Regulatory Guide Number: **1.14, Revision 1**

Title: **Reactor Coolant Pump Flywheel Integrity**

Office/Division/Branch **NRR/DE/EVIB**
Technical Lead: **Simon Sheng**

Staff Action Decision: **Reviewed with issues identified for future consideration**

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

The current revision is consistent with the general guidance provided in the Standard Review Plan (SRP) section 5.4.1.1. However, the guide is out of date with industry practice. (i.e. fracture mechanics analyses support a ten year periodicity for in-service inspections instead of three year periodicity for inspections as specified in R.G. 1.14). Also, it refers to American Society of Mechanical Engineers (ASME) Code paragraphs which has changed and does not include the available alternative methods. Alternate methods have been approved within topical reports issued in the 1990's, e.g. Westinghouse Commercial Atomic Power (WCAP)-14535 and WCAP-15666. The guidance is still workable but requires using subject matter expert judgment to align with current practices. A revision would merge the current practices into one document and provide a useful tool for knowledge management. The following items were identified during the review of this RG:

Item	Section/ Paragraph/ Sentence	RG 1.14	Revised RG 1.14 (changes are underlined)	Reason for Revision
1	B/2/first	Methods of predicting the loss-of-coolant accident (LOCA) overspeed conditions are under continuing investigation.	Delete.	NRC currently does not have a program investigating reactor coolant pump flywheel overspeed in the event of a LOCA.
2	B/2/second	The limit on predicted pump overspeed in the event of a LOCA should be less than the calculated critical speed for failure of the flywheel.	The limit on predicted pump overspeed in the event of a LOCA should be less than the calculated critical speed for failure of the flywheel.	Revision caused by Item 1.
3	B/2/last	Methods of limiting potential pump	Delete.	NRC currently does not have a program investigating

NOTE: This review was conducted in April 2013 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.

Item	Section/ Paragraph/ Sentence	RG 1.14	Revised RG 1.14 (changes are underlined)	Reason for Revision
		overspeed are also under investigation.		methods of limiting potential pump overspeed.
4	C2/3/second	The methods and limits of paragraph F-1323.1(b) in Section III of the ASME Code are acceptable.	The methods and limits of paragraph F-1331.1(a) in Section III of the ASME Code are acceptable.	The current ASME Code, Section III no longer has F-1323.1(b). The equivalent criteria are now contained in F-1331.1(a).
5	C4a(1)/1/1	Areas of higher stress concentrations, e.g. bores, keyways, splines, and drilled holes, and surfaces adjacent to these areas on the finished flywheel should be examined for surface defects in accordance with paragraph NB-2545 or NB-2546 of Section III of the ASME Code using the procedures of paragraph NB-2540.	Areas of higher stress concentrations, e.g. bores, keyways, splines, and drilled holes, and surfaces adjacent to these areas on the finished flywheel should be examined for surface defects in accordance with paragraph NB-2545 or NB-2546 of Section III of the ASME Code.	Examination procedure, evaluation of indications, and acceptance standards are specified within NB-2545 and NB-2546 in the current ASME Code, Section III. Therefore, “using the procedures of paragraph NB-2540” is redundant and confusing.
6	C4b(1)/1/1	An in-place ultrasonic volumetric examination of the areas of higher stress concentration at the bore and keyway at approximately 3-year intervals, during the refueling or maintenance shutdown coinciding with the inservice inspection schedule as required by Section XI of the ASME Code.	An in-place ultrasonic volumetric examination of the areas of higher stress concentration at the bore and keyway at approximately 3-year intervals, during the refueling or maintenance shutdown coinciding with the inservice inspection schedule as required by Section XI of the ASME	Alternative examinations in approved topical reports (September 12, 1996 SE on WCAP-14535; May 21, 1997 SE on SIR-94-080; and May 5, 2003 SE on WCAP-15666) are acceptable.

NOTE: This review was conducted in April 2013 and reflects the staff’s plans as of that date. These plans are tentative and are subject to change.

Item	Section/ Paragraph/ Sentence	RG 1.14	Revised RG 1.14 (changes are underlined)	Reason for Revision
			Code, or alternatively an examination (method, scope, and frequency) based on approved topical reports.	
7	C4b(2)/1/1	A surface examination of all exposed surfaces and complete ultrasonic volumetric examination at approximately 10-year intervals, during the plant shutdown coinciding with the inservice inspection schedule as required by Section XI of the ASME Code.	A surface examination of all exposed surfaces and complete ultrasonic volumetric examination at approximately 10-year intervals, during the plant shutdown coinciding with the inservice inspection schedule as required by Section XI of the ASME Code, or alternatively an examination (method, scope, and frequency) based on approved topical reports.	Alternative examinations in approved topical reports (September 12, 1996 SE on WCAP-14535; May 21, 1997 SE on SIR-94-080; and May 5, 2003 SE on WCAP-15666) are acceptable.
8	D2/1/second	If a licensee wishes to use the recommendations of regulatory position C.4.b of this regulatory guide in performing the inspection before January 1, 1976, the pertinent portions of the inspection procedures will be evaluated on the basis of this guide.	Delete.	Useless sentence because January 1, 1976 has been passed.

NOTE: This review was conducted in April 2013 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.

Item	Section/ Paragraph/ Sentence	RG 1.14	Revised RG 1.14 (changes are underlined)	Reason for Revision
9	D2/1/third	Where requirements of Section XI are recommended, examinations conducted during each 40-month inspection period should meet the code edition and all addenda that were in effect per paragraph (b) of 10 CFR 50.55a 6 months prior to the inspection period.	Where requirements of Section XI are recommended, examinations conducted during an inspection period should meet the code edition and all addenda that were in effect per paragraph (b) of 10 CFR 50.55a 6 months prior to the inspection period.	To be consistent with the changes made in Items 6 and 7.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

There is little if any impact at this time from the guidance being out of date. The use of updated guidance developed in the 1990s, to support decreased surveillance frequency for Inservice Inspection of the reactor coolant pump flywheels, is on record in licensing amendment safety evaluations and is referred to, when appropriate.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

120 hours to perform a literature review and draft the revision.

4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with issues identified for future consideration.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

To be updated when staffing and material information is available.

NOTE: This review was conducted in April 2013 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.