VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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U.S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

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Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
ANNUAL CHANGES, TESTS, AND EXPERIMENTS REPORT
REGULATORY COMMITMENT EVALUATION REPORT

Virginia Electric and Power Company submits the annual report of Changes, Tests, and Experiments pursuant to 10 CFR 50.59(d)(2) and Regulatory Commitment Changes identified in Commitment Evaluation Summaries implemented at Surry Power Station during 2014. Attachment 1 provides a description and summary of the Regulatory Evaluations and Regulatory Commitment Changes in 2014.

Should you have any questions regarding this report, please do not hesitate to contact me at (757) 365-2003.

Very truly yours,

Douglas C. Lawrence,
Director Station Safety & Licensing
Surry Power Station

Attachment

Commitments made in this letter: None.

cc: United States Nuclear Regulatory Commission, Region II
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Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector
Surry Power Station

IE47
NRR

Attachment 1

Surry Units 1 & 2

2014 - 10 CFR 50.59 Changes, Tests and Experiments

14-001 Regulatory Evaluation 02/20/14

Description: Regulatory Evaluation 14-001 reviewed the installation of a 50 millisecond filter in the signal path of Reactor Coolant Flow Protection Channel 1 in order to attenuate an 8 HZ noise.

Summary: Reactor Coolant Flow Protection Channel 1, for Loop 1, has generated intermittent spurious low flow trip alarms due to 8 HZ noise superimposed on the actual flow signal. Generation of a spurious low flow trip in coincidence with periodic maintenance in a redundant channel would initiate a reactor trip. This evaluation provided documentation for the installation of a 50 millisecond filter in the signal path of Reactor Coolant Flow Protection Channel 1 in order to attenuate the 8 HZ noise.

The modification slightly increases the response time of one redundant input to a two-of-three trip matrix for Loop 1 Loss of Reactor Coolant Flow protection from less than 0.6 seconds to less than 0.7 seconds and, under certain conditions, could delay a Loss of Reactor Coolant Flow reactor trip by 0.1 seconds. However, this modification has no effect on the protection system response to a loss of flow sensed in Loop 2 or Loop 3. In the event of a loss of flow sensed only in Loop 1 where one of the two redundant channels fails to respond, the reactor trip breakers will open in 0.7 seconds which is less than the UFSAR analysis of the Loss of Reactor Coolant Flow accident assumed 1.0 second delay in reactor trip.

The modification implements a design feature of the comparator that is bounded by 1E and seismic qualification testing and does not affect the safety related qualification of the comparator or circuit and does not change the function or setpoint of the comparator. The modification is to protect circuitry designed to respond to an accident and will have no affect on the frequency of occurrence of an accident. Therefore, the analysis could be implemented without prior NRC review and approval.

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Surry Units 1 & 2

2014 - 10 CFR 50.59 Changes, Tests and Experiments

14-002 Regulatory Evaluation 02/20/14

Description: Regulatory Evaluation 14-002 involves updating assumptions relative to the performance of the inside recirculation spray (RS), outside RS pumps and accumulators in the LOCA containment safety analyses of Chapters 5 and 6 of the Surry UFSAR.

Summary: The specific analysis input changes were:

1) Revised analysis for RS pump NPSH available to incorporate NPSH required that is a function of fluid temperature, a reduction in RS pump suction piping friction losses, and small changes to accumulator nitrogen pressure and volume to embed additional margin in the calculation.
2) Revised LOCA containment depressurization peak pressure analysis to incorporate changes to inputs for accumulator nitrogen pressure, temperature, and volume.
3) Remove a 0.1 psia penalty against LOCA peak containment pressure that had previously been provided by Westinghouse, but has been determined to be unnecessary through explicit evaluation as part of the resolution of Nuclear Safety Advisory Letter 2011-05.

There is an adverse effect on the RS pump performance (reduction in NPSH margin) when accounting for the fluid-temperature dependency of NPSH required and the LOCA containment depressurization analysis results got slightly worse from the accumulator nitrogen input changes. However, the reanalysis of the UFSAR containment analyses continue to meet all applicable acceptance criteria, including positive NPSH margin for the RS pumps, containment peak pressure < 45 psig, and long-term containment depressurization requirements in accordance with the LOCA radiological consequences analysis.

Reanalyzing the Surry UFSAR Chapters 5 and 6 LOCA containment analyses and incorporating the results of these analyses into the Surry licensing basis does not increase the frequency of occurrence of a LOCA or any other accident or malfunction previously evaluated in the FSAR, and the UFSAR methods of evaluation were not changed for the reanalysis. Therefore, the revised analysis could be implemented without prior NRC review and approval.

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Surry Units 1 & 2

2014 - 10 CFR 50.59 Changes, Tests and Experiments

14-003 Regulatory Evaluation 07/29/14

Description: Regulatory Evaluation 14-003 reviewed the temporary Service Water (SW) flow path (jumper) from the Component Cooling Heat Exchangers (CCHX) during the 2015 Surry Unit 1 refueling outage.

Summary: SW piping from the CCHXs will be drained, cleaned, inspected, repaired (as needed) and recoated (as needed) during the 2015 Unit 1 refueling outage. A temporary SW flow path (jumper) from the CCHXs to the outlet waterbox of the Unit 2 main steam condenser is required to maintain adequate cooling capacity from two CCHXs for operation/shutdown (if required) of Unit 2, and for cooling of residual heat from Unit 1 and the spent fuel pool.

The SW design functions and basic configurations are not being altered as a result of using the temporary jumper. The possibility of flooding due to failure of the temporary SW jumper in the turbine building basement has been evaluated and dispositioned by the implementation of appropriate project constraints and compensatory measures to preclude damage to the SW jumper and to respond to a postulated flooding event. During the time the temporary SW jumper is in service, an installed manual isolation valve in the SW jumper will be under administrative control 24 hours/day. If required, the operator assigned administrative control will close the valve and isolate SW flow from the CCHXs. Also, a 24 hour/day flood watch will be established when the jumper is in service.

The temporary jumper is designed with the attributes of the normal SW discharge line except for complete missile and heavy load protection. However, use of the temporary SW jumper is limited to the time period when missile producing weather is not expected and heavy loads are to be controlled by station procedure. Unit 1 will also be in a plant condition that will provide adequate time to restore normal SW flow, if required.

The project constraints, compensatory measures, and contingency action plan will ensure an operable SW flowpath to the required number of CCHXs and provide the same reliability as the normal SW flow path. In addition, the CCHXs serve no design basis accident mitigating function and, therefore, the consequences of an accident previously evaluated are not increased. Therefore, the temporary SW jumper could be implemented without prior NRC review and approval.

Attachment 1

Surry Units 1 & 2

2014 - 10 CFR 50.59 Changes, Tests and Experiments

14-004 Regulatory Evaluation 09/25/14

Description: Regulatory Evaluation 14-004 reviewed the substitution of the current Westinghouse cladding corrosion model for a new cladding corrosion model, which was approved by the NRC in July 2013 and documented in WCAP-12610-P-A Addendum 2-A.

Summary: This evaluation documented the implementation of WCAP-12610-P-A Addendum 2-A, "Westinghouse Clad Corrosion Model for ZIRLO and Optimized ZIRLO" as a replacement for the existing Westinghouse cladding corrosion model. It is a one for one replacement for the Westinghouse cladding corrosion model referenced in the Surry UFSAR and was used in the Surry 2 Cycle 26 fuel rod design analysis performed by Westinghouse. The NRC approved Westinghouse applying this method to fuel rod design analysis for ZIRLO and Optimized ZIRLO based fuel.

The regulatory evaluation determined the areas reviewed do not result in a departure in a method of evaluation as described in the UFSAR. Therefore, the analysis could be implemented without prior NRC review and approval.

Attachment 1

Surry Units 1 & 2

2014 - 10 CFR 50.59 Changes, Tests and Experiments

Commitment Evaluation Summary 04/15/14

Description: This Commitment Evaluation documented deferral of flow testing for Surry's Unit 2 A and D Recirculation Spray Heat Exchangers (RSHX) until the 2020 Unit 2 refueling outage (RFO).

Summary: LER 90-014-01 documented the Unit 1 & 2 RSHXs being declared inoperable due to potentially inadequate Service Water (SW) flow caused by macrofouling. Actions to prevent recurrence included implementation of an enhanced program of inspection and maintenance. Associated with LER 90-014-01 was a Notice of Violation (NOV) and corrective steps included planned flow testing and inspection on one RSHX SW subsystem during both the 1991 Unit 2 and 1992 Unit 1 RFOs with a determination regarding further flow testing. This discussion also stated activities committed to as part of our response to Generic Letter 89-13 were adequate to prevent recurrence of any significant RSHX macrofouling. One of our updated responses to Generic Letter 89-13 (SN 94-408, 12/6/94) notified the NRC of our intent to flow test one RSHX SW subsystem every other RFO and thereafter, alternate subsystems would be tested every other RFO and the post-data assessment would include confirmation and modification of the testing frequency.

These commitments were made to prevent recurrence of any significant RSHX fouling. Documentation from Engineering provided assurance that, based on satisfactory inspection and repair of the 2C circulating water inlet line and the SW inlet lines to the Unit 2 A and D RSHXs conducted during the Unit 2 Spring 2014 RFO, in conjunction with cleaning of the 48" RSHX supply headers and maintaining piping between the SW 103/203 and 104/204 valves partially in wet lay-up with chemically treated water, the RSHXs will function as designed thereby preserving compliance with the original commitments.