steam Generator Replacement Modification, Rev 1
EC 70586, Att Z00, Steam Generator Replacement Project Containment Opening Liner Plate Owner Reconciliation
Energy Steel & Supply Co ASME Certificate of Authorization, N-2928

ASME N-1 for 150F01 Steam Generator
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