

January 12, 2007

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
Dominion Resources
5000 Dominion Boulevard
Glenn Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION - PRESSURIZER INSPECTION REPORT
05000336/2006013

Dear Mr. Christian:

Over the period of June - November of 2006 the US Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station Unit 2 Pressurizer Replacement. The enclosed inspection report documents the inspection results, which were discussed on November 28, 2006, with Mr. Alan Price and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. The replacement of your pressurizer was implemented in accordance with your planned activities in a safe manner in compliance with the applicable codes, specifications, and regulations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Richard Conte, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos: 50-336
License Nos: DPR-65

Enclosure: Inspection Report 05000336/2006013
w/Attachment

cc w/encl:

J. A. Price, Site Vice President, Millstone Station
C. L. Funderburk, Director, Nuclear Licensing and Operations Support
D. W. Dodson, Supervisor, Station Licensing
L. M. Cuoco, Senior Counsel
C. Brinkman, Manager, Washington Nuclear Operations
J. Roy, Director of Operations, Massachusetts Municipal Wholesale Electric Company
First Selectmen, Town of Waterford
B. Sheehan, Co-Chair, NEAC
E. Woollacott, Co-Chair, NEAC
E. Wilds, Director, State of Connecticut SLO Designee
J. Buckingham, Department of Public Utility Control
G. Proios, Suffolk County Planning Dept.
R. Shadis, New England Coalition Staff
G. Winslow, Citizens Regulatory Commission (CRC)
S. Comley, We The People
D. Katz, Citizens Awareness Network (CAN)
R. Bassilakis, CAN
J. M. Block, Attorney, CAN
P. Eddy, Electric Division, Department of Public Service, State of New York
P. Smith, President, New York State Energy Research and Development Authority
J. Spath, SLO Designee, New York State Energy Research and Development Authority

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SUNSI Review Complete: RJC/MM (Reviewer's Initials)

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NAME								
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-336

License No: DPR-65

Report No: 05000336/2006013

Licensee: Dominion Nuclear Connecticut, Inc.

Facility: Millstone Power Station Units 2

Location: P. O. Box 128
Waterford, CT 06385

Dates: June 9 - November 28, 2006

Inspectors: M. Modes, Sr Reactor Engineer, EB1, DRS
A. DeFrancisco, Reactor Engineer, SB1, DRS
D. Carry, Sr. Security Specialist, SB2, DRS
T. Moslak, Health Physicist, SB1, DRS

Approved by: Richard J. Conte, Chief
Engineering Branch 1, DRS

Enclosure

SUMMARY OF FINDINGS

IR 05000336/2006013, 06/9/2006 - 11/28/2006; Millstone Power Station, Unit 2; Pressurizer Replacement. The report covered a 6-month period of inspection by regional inspectors. No findings of significance were found.

REPORT DETAILS

4OA5 Other Activities

.1 PRESSURIZER REPLACEMENT (IP 50003)

a. Inspection Scope

The pressurizer replacement at a Millstone Nuclear Power Station was a significant modification activity involving many different licensee disciplines with extensive contractor support. Because the replacement pressurizer was designed to be as close to the original pressurizer as possible, the replacement activity did not substantially affect the power plant safety analysis. The containment structure and plant operational characteristics were minimally impacted as well.

This inspection verified that engineering evaluations and design changes associated with the pressurizer replacement were completed in conformance with requirements in the facility license, the applicable codes and standards, licensing commitments, and the regulations. This inspection verified the pressurizer removal and replacement activities maintained adequate nuclear and radiological safety.

This inspection also verified the pressurizer post-installation test program was technically adequate and in conformance with requirements, and was satisfactorily implemented. Additionally, the shutdown risk was reviewed to ascertain it was minimized, as much as reasonably possible, for the pressurizer removal and replacement activities.

Design and Planning Inspections

The inspector verified that selected design changes and modifications to systems, structures, and components described in the Final Safety Analysis Report were subjected to a review in accordance with 10 CFR 50.59. Key design aspects and modifications for the replacement pressurizer and other modifications associated with the pressurizer replacement were reviewed. Pressurizer modifications and the designs of other related significant modifications were reviewed. Replacement materials and components were reviewed to determine they meet the appropriate design technical requirements. Selected key procurement specifications for the pressurizer and its components were reviewed to determine that they met applicable industry codes and standards and regulatory requirements including 10 CFR 50, Appendix B quality assurance requirements and 10 CFR 50.49 environmental qualification requirements.

The inspector determined that the licensee confirmed that the replacement pressurizer conforms to design drawings, and that there are no fabrication deviations from design. The inspector confirmed that this Class 1 vessel was hydrostatically tested and N-stamped and discussed the pre- and post- inservice inspection results with the responsible Dominion Level III individual.

Enclosure

Because the containment crane is not single-failure proof, the inspector conducted a comprehensive review of the engineering design, modification, and analysis associated with pressurizer lifting and rigging including:

- (1) crane and rigging equipment,
- (2) pressurizer component drop analysis,
- (3) safe load paths, and
- (4) load lay-down areas.

The inspector focused on the impact of load handling activities on reactor core or spent fuel and its cooling and plant support systems for the reactor unit and common systems for the other operating unit at the site. The inspector determined the reactor was fully de-fueled during the lifting process and all lift paths were planned to avoid critical equipment impact.

A regional health physics specialist reviewed the overall pressurizer radiation protection program with focus on controls, planning, and preparation. The As-Low-As-Reasonably-Achievable planning was reviewed to determine if all reasonable measures had been considered. These projections were compared with the planned and implemented exposure controls and the use of temporary shielding. Additional features reviewed were contamination controls, radioactive material management, radiological work plans, and control emergency contingencies. Prior to the outage project staffing and training plans.

In addition, security considerations associated with vital and protected area barriers that were to be affected during replacement activities were reviewed including the multiple perimeter breaches used to bring in the replacement pressurizer and remove the old pressurizer.

The licensee's maintenance rule risk assessment was reviewed and found acceptable. In addition, the inspector reviewed the risk assessment of planned modifications to ensure shutdown risk management objectives were acceptable.

Pressurizer Removal and Replacement Inspections

The inspector reviewed the following welding and non-destructive examination activities:

- (1) Procedures for welding and Nondestructive Evaluations.
- (2) Qualifications of welding and Nondestructive test personnel.
- (3) Radiography results and work packages for selected welds.
- (4) Completion of any pre-service NDE requirements.

The inspector reviewed activities associated with lifting and rigging including preparations and procedures for rigging and heavy lifting. The inspector reviewed the extensive modification of the pressurizer concrete support structure used to facilitate pressurizer replacement. The post-cut structural modification was reviewed and compared against the original design standards. The inspector reviewed radiological safety plans for temporary storage or disposal of the retired pressurizer and components.

The inspector reviewed the following activities throughout the replacement process:

- (1) The operating conditions including system isolation and safety tagging/blocking.
- (2) Implementation of radiation protection controls.
- (3) Controls for excluding foreign material.
- (4) Installation, use, and removal of temporary services.
- (5) Implementation of fire prevention and mitigation plans.

Post-installation Verification and Testing Inspections

The replacement pressurizer was essentially a direct replacement that did not require modification of the containment. The inspector reviewed the:

- (1) Containment testing.
- (2) RCS leakage testing.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On November 28, 2006, the inspector presented the overall inspection results to Mr. Alan Price and other members of the staff, who acknowledged the findings. The inspector asked Dominion whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Jordan	Director, Operations and Maintenance
R. Griffin	Director, Safety and Licensing
P. Grossman	Manager, Design Engineering
S. Janes	Manager, Pressurizer Project
D. Yapchanyk	Lead Engineer, Pressurizer Replacement
M. Doucette	Project Engineer, Pressurizer Replacement
H. Beeman	ISI Engineer
R. Fuller	Level III
M. Stark	Steam Generator Project Engineer
D. Gerber	Steam Generator Engineer

NRC

J. Benjamin	Resident Inspector
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LIST OF DOCUMENTS REVIEWED

Miscellaneous

Areva EFFNMW DT 1730 Rev A "Application of the Regulatory Guide 1.43, Stainless Steel Strip/Flux Cladding Test Report.

Areva EFFNM DT 1681 Rev A, "Precautions Taken To Prevent Underclad Cracking (Reheat Cracking and Cold Cracking)"

SOFSMI/NPR0030 Rev A, Resistant Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Submerged ARC Welding With Strip (SAW).

Welding Procedure Specification SOFSMI/NPR0030 Rev A

Technical Document 08-5043634-05 Revision 05, "Design Specification Pressurizer Replacement Unit 2"

DCN DM2-01-0370-02 "Replacement of Power Operated Relief Valves (PORV) 2-RC-404

DCN DM2-00-0070-05 "MP2 Pressurizer (T-37) Replacement -2R17"

DCN DM2-00-0440-05 "MP2 - PRZ Blockhouse Steel Platform Design & Installation - Pressurizer Replacement Project

DCN DM2-00-0407-05 "PRZ Blockhouse Roof Concrete Cut Out - Pressurizer Replacement Project

SP-M2-ME-1063 "Procurement Specification for Replacement Pressurizer Millstone Station U2

M2-EV-05-0023 Rev 00 "Requirements for Lifting 'L' - Shaped Cut-Out from Pressurizer Cubicle"

Engineering Information Record

51-9027154-000 Post Hydro Automated UT Results (Interim) for Millstone Pressurizer Weld S/C009-01 (Safety Nozzle@180Degrees)
51-9027155-000 Post Hydro Automated UT Results (Interim) for Millstone Pressurizer Weld S/C009-02 (Safety Nozzle@ 240Degrees)
51-9027156-000 Post Hydro Automated UT Results (Interim) for Millstone Pressurizer Weld S/C010 (Relief Nozzle)
51-9027157-000 Post Hydro Automated UT Results (Interim) for Millstone Pressurizer Weld S/C008 (Spray Nozzle)
51-9027348-000 Millstone Pzr PSI Inspection Evaluation

Calculations

32-5054202-03 OPZR and OPZR Comparison
32-5054222-00 Heater Sleeve Preliminary 2D Analysis
32-5057014-02 Structural Modal Analysis
32-5058306-02 OPZR and RPZR Sensible Heat
32-5061402-01 Design Transients Analysis
32-5061728-02 Convection Coefficients
32-5062325-01 Surge Nozzle Stress Analysis
32-5062390-02 Input Data for Code Analysis
32-5062925-01 Temperature and Vent Nozzle Analysis
32-5063932-01 Shell Head Skirt Junction Analysis
32-5064104-001 Support Skirt Analysis
32-5064184-01 Temperature Nozzle Analysis
32-5065129-001 Heater Element Analysis
32-5065218-01 Pressurizer Sizing Calc
32-5068046-02 Mixing of Inflow during Transient
32-5068364-01 Upper Head instrument Nozzle Stress Analysis
32-5070236-001 Manway Qualification
32-5070730-03 Structural Loading Analysis
32-5073389-01 Spray Nozzle Stress Analysis
32-9005433-001 Safety and Relief Nozzle Analysis
32-9006814-001 Appendix G Flaw Evaluations
32-9008746-001 Lower Head Level Tap
32-9009063-001 Vent Port Analysis
32-9012066-001 Heater Sleeve to Lower Head Weld
32-9016622-002 FIV
05-ENG-04166C2 Design of Pressurizer Concrete Cut Lift Rig - 'L' - Shaped Cut-Out from

Material Test Reports

Certified Material Test Report JQA-02-135 (1/38) Forged Intermediate Shell Archive Material
Certified Material Test Report JQA-02-197 (1/38) Forged Lower Shell Archive Material

Reports

Report RD/EF001-0030-0130
Report RD/EF001-0030-0140
Report RD/EF001-0030-0150
Report 03-NX-329 Rev B
Report 03-NX-319 Rev C
Report 03-NX-607 Rev C
Report RD/EF001-0040-0340
Report RD/EF001-0040-0430
Report RD/EF001-0040-0460
Report RD/EF001-0040-0500

Drawings

Dwg 02-5048482E-07 "Millstone Unit 2 Replacement Pressurizer Lower Head Assembly"
Dwg 02-5048547E-08 "Millstone Unit 2 Replacement Pressurizer Upper Head Assembly"
Dwg 02-5048768E-06 "Millstone Unit 2 Replacement Pressurizer Overall Assembly"
Dwg 02-5049099E-09 "Millstone Unit 2 Replacement Pressurizer Heater Sleeve Installation"
Dwg 02-5050419D-003 "Millstone Unit 2 Heater Element Assembly (Dominion Original P.O. 70122906)
Dwg 02-5052638E-05 "Millstone Unit 2 Replacement Pressurizer Heater Support Assembly"
Dwg 02-5045815E-03 "Pressurizer Outline Drawing"
Dwg 25203-28014 Sht 2 of 3, "Piping and Instrumentation Diagram Reactor Coolant System "
Dwg 25203-29527 SH 26, "BCA-2 Pressurizer Relief Upstream of Valves"
Dwg 25203-20150 SH 365 "BCA-2 Pressurizer Relief Upstream of Valves"
Dwg 25203-20125 SH 84 "BCA-3 Pressurizer Manual Vent and Post Accident Sampling"
Dwg 25203-29048 SH 42 "2 1/2" Pressurizer Seal Gate Valve (Forged) c/w Motor Operator Class 2500 lb"
Dwg SKS-AGR-U2PRSHR "MP2 Pressurizer Replacement Delivery Haul Routes"
Dwg 25203-20150 SH 1075 "BCA-2 Pressurizer Relief Upstream of Valves"
Dwg 25203-20219 SH 1 "Pressurizer Safety and Relief Valve Discharge Piping"
Dwg 25203-20219 SH 2 "Pressurizer Safety and Relief Valve Discharge Piping"
Dwg 25203-20219 SH 3 "Pressurizer Safety and Relief Valve Discharge Piping"
Dwg 25203-20219 SH 4 "Pressurizer Safety and Relief Valve Discharge Piping"
Dwg 25203-29527 SH 25 "Pressurizer Safety Valve Piping"
Dwg 25203-51383 SH NA "Pressurizer Blockhouse 'L' Shaped Concrete Slab Lift Beam
Dwg 2 Sheet 1 "General Arrangement - New Pzr Barge Offloading"
Dwg 2 Sheet 2 "General Arrangement - New Barge Offloading"
Dwg 3 Sheet 1 "Transfer to Storage - New Pzr Storage"
Dwg 3 Sheet 2 "Retrieval from Storage - New Pzr Storage"
Dwg 4 Sheet 1 "Transfer Pzr From Blockhouse to Rails - Lift Retired Pzr and Downend
Dwg 4 Sheet 2 "Downending Details at Hatch - Lift Retired Pzr and Downend"
Dwg 4 Sheet 3 "Downending Details at Hatch - Lift Retired Pzr and Downend"
Dwg 4 Sheet 4 "Miscellaneous Details - Lift Retired Pzr and Downend"
Dwg 4 Sheet 5 "Top Cross Beam Attachment Details - Lift Retired Pzr and Downend"
Dwg 5 Sheet 1 "General Arrangement - Removal of Upend/Downend Cart"

Dwg 5 Sheet 2 "General Arrangement - Lift Retired Pzr Clear of Front Cart"
 Dwg 5 Sheet 3 "General Arrangement - Remove Retired from Enclosure Bldg"
 Dwg 5 Sheet 4 "General Arrangement - Transporter Maneuvering Between Gantries"
 Dwg 5 Sheet 5 "General Arrangement - Lift Retired Prz and Install Transporter"
 Dwg 5 Sheet 6 "General Arrangement - Load Retired Pzr onto Transporter"
 Dwg 6 Sheet 1 "General Arrangement - Retired Pzr Storage"
 Dwg 8 Sheet 1 "General Arrangement - Transfer New Pzr to Upend System"
 Dwg 8 Sheet 2 "General Arrangement - Lift New Pzr and Remove Transporter"
 Dwg 8 Sheet 3 "General Arrangement - Roll New Pzr into Enclosure"
 Dwg 8 Sheet 4 "General Arrangement - Lower New Pzr onto Front Cart"
 Dwg 8 Sheet 5 "General Arrangement - Attach New Pzr to Upend/downend System"
 Dwg 9 Sheet 1 "General Arrangement - Lift New Pzr and Upend"
 Dwg 9 Sheet 2 "General Arrangement - Lift New Pzr and Upend"
 Dwg 9 Sheet 3 "General Arrangement - Lift New Pzr and Set"
 Dwg 9 Sheet 4 "Miscellaneous Details - Lift new Pzr and Upend"
 Dwg 20 Sheet 1 "General Arrangement - Gantry System Layout at Bldg 207"
 Dwg 20 Sheet 2 "Elevation View - Gantry System Layout at Bldg 207"
 Dwg 20 Sheet 3 "End Views - Gantry System Layout at Bldg 207"
 Dwg 40 Sheet 1 "General Arrangement - Upend/Downend Rail System"
 Dwg 40 Sheet 2 "Elevation and Sections - Upend/Downend Rail System"
 Dwg 41 Sheet 1 "General Arrangement - Rear Cart, Pzr Upend/Downend System"
 Dwg 41 Sheet 2 "Rear Cart Details - Prz Upend/Downend System"
 Dwg 41 Sheet 3 "Rear Cart Details - Prz Upend/Downend System"
 Dwg 41 Sheet 4 "Rear Cart Details - Prz Upend/Downend System"
 Dwg 41 Sheet 5 "Rear Cart Isometric View - Upend/Downend System"
 Dwg 41 Sheet 6 "General Arrangement, Front Cart - Prz Upend/Downend System"
 Dwg 50 Sheet 1 "Lift Beam and Details - Prz Lifting System in Bldg 207"
 Dwg 51 Sheet 1 "Elevation View, Rigging - New Pzr Storage"
 Dwg 70 Sheet 1 "Layout - New Pzr Barge Offloading"
 Dwg 70 Sheet 2 "Miscellaneous Details - New Barge Offloading"
 Dwg 71 Sheet 1 "General Arrangement, Barge to Storage - New Pzr Transportation"
 Dwg 71 Sheet 2 "General Arrangement, Storage to Gantry - New Pzr Transportation"
 Dwg 72 Sheet 1 "General Arrangement - Retired Pzr Transportation"
 Dwg 5051461C Rev 05 "Repl. Pressurizer Bill of Materials"

Radiographs

3FWS*3321A RC-061-W-25
 4"-BCA-2 BPV-C-5029A RI
 2-1/2"-BCA-2 BPV-C-5049(A)
 4"-BCA-2 BPV-C-5021A
 4"-BPV-C-5021A
 4"-BCA-2 BPV-C-5105A
 4"-BCA-2 BPV-C-5104A
 6" Pipe to Valve 2-SI-478
 24"-DBD-(A)1 W-6RC Rejected
 24"-DBD-(A)1 W-1R2 Rejected
 18"-EBD-(A)8 W-1R2 Rejected

50.59

DCR M2-05002 Rev 0, 50.59/72.48 Screen Form for Pressurizer
DCR M2-02006 Rev 2, 50.59/72.48 Screen Form for PORV replacement

Work Orders

M2-06-09419 Valve Disassemble and Reassembly is required on the PORVs to support new pressurizer piping installation.

M2-05-10872 2R17 Test, Determ, Reterm test for Pressurizer Replacement Project

M2-06-09420 Valve Disassemble and Reassembly is required on the PORVs to support new pressurizer piping installation.

M2-05-10551 Incorporate Supplemental DCN DM2-04-0237-05 to correct wiring discrepancies. Perform redline of schematic diagrams.

M2-05-04153 SV, Every refuel -- Low Temp/Overpress circuit channel calibration PORV closure test.