

July 1, 2008

Mr. Gerald T. Bischof
Vice President, Nuclear Engineering
Virginia Electric and Power Company
Richmond, Virginia 23261

SUBJECT: KEWAUNEE POWER STATION, MILLSTONE POWER STATION, UNITS 2 AND 3, NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2, AND SURRY POWER STATION, UNIT NOS. 1 AND 2, REQUEST FOR EXTENSION OF COMPLETION DATES FOR GENERIC LETTER 2004-02 CORRECTIVE ACTIONS (TAC NOS. MC4691, MC4694, MC4695, MC4696, MC4697, MC4722 AND MC4723)

Dear Mr. Bischof:

By letter dated May 21, 2008, Dominion Energy Kewaunee, Inc., Dominion Nuclear Connecticut, Inc., and Virginia Electric and Power Company (the licensees), requested an extension of the containment sump clogging corrective actions stated in Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," from May 31, 2008, to September 30, 2008, for Kewaunee Power Station (Kewaunee), Millstone Power Station, Units 2 and 3 (Millstone 2 and 3), North Anna Power Station, Unit Nos. 1 and 2 (North Anna 1 and 2), and Surry Power Station, Unit Nos. 1 and 2 (Surry 1 and 2). By letter dated May 22, 2008, the licensees requested an interim extension to complete GL 2004-02 corrective actions from May 31, 2008, to June 30, 2008, and the Nuclear Regulatory Commission (NRC) approved this interim request on May 29, 2008.

As requested in your letter dated May 21, 2008, and based on the enclosed NRC staff's evaluation, we have further extended the due date for completion of the GL 2004-02 corrective actions until September 30, 2008.

Sincerely,

/RA/

Siva P. Lingam, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-305, 50-336, 50-423,
50-338, 50-339, 50-280 and 50-281

Enclosures:

1. Evaluation for Kewaunee
2. Evaluation for Millstone 2 and 3
3. Evaluation for North Anna 1 and 2
4. Evaluation for Surry 1 and 2

cc w/encls: See next page

July 1, 2008

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Virginia Electric and Power Company
Richmond, Virginia 23261

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As requested in your letter dated May 21, 2008, and based on the enclosed NRC staff's evaluation, we have further extended the due date for completion of the GL 2004-02 corrective actions until September 30, 2008.

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| OFFICE | NRR/LPL2-1/PM | NRR/LPL2-1/LA | NRR/DSS/SSIB/BC | NRR/LPL2-1/BC |
| NAME | SLingam | MO'Brien | MScott | MWong |
| DATE | 6/30/08 | 7/1/08** | 6/25/08* | 7/1/08 |

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EXTENSION REQUEST FOR CONTAINMENT SUMP
CORRECTIVE ACTIONS ASSOCIATED WITH
GENERIC LETTER 2004-02
KEWANEE POWER STATION
DOCKET NO. 50-305

In a letter dated May 21, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081420793), Dominion Energy Kewaunee, Inc. (DEK or the licensee) requested an extension to the corrective action due date of September 30, 2008, stated in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors" (GL 2004-02), for the Kewaunee Power Station (Kewaunee). The stated intent of this extension was to allow DEK additional time to perform strainer performance testing, final analysis and all licensing activities to address GL 2004-02. Therefore, an extension to the compliance due date of September 30, 2008, was requested to allow time for completion of these activities.

In its letter dated May 22, 2008 (ADAMS Accession No. ML081430612), DEK separately requested an interim extension to allow DEK additional time to support NRC review of the extension requested by letter dated May 21, 2008, and the accompanying detailed justifications. DEK requested an interim extension to June 30, 2008. The NRC approved an interim extension for completion of Kewaunee sump clogging corrective actions from the GL 2004-02 due date of May 31, 2008, until June 30, 2008 (NRC letter dated May 29, 2008, ADAMS Accession No. ML081490572).

Prior to the approval of the interim extension, the NRC approved an extension for completion of Kewaunee sump clogging corrective actions from the GL 2004-02 due date of December 31, 2007, until May 31, 2008 (NRC letter dated December 13, 2007, ADAMS Accession No. ML073450594).

DEK stated in their May 21, 2008, letter that the request for an additional extension is due to a delay in obtaining a vendor-supplied computational fluid dynamics (CFD) analysis. The licensee explained that the recent CFD preliminary results revealed higher flow rates over one of three debris interceptors. The flow rates over one debris interceptor exceed the flow rates used in debris transport flume tests conducted in 2007. Consequently, the debris transport flume test will be performed at the flow rates identified by the new CFD analysis in order to confirm the quantity of debris expected to transport to the strainer and the resultant impact on the strainer head loss.

DEK has also stated in its May 21, 2008, letter, that Kewaunee has been an active participant in the Performance Contracting, Inc. (PCI), Sure Flow Strainer Users Group (SFSUG) and the SFSUG large-scale flume testing effort. Therefore, Kewaunee is prepared to begin testing as soon as the SFSUG test flume is available. The current SFSUG test schedule for the large scale test flume indicates Kewaunee's testing can commence approximately July 7, 2008.

As stated in the May 21, 2008, letter, DEK is requesting an extension until September 30, 2008 for completion of the following activities listed below:

- Complete the post-loss-of-coolant accident (LOCA) containment sump pool CFD analysis.
- Complete strainer performance testing and documentation that confirms Kewaunee's low fiber quantity and containment sump pool transport characteristics do not result in a thin or thick bed of debris on the sump strainer. Consequently, clean strainer surfaces are expected to remain and there will be no increased strainer head loss due to chemical precipitants in the sump pool.
- Following completion of the CFD analysis and strainer performance testing and documentation, the Kewaunee Updated Final Safety Analysis Report (UFSAR) will be updated.

The NRC has based its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions on the criteria stated in SECY-06-0078. Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and a schedule to address outstanding technical issues with enough margin to account for uncertainties, and
- the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded emergency core cooling system (ECCS) and containment spray system (CSS) functions during the extension period.

The SECY also states that for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

With regard to the first extension criterion, DEK has provided a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions. In light of the new developments, and in order to meet the regulatory requirements, DEK stated that it has scheduled the following activities.

- Completion of post-LOCA containment sump pool CFD analysis by June 15, 2008.
- Completion of strainer performance testing and documentation, preparation and approval of an update to the Kewaunee UFSAR by September 30, 2008.

DEK stated that it had completed all other corrective actions in accordance with Kewaunee's Plant-Specific Plan, outlined in DEK's extension request letter dated November 15, 2007 (ADAMS Accession No. ML073190553) and DEK's GL 2004-02 supplemental response dated February 29, 2008 (ADAMS Accession No. ML080650314).

With regard to the second extension criterion, the licensee stated in its letter dated May 21, 2008, that modifications, mitigation measures, compensatory measures, and/or favorable conditions are in effect at Kewaunee, minimizing the risk of degraded ECCS and CSS functions during the extension period. The NRC staff evaluation of the previous extension request and interim extension request concluded that DEK had put mitigation measures in place to adequately reduce risk for the previous requested extension periods (May 31, 2008 and June 30, 2008), as stated in the NRC extension approval letters cited above. In addition the licensee has stated in its May 21, 2008, letter that 5.8 feet of net positive suction head (NPSH) margin is available for the RHR pumps when operating in the containment sump recirculation mode with the new ECCS recirculation strainer arrangement and the maximum allowed strainer head loss (10 feet). Strainer performance testing and calculations using NUREG/CR-6224 show greater margin is available.

The licensee submittal also noted the following:

As discussed in greater detail in DEK's February 29, 2008 letter to the NRC, physical modifications included installation of a new, passive, safety-related Sure-Flow strainer designed by Performance Contracting, Incorporated (PCI). The modification included installing debris interceptors around the strainer to prevent debris traveling along the sump floor from reaching the strainer's perforated material. The modification also included a change to the narrow range sump level instrument float columns to prevent entry of debris exceeding the strainer perforation size into the recirculation sump. Downstream effects evaluations for the reactor vessel and nuclear fuel and safety injection, residual heat removal and internal containment spray systems are complete. No additional modifications are required.

Additionally, the November 15, 2007 and May 21, 2008, letters provide plant risk evaluations for Kewaunee which compared the increase in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) from a large-break LOCA to total plant CDF and LERF risk values and showed that these values could be categorized as "small" in accordance with the criteria stated in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The NRC staff has not reviewed the analysis in detail; but agrees with the licensee's conclusion that the risk due to the proposed 3-month extension period is small and is bounded by the risk associated with the extension period previously approved in the December 13, 2007, NRC letter.

The NRC staff believes that DEK has a reasonable plan for Kewaunee that should result in the completion of final GL 2004-02 corrective actions that provide acceptable strainer function with adequate margin for uncertainties. The additional time requested in the May 21, 2008, letter is considered to be of low safety concern given the mitigation measures and plant improvements already in place. Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due date extension criteria as discussed above, the NRC staff finds it is acceptable to extend the completion date for GL 2004-02 corrective actions associated with strainer performance testing, final analysis and related licensing activities, as described in this enclosure, for Kewaunee from June 30, 2008, to September 30, 2008. While the NRC accepts this date as reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC expects Kewaunee to place a high priority on completing remaining actions and updating the plants' licensing bases as soon as possible.

The NRC staff expects that the licensee will not rely solely on "best case" expectations for testing results and will have in place a contingency plan. This plan should result in expeditious identification, through analysis and testing, of the complete set of modifications that will be needed to support demonstration of adequate strainer performance. Any future extension request should include the results of this planning and testing.

Date: July 1, 2008

EXTENSION REQUEST FOR CONTAINMENT SUMP
CORRECTIVE ACTIONS ASSOCIATED WITH
GENERIC LETTER 2004-02
MILLSTONE POWER STATION, UNITS 2 AND 3
DOCKET NOS. 50-336 AND 50-423

In a letter dated May 21, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081420793), Dominion Nuclear Connecticut, Inc. (DNC or the licensee) requested an extension to the corrective action due date of September 30, 2008, stated in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors" (GL 2004-02), for the Millstone Power Station, Units 2 and 3 (Millstone 2 and 3). The stated intent of this extension was to allow additional time for completion of downstream component wear effects evaluations, chemical effects testing and evaluation, and licensing basis updates, as well as to determine whether any additional actions may be required based on the results of the testing and technical evaluations. DNC requested an extension to September 30, 2008, for completion of these activities.

In its letter dated May 22, 2008 (ADAMS Accession No. ML081430612), DNC separately requested an interim extension to allow DNC additional time to support NRC review of the extension requested by letter dated May 21, 2008, and the accompanying detailed justifications. DNC requested an interim extension to June 30, 2008. The NRC approved an interim extension for completion of Millstone 2 and 3 sump clogging corrective actions from the GL 2004-02 due date of May 31, 2008, until June 30, 2008 (NRC letter dated May 29, 2008, ADAMS Accession No. ML081490572).

Dominion's May 21, 2008, letter states that the request for an additional extension is due to the realization that not all of the remaining corrective actions can be completed by May 31, 2008. The remaining corrective actions, as described in the May 21, 2008, extension request letter, are identified below.

- Issuance and internal review of chemical evaluation and benchtop testing reports,
- Completion of emergency core cooling system (ECCS) downstream component wear system performance, and pump seal evaluations,
- Completion of chemical effects reduced scale testing, evaluation, and test report preparation and review,

- Determination of whether any additional actions are required based on the results of the chemical effects testing and evaluations, and
- Update of design and licensing basis documents to reflect the plant changes implemented to resolve GSI-191 issues.

The NRC has based its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions on the criteria stated in SECY-06-0078. Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and a schedule to address outstanding technical issues with enough margin to account for uncertainties, and
- the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded ECCS and containment spray system (CSS) functions during the extension period.

The SECY also states that for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

With regard to the first extension criterion, DNC has provided a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions. The licensee-proposed plan for the remaining corrective actions has been summarized in its May 21, 2008, letter; activities are itemized below along with established milestone dates.

Downstream wear calculations

- DNC review and comment June 18, 2008
- Issue final calculation July 18, 2008
- Pump seal wear evaluations July 31, 2008
- System performance evaluations Aug. 15, 2008

Strainer chemical effects reduced scale testing and evaluation

- Complete strainer testing July 31, 2008
- AECL issue Test Report Aug. 31, 2008
- DNC review and comment Sept.15, 2008
- AECL issue Final Strainer Test Report Sept. 30, 2008

- Revision to Design Change Record Sept. 15, 2008
- Determination of whether any hardware and/or procedural modifications are needed as a result of the completion of the chemical precipitate head loss testing Sept. 30, 2008

With regard to the second extension criterion, the licensee stated in its letter dated May 21, 2008, that modifications, mitigation measures, compensatory measures, and/or favorable conditions are in effect at Millstone 2 and 3, minimizing the risk of degraded ECCS and CSS functions during the extension period. The NRC staff's evaluation of the previous extension request and interim extension request concluded that DNC had put mitigation measures in place at Millstone 2 and 3 to adequately reduce risk for the previous requested extension periods (May 31, 2008, and June 30, 2008), as stated in the NRC extension approval letters cited above.

In its May 21, 2008, letter, DNC stated that the justification for an extension request for the final GL 2004-02 submittal to September 30, 2008, remains the same as the justification from the DNC letter to the NRC dated November 15, 2007 (ADAMS Accession No. ML073190553). In the letter dated November 15, 2007, DNC stated that it has taken actions toward bringing Millstone 2 and 3 into compliance with GL 2004-02, including replacing the sump screens with substantially larger sump strainers with a 6,000 ft² surface area for Millstone 2, and a 5,000 ft² surface area for Millstone 3, during the fall 2006 refueling outage and the spring 2007 refueling outage respectively. In order to minimize the risk of degraded ECCS and CSS functions, DNC stated that for Millstone 2 it had replaced some calcium silicate insulation from the steam generator cavities that could contribute to a limiting strainer debris bed (so that the remaining calcium silicate insulation is located outside the loss-of-coolant accident (LOCA) zone of influence, jacketed to prevent damage from containment spray, and would not become submerged during an accident). DNC also stated that for Millstone 3, it had implemented a modification to delay the start time of the Recirculation Spray System (RSS) pumps using a Lo-Lo Refueling Water Storage Tank level switch rather than a timer to ensure that the replacement sump strainers are submerged prior to pump start (with the Millstone 3 RSS pumps being the only pumps that take suction from the sump during recirculation and long-term cooling).

Additionally, the November 15, 2007 and May 21, 2008, letters provide plant risk evaluations for Millstone 2 and 3 which compared the increase in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) from a large-break LOCA to total plant CDF and LERF risk values and showed that these values could be categorized as "small" in accordance with the criteria stated in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The NRC staff has not reviewed the analysis in detail; but agrees with the licensee's conclusion that the risk, due to the proposed 3-month extension period, is small and is bounded by the risk associated with the extension period previously approved in the December 13, 2007 (ADAMS Accession No. ML073450594), NRC letter.

The NRC staff believes that DNC has a reasonable plan for Millstone 2 and 3 that should result in the completion of final GL 2004-02 corrective actions that provide acceptable strainer function with adequate margin for uncertainties. The additional time requested in the May 21, 2008, letter is considered to be of low safety concern given the mitigation measures and plant improvements already in place. Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due

date extension criteria as discussed above, the NRC staff finds it is acceptable to extend the completion date for GL 2004-02 corrective actions associated with downstream effects and chemical effects evaluations and testing, as described in this enclosure, for Millstone 2 and 3 from June 30, 2008, to September 30, 2008. While the NRC accepts this date as reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC expects Millstone 2 and 3 to place a high priority on completing remaining actions and updating the plants' licensing bases as soon as possible.

The NRC staff expects that the licensee will not rely solely on "best case" expectations for testing results and will have in place a contingency plan. This plan should result in expeditious identification, through analysis and testing, of the complete set of modifications that will be needed to support demonstration of adequate strainer performance. Any future extension request should include the results of this planning and testing.

Date: July 1, 2008

EXTENSION REQUEST FOR CONTAINMENT SUMP
CORRECTIVE ACTIONS ASSOCIATED WITH
GENERIC LETTER 2004-02
NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-338 AND 50-339

In a letter dated May 21, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081420793), Virginia Electric and Power Company (the licensee), requested an extension to the corrective action due date of September 30, 2008, stated in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," (GL 2004-02), for the North Anna Power Station, Unit Nos. 1 and 2 (North Anna 1 and 2). The stated intent of this extension was to allow additional time for completion of downstream component wear and system performance evaluations and to finalize the associated documentation, chemical effects testing, technical evaluations and reviews, and licensing basis updates, as well as to determine whether any additional actions may be required based on the results of the testing and technical evaluations. The licensee requested an extension to September 30, 2008, for completion of these activities.

In its letter dated May 22, 2008 (ADAMS Accession No. ML081430612), the licensee separately requested an interim extension to allow the licensee additional time to support NRC review of the extension requested by letter dated May 21, 2008, and the accompanying detailed justifications. The licensee requested an interim extension to June 30, 2008. The NRC approved an interim extension for completion of North Anna 1 and 2 sump clogging corrective actions from the GL 2004-02 due date of May 31, 2008, until June 30, 2008 (NRC letter dated May 29, 2008, ADAMS Accession No. ML081490572).

The licensee's May 21, 2008, letter states that the request for an additional extension is due to the realization that not all of the remaining corrective actions can be completed by May 31, 2008. The remaining corrective actions, as described in the May 21, 2008, extension request letter, are identified below.

- Internal review and issue of final analyses and evaluation reports of bench-top testing, downstream component wear and systems performance, and debris generation and transport,
- Chemical effects reduced scale testing, evaluation, and test report preparation and review,
- Determination of any additional actions that may be required based on the results of the chemical effects testing and evaluations, and
- Update of design and licensing basis documents (e.g., UFSAR, Tech Specs, plant procedures, etc.) to reflect the plant changes implemented to resolve Generic Safety Issue (GSI)-191 issues.

The NRC has based its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions on the criteria stated in SECY-06-0078. Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and a schedule to address outstanding technical issues with enough margin to account for uncertainties, and
- the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded emergency core cooling system (ECCS) and containment spray system (CSS) functions during the extension period.

The SECY also states that for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

With regard to the first extension criterion, the licensee has provided a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions. The licensee-proposed plan for the remaining corrective actions has been summarized in its May 21, 2008, letter, as itemized below along with its established milestones and dates.

Downstream wear calculations, bench-top testing, downstream wear effects on components, and system performance, and debris generation and transport

- The licensee review and comment June 18, 2008
- Issue final calculations/evaluations July 18, 2008
- Pump Seal Wear Evaluations July 31, 2008
- System Performance Evaluations July 31, 2008

Strainer chemical effects reduced scale testing and evaluation

- Complete strainer chemical effects testing July 7, 2008
- AECL issue Test Report July 31, 2008
- The licensee review and comment August 15, 2008
- AECL issue Final Strainer Test Report August 29, 2008
- Determination of whether any hardware and/or procedural modifications are needed as a result of the completion of the chemical precipitate head loss testing Sept. 15, 2008

Field Change to design change package (DCP) to implement chemical design documents

- Issue Field Change to strainer installation DCP for acceptance of chemical strainer testing Sept. 19, 2008
- Facility Safety Review Committee approval of design and licensing basis changes Sept. 30, 2008

With regard to the second extension criterion, the licensee stated in its letter dated May 21, 2008, that modifications, mitigation measures, compensatory measures, and/or favorable conditions are in effect at North Anna 1 and 2, minimizing the risk of degraded ECCS and CSS functions during the extension period. The NRC staff's evaluation of the previous extension request and interim extension request concluded that the licensee had put mitigation measures in place at North Anna 1 and 2 to adequately reduce risk for the previous requested extension periods (May 31, 2008, and June 30, 2008), as stated in the NRC extension approval letters cited above.

The licensee completed the installation of replacement strainer systems for both units. The total surface area of the new recirculation spray (RS) strainer systems is approximately 4400 ft² (each unit), and the total surface area of the low-head safety injection (LHSI) strainer is approximately 2000 ft² for North Anna 1, and 1900 ft² for North Anna 2. This replaces the previous screens which had a surface area of approximately 168 ft² for each strainer.

In its May 21, 2008, letter, the licensee stated that the justification for an extension request for the final GL 2004-02 submittal to September 30, 2008, remains the same as the justification from the licensee's letter to the NRC dated November 15, 2007 (ADAMS Accession No. ML073190553). In addition, the following additional physical modifications have been completed.

1. As discussed in greater detail in the licensee's February 29, 2008 (ADAMS Accession No. ML080650563), supplemental response to GL 2004-02, physical modifications include the installation of replacement strainers in North Anna 1 and 2.
2. Calcium-Silicate (Cal-Sit) and Microtherm insulation was either removed or replaced in North Anna 1 and 2 containments as required to reduce the calculated quantities of particulates and fiber that could reach the containment sumps and achieve the specified strainer head loss and to help reduce component wear.
3. The licensee has modified the North Anna 1 and 2 refueling water storage tanks' level instrumentation and the SI automatic recirculation mode transfer setpoint to ensure sufficient water is available to meet RS and LHSI strainer submergence requirements.
4. A 12-inch hole was core bored in the primary shield wall plug for both North Anna 1 and 2 to allow reactor cavity water to drain from the in-core sump room into the containment sump. This facilitates transfer of additional water to the containment sump to ensure full submergence of the new containment sump strainers.

Additionally, the November 15, 2007, and May 21, 2008, letters provide plant risk evaluations for North Anna 1 and 2 which compared the increase in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) from a large-break loss-of-coolant accident (LOCA) to total plant CDF and LERF risk values and showed that these values could be categorized as "small" in

accordance with the criteria stated in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

The NRC staff has not reviewed the analysis in detail; but agrees with the licensee's conclusion that the risk, due to the proposed 3-month extension period, is small and is bounded by the risk associated with the extension period previously approved in the December 13, 2007 (ADAMS Accession No. ML073450594), NRC letter.

The NRC staff believes that the licensee has a reasonable plan for North Anna 1 and 2 that should result in the completion of final GL 2004-02 corrective actions that provide acceptable strainer function with adequate margin for uncertainties. The additional time requested in the May 21, 2008, letter is considered to be of low safety concern given the mitigation measures and plant improvements already in place. Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due date extension criteria as discussed above, the NRC staff finds it is acceptable to extend the completion date for GL 2004-02 corrective actions associated with downstream effects and chemical effects evaluations and testing, as described in this enclosure, for North Anna 1 and 2 from June 30, 2008, to September 30, 2008. While the NRC accepts this date as reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC expects North Anna 1 and 2 to place a high priority on completing remaining actions and updating the plants' licensing bases as soon as possible.

The NRC staff expects that the licensee will not rely solely on "best case" expectations for testing results and will have in place a contingency plan. This plan should result in expeditious identification, through analysis and testing, of the complete set of modifications that will be needed to support demonstration of adequate strainer performance. Any future extension request should include the results of this planning and testing.

Date: July 1, 2008

EXTENSION REQUEST FOR CONTAINMENT SUMP
CORRECTIVE ACTIONS ASSOCIATED WITH
GENERIC LETTER 2004-02
SURRY POWER STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-280 AND 50-281

In a letter dated May 21, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081420793), Virginia Electric and Power Company (the licensee), requested an extension to the corrective action due date of September 30, 2008, stated in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," (GL 2004-02), for the Surry Power Station, Unit Nos. 1 and 2 (Surry 1 and 2). The stated intent of this extension was to allow additional time for completion of downstream component wear and system performance evaluations and to finalize the associated documentation, chemical effects testing, technical evaluations and reviews, and licensing basis updates, as well as to determine whether any additional actions may be required based on the results of the testing and technical evaluations. The licensee requested an extension to September 30, 2008, for completion of these activities.

In its letter dated May 22, 2008 (ADAMS Accession No. ML081430612), the licensee separately requested an interim extension to allow the licensee additional time to support NRC review of the extension requested by letter dated May 21, 2008, and the accompanying detailed justifications. The licensee requested an interim extension to June 30, 2008. The NRC approved an interim extension for completion of Surry 1 and 2 sump clogging corrective actions from the GL 2004-02 due date of May 31, 2008, until June 30, 2008 (NRC letter dated May 29, 2008, ADAMS Accession No. ML081490572).

The licensee's May 21, 2008, letter states that the request for an additional extension is due to the realization that not all of the remaining corrective actions can be completed by May 31, 2008. The remaining corrective actions, as described in the May 21, 2008, extension request letter, are identified below.

- Internal review and issue of final analyses and evaluation reports of bench-top testing, downstream component wear and systems performance, and debris generation and transport,
- Chemical effects reduced scale testing, evaluation, and test report preparation and review,
- Determination of any additional actions that may be required based on the results of the chemical effects testing and evaluations, and
- Update of design and licensing basis documents (e.g., UFSAR, Tech Specs, plant procedures, etc.) to reflect the plant changes implemented to resolve Generic Safety Issue (GSI)-191 issues.

The NRC has based its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions on the criteria stated in SECY-06-0078. Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and a schedule to address outstanding technical issues with enough margin to account for uncertainties, and
- the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded emergency core cooling system (ECCS) and containment spray system (CSS) functions during the extension period.

The SECY also states that for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

With regard to the first extension criterion, the licensee has provided a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions. The licensee-proposed plan for the remaining corrective actions has been summarized in its May 21, 2008, letter, as itemized below along with its established milestones dates.

Downstream wear calculations, bench-top testing, downstream wear effects on components, and system performance, and debris generation and transport

- The licensee review and comment June 18, 2008
- Issue final calculations/evaluations July 18, 2008
- Pump Seal Wear Evaluations July 31, 2008
- System Performance Evaluations July 31, 2008

Strainer chemical effects reduced scale testing and evaluation

- Complete strainer chemical effects testing July 7, 2008
- AECL issue Test Report July 31, 2008
- The licensee review and comment August 15, 2008
- AECL issue Final Strainer Test Report August 29, 2008

- Determination of whether any hardware and/or procedural modifications are needed as a result of the completion of the chemical precipitate head loss testing Sept. 15, 2008

Field Change to design change package (DCP) to implement chemical design documents

- Issue Field Change to strainer installation DCP for acceptance of chemical strainer testing Sept. 19, 2008
- Facility Safety Review Committee approval of design and licensing basis changes Sept. 30, 2008

License amendment request (LAR) to delete recirculation spray (RS) subsystems minimum recirculation flow value from the Surry 1 and 2 Technical Specifications (TS) Section 5.2.C

- NRC approval of LAR submitted April 2, 2008, to delete RS flow design value that is being revised to provide additional pump margin Sept. 30, 2008

With regard to the second extension criterion, the licensee stated in its letter dated May 21, 2008, that modifications, mitigation measures, compensatory measures, and/or favorable conditions are in effect at Surry 1 and 2, minimizing the risk of degraded ECCS and CSS functions during the extension period. The NRC staff evaluation of the previous extension request and interim extension request concluded that the licensee had put mitigation measures in place at Surry 1 and 2 to adequately reduce risk for the previous requested extension periods (May 31, 2008, and June 30, 2008), as stated in the NRC extension approval letters cited above.

In its May 21, 2008, letter, the licensee stated that the justification for an extension request for the final GL 2004-02 submittal to September 30, 2008, remains the same as the justification from the licensee letter to the NRC dated November 15, 2007 (ADAMS Accession No. ML073190553). In addition, the following additional physical modifications will have been implemented before the requested extension period begins, as described by the licensee.

1. As discussed in the February 29, 2008 (ADAMS Accession No. ML080650562), supplemental response to GL 2004-02, the licensee completed the installation of replacement strainer systems in Surry 1 and is currently completing the Surry 2 strainer installation during the ongoing spring 2008 refueling outage. The total surface area of the new recirculation spray (RS) strainer systems is approximately 6220 ft² for Surry 1 and 6258 ft² for Surry 2, and the total surface area of the low-head safety injection (LHSI) strainer is approximately 2180 ft² for Surry 1 and 2230 ft² for Surry 2. These replace the previous screens, which had a total surface area of approximately 158 ft² for each strainer.
2. The licensee has repaired, jacketed, or removed damaged or unqualified insulation and insulation jacketing in Surry 1 containment, and is currently performing the same modifications in the Surry 2 containment during the ongoing refueling outage, as required to reduce the calculated quantities of fiber that could reach the containment sumps and achieve the specified strainer head loss and help reduce component wear.

3. The licensee has modified the Surry 1 and 2 refueling water storage tanks level instrumentation to ensure sufficient water is available to meet RS and LHSI strainer submergence requirements.
4. A 12-inch hole was core bored in the primary shield wall plug for both Surry 1 and 2 to allow reactor cavity water to drain from the in-core sump room into the containment sump. This facilitates transfer of additional water to the containment sump to ensure full submergence of the new containment sump strainers.

Additionally, the November 15, 2007 and May 21, 2008, letters provide plant risk evaluations for Surry 1 and 2 which compared the increase in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) from a large-break loss-of-coolant accident (LOCA) to total plant CDF and LERF risk values and showed that these values could be categorized as "small" in accordance with the criteria stated in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The NRC staff has not reviewed the analysis in detail; but agrees with the licensee's conclusion that the risk, due to the proposed three-month extension period, is small and is bounded by the risk associated with the extension period previously approved in the December 13, 2007 (ADAMS Accession No. ML073450594), NRC letter.

The NRC staff believes that the licensee has a reasonable plan for Surry 1 and 2 that should result in the completion of final GL 2004-02 corrective actions that provide acceptable strainer function with adequate margin for uncertainties. The additional time requested in the May 21, 2008, letter is considered to be of low safety concern given the mitigation measures and plant improvements already in place. Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due date extension criteria as discussed above, the NRC staff finds it is acceptable to extend the completion date for GL 2004-02 corrective actions associated with downstream effects and chemical effects evaluations and testing, as described in this enclosure, for Surry 1 and 2 from June 30, 2008, to September 30, 2008. While the NRC accepts this date as reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC expects Surry 1 and 2 to place a high priority on completing remaining actions and updating the plants' licensing bases as soon as possible. In addition, the NRC expects that the actions dependent on approval of a license amendment relating to the removal of the RS subsystems minimum recirculation flow value from the Surry 1 and 2 TS Section 5.2.C will be implemented expeditiously after receipt of the amendment.

The NRC staff expects that the licensee will not rely solely on "best case" expectations for testing results and will have in place a contingency plan. This plan should result in expeditious identification, through analysis and testing, of the complete set of modifications that will be needed to support demonstration of adequate strainer performance. Any future extension request should include the results of this planning and testing.

Approval of the extension to the GL 2004-02 corrective action due date shall not be construed as approval of any operating license amendment described in the licensee's extension request.

Date: July 1, 2008

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