



Program Management Office  
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PWROG-17011-NP, Revision 2  
Project Number 99902037

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U.S. Nuclear Regulatory Commission  
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Subject: PWR Owners Group  
**PWROG-17011-NP, Rev 2, "Update for Subsequent License Renewal: WCAP-14535A, "Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination" and WCAP-15666-A, "Extension of Reactor Coolant Pump Motor Flywheel Examination," PA-MSC-1500**

Reference: PWROG Letter OG-18-123, "PWROG-17011-NP, Rev 1, "Update for Subsequent License Renewal: WCAP-14535A, "Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination" and WCAP-15666-A, "Extension of Reactor Coolant Pump Motor Flywheel Examination," PA-MSC-1500. ML18143B465

The purpose of this letter is to transmit Pressurized Water Reactor Owners Group (PWROG) Topical Report (TR), PWROG-17011-NP, Revision 2, "Update for Subsequent License Renewal: WCAP-14535A, "Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination" and WCAP-15666-A, "Extension of Reactor Coolant Pump Motor Flywheel Examination" in accordance with the Nuclear Regulatory Commission (NRC) TR program for review and acceptance for referencing in regulatory actions (Enclosure 1).

Revision 1 of the TR was submitted under Reference 1. Revision 2 of this TR addresses NRC Request for Additional Information on Turkey Point Subsequent License Renewal (Set 5, RAI 4.3.5-2). In seeking to address the NRC's RAI, Westinghouse engineers determined that the RPFWPROF executable file used in PWROG-17011-NP cannot reproduce the results of WCAP-15666-A when run on original computer platforms. To correct for this, Westinghouse has performed a review of the deterministic aspects of the analysis to ensure their continued appropriateness, re-establish configuration control of the RPFWPROF program and determined revised RCP Flywheel probabilities of failure for 40, 60, and 80 years of operation.

Revision 2 of this TR revised the risk assessment in Section 3 based on the corrected RPFWPROF runs.

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### **Topical Report Summary**

The purpose of this topical report (TR) is to extend the applicability of WCAP-14535A and WCAP-15666-A to subsequent license renewal (SLR), i.e., 80 years of operation.

Westinghouse provided the technical basis in WCAP-14535A for the elimination of inspection requirements for the reactor coolant pump (RCP) motor flywheels for all operating domestic Westinghouse and several B&W plants. The NRC issued a Safety Evaluation Report (SER) in September 12, 1996, accepting the technical arguments but did not allow for total elimination of examinations as WCAP-14535A requested. The SER provided partial relief from the reactor coolant pump (RCP) motor flywheels examination requirements in NRC RG 1.14, by allowing an extension in the examination frequency from 40 months to 10 years. It further relaxed the RG 1.14 examination guidance by recommending an in-place ultrasonic examination (UT) over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or an alternative surface examination, i.e., magnetic particle testing (MT) and/or liquid penetrant testing (PT), of the exposed surfaces defined by the volume of disassembled flywheel.

WCAP-15666-A is a follow-up TR that justified extending the 10 year inspection frequency that was approved by the NRC in WCAP-14535A, to 20 years. WCAP-15666-A demonstrated that the deterministic results in WCAP-14535A remain valid, and also performed a failure probability analysis to show that the change in risk for a 20 year inspection frequency meet the Regulation Guide 1.174 acceptance guidelines. The NRC SER for WCAP-15666-A concluded that both the deterministic and probabilistic calculations contained in WCAP-15666-A were acceptable, and approved the 20-year inspection frequency.

### **Limits of Applicability**

WCAP-14535A is applicable to the RCP motor flywheels in all domestic Westinghouse Nuclear Steam Supply System (NSSS) plants, and Oconee Units 1, 2, and 3, Davis Besse, and Three Mile Island Unit 1, which are Babcock and Wilcox (B&W) NSSS plants.

WCAP-15666-A is applicable to plants with Westinghouse-designed NSSS. Although it included some data for B&W NSSS plants, however, the TR and the NRC SER did not specifically address the applicability of the risk assessments and other evaluations to the three B&W NSSS plants that WCAP-14535-A was applicable to. The following is a quote from the NRC SER for WCAP-15666-A:

*“The NRC staff acknowledges that some of the supporting material for TSTF-421 may also help to support plant-specific applications for the B&W units included in portions of WCAP-15666. The NRC staff will work with licensees for the applicable B&W units to ensure that our processes work as efficiently as possible for those applying for license amendments similar to that described in TSTF-421. The affected licensees are encouraged to discuss this matter with the NRC staff before submitting an application.”*

This same applicability is carried over for the TR presented herein. This TR is not applicable to Combustion Engineering (CE) NSSS plants, with the exception of Calvert Cliffs Units 1 and 2. This TR is applicable to Calvert Cliff Units 1 and 2 as these plants have Westinghouse RCP motors

and flywheels. However, these flywheels and motor operating speeds are different than those evaluated in WCAP-15666-A. Westinghouse performed a plant-specific evaluation for Calvert Cliffs Unit 1 and 2 for 80 years, which applied the same methods detailed in WCAP-15666-A for 60 years of operation.

#### **Intended Application**

Licensees will reference PWROG-17011-NP as the basis for their inspection frequencies during subsequent license renewal operations.

#### **Industry Implementation**

WCAP-17011-NP can be implemented by all applicable U. S. PWRs as listed in the Limits of Applicability section above.

#### **Specialized Resource Availability**

This TR is being submitted to the NRC for review and approval so that the NRC approved version can be utilized by licensees. Licensees will reference PWROG-17011-NP as the basis for flywheel inspection frequencies during extended operating license periods. NRC approval of the generic TR will reduce the impact on both licensee and NRC resources by eliminating the need for the preparation of and NRC review of plant specific justifications for these inspection frequencies.

#### **NRC Review Schedule**

The PWROG requests that the NRC complete their review of the TR by January 2020.

This letter transmits one copy of PWROG-17011-NP, Revision 2 (Enclosure 1).

Correspondence related to this transmittal should be addressed to:

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If you have any questions, please do not hesitate to contact me at (805) 545-4328 or Mr. W. Anthony Nowinowski, Program Manager of the PWR Owners Group, Program Management Office at (412) 374-6855.

Sincerely yours,



Ken Schrader, Chief Operating Officer and Chairman  
PWR Owners Group

KS:WAN:am

Enclosure 1: One copy of PWROG-17011-NP, Revision 2

cc:	PWROG Management Committee	
	PWROG Materials Committee	J. Andrachek, Westinghouse
	PWROG Steering Committee	T. Zalewski, Westinghouse
	PWROG Licensing Committee	B. Mays, Westinghouse
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