UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 11, 2015

MEMORANDUM TO: Edwin M. Hackett, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Christopher G. Miller, Director /***RA by JMarshall for***/
Division of License Renewal
Office of Nuclear Reactor Regulation

SUBJECT: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS REVIEW OF THE BYRON-BRAIDWOOD NUCLEAR STATIONS LICENSE RENEWAL APPLICATION – CORRECTIONS TO THE TABLE OF AGING MANAGEMENT PROGRAMS FOR THE SAFETY EVALUATION REPORT

During the ACRS full committee review for the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, license renewal application (LRA) on September 10, 2015, the staff indicated that corrections had been identified for Table 3.0-1, "Byron and Braidwood Aging Management Programs," in the staff's "Safety Evaluation, Related to the License Renewal of Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2" Safety Evaluation Report (SER) (ADAMS Accession No. ML15182A051). The purpose of this memorandum is to describe those changes in the table that will be incorporated in the NUREG version of the SER.

The staff identified three cases of aging management program (AMP) summaries in the table where corrections need to be made; these are shown in the red-line/strikeout version of the Table in Enclosure 1. Specifically:

- The Water Chemistry AMP is changed in the "SER Section (Disposition)" column (column 6) to "Consistent with exception," as opposed to stating "Consistent."

- The Flux Thimble Tube Inspection AMP is changed in "LRA Initial Comparison to the GALL Report" (column 4) to "Consistent," as opposed to "Consistent with exception and enhancements."

- The Environmental Qualification (EQ) of Electric Components AMP is changed in the "SER Section (Disposition)" column (column 6) to "consistent with enhancement" as opposed to "Consistent."

CONTACT: John Daily, NRR/DLR
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These summary designations in the Enclosure have been reviewed against the corresponding SER sections and verified that these accurately reflect the staff's evaluations. These corrections to Table 3.0-1 will be incorporated into the NUREG version of the SER, which also will include the ACRS letter. This NUREG will be prepared and published after the ACRS letter has been issued.

The staff also presented a table showing a summary of the AMPs reflecting which ones were evaluated by the staff as "consistent," "consistent with exceptions," "consistent with enhancements," and "consistent with enhancements and exceptions." The following table is provided to clarify the staff dispositions of the AMPs for each station:

Total AMPs in SER	**Staff's Disposition**	**Byron AMPs**	**Braidwood AMPs**
New	**13 New Programs**		
13 New Programs	Consistent	11	10 (Fuse Holders AMP is N/A for Braidwood)
	Consistent with exceptions	2	2
Existing	**32 Existing Programs**		
32 Existing Programs	Consistent	5 (Includes Flux Thimble Tube Inspection AMP for Byron)	4
	Consistent with enhancements	20	20
	Consistent with exceptions	1	1
	Consistent with enhancements and exceptions	6	7 (Includes Flux Thimble Tube Inspection AMP for Braidwood)
45 Total AMPs		45 AMPs	44 AMPs

A disposition of a program as "consistent" means that it is consistent with the GALL Report (Revision 2), as amended by approved Interim Staff Guidance (ISGs). An "enhancement" is an addition to an existing program to bring it into consistency with the GALL Report (as amended by ISGs). An "exception" is a portion of a GALL Report recommendation (as amended by ISGs) that the applicant does not intend to implement. These are evaluated for acceptability by the staff.

The Electrical Fuse holders AMP is a new program, and is applicable only to Byron. Braidwood does not have any components to be managed by this AMP. Therefore, Byron has 45 total applicable AMPs, whereas Braidwood has 44 applicable. The total count of AMPs that have exceptions for Byron is 9; the total count for Braidwood is 10.

As stated in SER Section 3.0.3.2.11, the staff considered 2 instances of the applicant's Fire Water System program to be exceptions to the recommendations of LR-ISG-2012-02. The staff determined that the exceptions were acceptable and that the program, with enhancements and exceptions, is adequate to manage the effects of aging for the fire water system.

The Flux Thimble Tube Inspection program is an existing program and has an exception and three enhancements applicable only to Braidwood; therefore for Braidwood it is "consistent with enhancements and exceptions," and for Byron it is considered "consistent." This is reflected in the count of "consistent" programs for Byron and the "consistent with enhancements and exceptions" count for Braidwood.

If you have any questions, please contact John Daily, the license renewal Safety Project Manager for this application, at 301-415-3873 or by email at John.Daily@NRC.Gov.

Docket Nos. 50-454, 50-455, 50-456, and 50-457

Enclosure:
Table 3.0-1 Byron and Braidwood Aging Management Programs (changes in redline/strikeout)

As stated in SER Section 3.0.3.2.11, the staff considered 2 instances of the applicant's Fire Water System program to be exceptions to the recommendations of LR-ISG-2012-02. The staff determined that the exceptions were acceptable and that the program, with enhancements and exceptions, is adequate to manage the effects of aging for the fire water system.

The Flux Thimble Tube Inspection program is an existing program and has an exception and three enhancements applicable only to Braidwood; therefore for Braidwood it is "consistent with enhancements and exceptions," and for Byron it is considered "consistent." This is reflected in the count of "consistent" programs for Byron and the "consistent with enhancements and exceptions" count for Braidwood.

If you have any questions, please contact John Daily, the license renewal Safety Project Manager for this application, at 301-415-3873 or by email at John.Daily@NRC.Gov.

Docket Nos. 50-454, 50-455, 50-456, and 50-457

Enclosure:
Table 3.0-1 Byron and Braidwood Aging Management Programs
(changes in redline/strikeout)

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ADAMS Accession No: **ML15253A913** *concurred via email

OFFICE	LA:DLR*	PM:DLR:RPB1	BC:DLR:RPB1	D:DLR
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DATE	9/10/2015	9/10/2015	9/11/2015	9/11/2015

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Table 3.0-1 Byron and Braidwood Aging Management Programs
(changes in redline/strikeout)

Applicant AMP	LRA Sections	New or Existing Program	LRA Initial Comparison to the GALL Report	GALL Report AMP(s)	SER Section *(Disposition)*
American Society of Mechanical Engineers (ASME) Section XI Inservice Inspection, Subsections IWB, IWC, and IWD	A.2.1.1 B.2.1.1	Existing	Consistent with enhancement	XI.M1, ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD	3.0.3.2.1 *(Consistent with enhancement)*
Water Chemistry	A.2.1.2 B.2.1.2	Existing	Consistent	XI.M2, Water Chemistry	3.0.3.1.1 *(Consistent with exception)*
Reactor Head Closure Stud Bolting	A.2.1.3 B.2.1.3	Existing	Consistent with exception and enhancement	XI.M3, Reactor Head Closure Stud Bolting	3.0.3.2.2 *(Consistent with exception and enhancement)*
Boric Acid Corrosion	A.2.1.4 B.2.1.4	Existing	Consistent	XI.M10, Boric Acid Corrosion	3.0.3.1.2 *(Consistent)*
Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components	A.2.1.5 B.2.1.5	Existing	Consistent	XI.M11B, Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components (Pressurized Water Reactors (PWRs) only)	3.0.3.1.3 *(Consistent)*
Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)	A.2.1.6 B.2.1.6	New	Consistent	XI.M12, Thermal Aging Embrittlement of CASS	3.0.3.1.4 *(Consistent)*
PWR Vessel Internals	A.2.1.7 B.2.1.7	New	Consistent with exception	XI.M16A, PWR Vessel Internals	3.0.3.2.3 *(Consistent with exception)*
Flow-Accelerated Corrosion	A.2.1.8 B.2.1.8	Existing	Consistent	XI.M17, Flow-Accelerated Corrosion	3.0.3.1.5 *(Consistent with enhancement)*

ENCLOSURE

Applicant AMP	LRA Sections	New or Existing Program	LRA Initial Comparison to the GALL Report	GALL Report AMP(s)	SER Section *(Disposition)*
Bolting Integrity	A.2.1.9 B.2.1.9	Existing	Consistent with enhancements	XI.M18, Bolting Integrity	3.0.3.2.4 *(Consistent with enhancements)*
Steam Generators	A.2.1.10 B.2.1.10	Existing	Consistent with exception and enhancements	XI.M19, Steam Generators	3.0.3.2.5 *(Consistent with exception and enhancements)*
Open-Cycle Cooling Water System	A.2.1.11 B.2.1.11	Existing	Consistent with enhancement	XI.M20, Open-Cycle Cooling Water System	3.0.3.2.6 *(Consistent with enhancements)*
Closed Treated Water Systems	A.2.1.12 B.2.1.12	Existing	Consistent with enhancements	XI.M21A, Closed Treated Water Systems	3.0.3.2.7 *(Consistent with enhancements)*
Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	A.2.1.13 B.2.1.13	Existing	Consistent with enhancements	XI.M23, Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems	3.0.3.2.8 *(Consistent with enhancements)*
Compressed Air Monitoring	A.2.1.14 B.2.1.14	Existing	Consistent with exception and enhancement	XI.M24, Compressed Air Monitoring	3.0.3.2.9 *(Consistent with exception and enhancement)*
Fire Protection	A.2.1.15 B.2.1.15	Existing	Consistent with enhancements	XI.M26, Fire Protection	3.0.3.2.10 *(Consistent with enhancements)*
Fire Water System	A.2.1.16 B.2.1.16	Existing	Consistent with enhancements	XI.M27, Fire Water System	3.0.3.2.11 *(Consistent with exceptions and enhancements)*
Aboveground Metallic Tanks	A.2.1.17 B.2.1.17	New	Consistent with exception	XI.M29, Aboveground Metallic Tanks	3.0.3.2.12 *(Consistent with exception)*
Fuel Oil Chemistry	A.2.1.18 B.2.1.18	Existing	Consistent with enhancements	XI.M30, Fuel Oil Chemistry	3.0.3.2.13 *(Consistent with enhancements)*

Applicant AMP	LRA Sections	New or Existing Program	LRA Initial Comparison to the GALL Report	GALL Report AMP(s)	SER Section *(Disposition)*
Reactor Vessel Surveillance	A.2.1.19 B.2.1.19	Existing	Consistent with enhancement	XI.M31, Reactor Vessel Surveillance	3.0.3.2.14 *(Consistent with enhancements)*
One-Time Inspection	A.2.1.20 B.2.1.20	New	Consistent	XI.M32, One-Time Inspection	3.0.3.1.6 *(Consistent)*
Selective Leaching	A.2.1.21 B.2.1.21	New	Consistent	XI.M33, Selective Leaching	3.0.3.1.7 *(Consistent)*
One-Time Inspection of ASME Code Class 1 Small Bore Piping	A.2.1.22 B.2.1.22	New	Consistent	XI.M35, One-Time Inspection of ASME Code Class 1 Small Bore-Piping	3.0.3.1.8 *(Consistent)*
External Surfaces Monitoring of Mechanical Components	A.2.1.23 B.2.1.23	New	Consistent	XI.M36, External Surfaces Monitoring of Mechanical Components	3.0.3.1.9 *(Consistent)*
Flux Thimble Tube Inspection	A.2.1.24 B.2.1.24	Existing	Consistent ~~with exception and enhancements~~	XI.M37, Flux Thimble Tube Inspection	3.0.3.1.10 *(Consistent with exception and enhancements)*
Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	A.2.1.25 B.2.1.25	New	Consistent	XI.M38, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components	3.0.3.1.11 *(Consistent)*
Lubricating Oil Analysis	A.2.1.26 B.2.1.26	Existing	Consistent	XI.M39, Lubricating Oil Analysis	3.0.3.1.12 *(Consistent)*
Monitoring of Neutron-Absorbing Materials Other than Boraflex	A.2.1.27 B.2.1.27	Existing	Consistent	XI.M40, Monitoring of Neutron-Absorbing Materials Other than Boraflex	3.0.3.1.13 *(Consistent with enhancement)*
Buried and Underground Piping	A.2.1.28 B.2.1.28	Existing	Consistent with exceptions and enhancements	XI.M41, Buried and Underground Piping and Tanks	3.0.3.2.15 *(Consistent with exceptions and enhancements)*
ASME Section XI, Subsection IWE	A.2.1.29 B.2.1.29	Existing	Consistent with enhancement	XI.S1, ASME Section XI, Subsection IWE	3.0.3.2.16 *(Consistent with enhancements)*

Applicant AMP	LRA Sections	New or Existing Program	LRA Initial Comparison to the GALL Report	GALL Report AMP(s)	SER Section *(Disposition)*
ASME Section XI, Subsection IWL	A.2.1.30 B.2.1.30	Existing	Consistent with enhancements	XI.S2, ASME Section XI, Subsection IWL	3.0.3.2.17 *(Consistent with enhancements)*
ASME Section XI, Subsection IWF	A.2.1.31 B.2.1.31	Existing	Consistent with exceptions and enhancements	XI.S3, ASME Section XI, Subsection IWF	3.0.3.2.18 *(Consistent with exceptions and enhancements)*
10 CFR Part 50, Appendix J	A.2.1.32 B.2.1.32	Existing	Consistent	XI.S4, 10 CFR Part 50, Appendix J	3.0.3.1.14 *(Consistent)*
Masonry Walls	A.2.1.33 B.2.1.33	Existing	Consistent with enhancements	XI.S5, Masonry Walls	3.0.3.2.19 *(Consistent with enhancements)*
Structures Monitoring	A.2.1.34 B.2.1.34	Existing	Consistent with enhancements	XI.S6, Structures Monitoring	3.0.3.2.20 *(Consistent with enhancements)*
RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants	A.2.1.35 B.2.1.35	Existing	Consistent with enhancements	XI.S7, RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants	3.0.3.2.21 *(Consistent with enhancements)*
Protective Coating Monitoring and Maintenance Program	A.2.1.36 B.2.1.36	Existing	Consistent with enhancements	XI.S8, Protective Coating Monitoring and Maintenance Program	3.0.3.2.22 *(Consistent with enhancements)*
Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	A.2.1.37 B.2.1.37	New	Consistent	XI.E1, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	3.0.3.1.15 *(Consistent)*

Applicant AMP	LRA Sections	New or Existing Program	LRA Initial Comparison to the GALL Report	GALL Report AMP(s)	SER Section *(Disposition)*
Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	A.2.1.38 B.2.1.38	New	Consistent	XI.E2, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits	3.0.3.1.16 *(Consistent)*
Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	A.2.1.39 B.2.1.39	New	Consistent	XI.E3, Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	3.0.3.1.17 *(Consistent)*
Metal Enclosed Bus	A.2.1.40 B.2.1.40	Existing	Consistent with enhancements	XI.E4, Metal Enclosed Bus	3.0.3.2.23 *(Consistent with enhancements)*
Fuse Holders (Byron Only)	A.2.1.41 B.2.1.41	New	Consistent	XI.E5, Fuse Holders	3.0.3.1.18 *(Consistent)*
Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	A.2.1.42 B.2.1.42	New	Consistent	XI.E6, Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements	3.0.3.1.19 *(Consistent)*
Fatigue Monitoring	A.3.1.1 B.3.1.1	Existing	Consistent with enhancements	X.M1, Fatigue Monitoring	3.0.3.2.24 *(Consistent with enhancements)*
Concrete Containment Tendon Prestress	A.3.1.2 B.3.1.2	Existing	Consistent with enhancement	X.S1, Concrete Containment Tendon Prestress	3.0.3.2.25 *(Consistent with enhancement)*
Environmental Qualification (EQ) of Electric Components	A.3.1.3 B.3.1.3	Existing	Consistent	X.E1, Environmental Qualification (EQ) of Electrical Components	3.0.3.1.20 *(Consistent with enhancement)*