

## NUCLEAR REGULATORY COMMISSION

### Notice of Opportunity to Comment on Model Safety Evaluation on Technical Specification Improvement to Eliminate Post Accident Sampling Requirements for Babcock and Wilcox Reactors Using the Consolidated Line Item Improvement Process

AGENCY: Nuclear Regulatory Commission.

ACTION: Request for comment.

SUMMARY: Notice is hereby given that the staff of the Nuclear Regulatory Commission (NRC) has prepared a model safety evaluation (SE) relating to the elimination of requirements on post accident sampling imposed on licensees through orders, license conditions, or technical specifications. The NRC staff has also prepared a model no significant hazards consideration (NSHC) determination relating to this matter. The purpose of these models is to permit the NRC to efficiently process amendments that propose to remove requirements for the Post Accident Sampling System (PASS) for Babcock and Wilcox (B&W) Reactors. Licensees of nuclear power reactors to which the models apply could request amendments conforming to the models. In such a request, a licensee should confirm the applicability of the SE and NSHC determination to its reactor and provide the requested plant-specific verifications and commitments. The NRC staff is requesting comments on the model SE and model NSHC determination before announcing their availability for referencing in license amendment applications.

DATES: The comment period expires [insert date 30 days from date of publication in the Federal Register]. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: Comments may be submitted either electronically or via U.S. mail.

Submit written comments to: Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, Mail Stop: T-6 D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Hand deliver comments to: 11545 Rockville Pike, Rockville, Maryland, between 7:45 a.m. and 4:15 p.m. on Federal workdays.

Copies of comments received may be examined at the NRC's Public Document Room, One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland.

Comments may be submitted by electronic mail to [CLIP@nrc.gov](mailto:CLIP@nrc.gov).

FOR FURTHER INFORMATION CONTACT: Robert Dennig, Mail Stop: O-12H2, Technical Specifications Section, Operating Reactor Improvement Program, Division of Regulatory Improvement Programs, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-1156.

SUPPLEMENTARY INFORMATION:

#### BACKGROUND

Regulatory Issue Summary 2000-06, "Consolidated Line Item Improvement Process for Adopting Standard Technical Specification Changes for Power Reactors," was issued on March 20, 2000. The Consolidated Line Item Improvement Process (CLIP) is intended to improve the efficiency and transparency of NRC licensing processes. This is accomplished by

processing proposed changes to the Standard Technical Specifications (STS) in a manner that supports subsequent license amendment applications. The CLIIP includes an opportunity for the public to comment on proposed changes to the STS following a preliminary assessment by the NRC staff and finding that the change will likely be offered for adoption by licensees. This notice is soliciting comment on a proposed change to the STS that removes requirements for the PASS for B&W plants. The CLIIP directs the NRC staff to evaluate any comments received for a proposed change to the STS and to either reconsider the change or to proceed with announcing the availability of the change for proposed adoption by licensees. Those licensees opting to apply for the subject change to technical specifications are responsible for reviewing the staff's evaluation, referencing the applicable technical justifications, and providing any necessary plant-specific information. Each amendment application made in response to the notice of availability would be processed and noticed in accordance with applicable rules and NRC procedures.

This notice involves the elimination of requirements for PASS and related administrative controls in technical specifications for B&W plants. This proposed change was proposed for incorporation into the standard technical specifications by the B&W Owners Group (BWOOG) participants in the Technical Specification Task Force (TSTF) and is designated TSTF-442. TSTF-442 is supported by the NRC staff's safety evaluation dated November 14, 2002, for the BWOOG topical report BAW-2387, "Justification for the Elimination of the Post Accident Sampling System (PASS) from the Licensing Basis of Babcock and Wilcox-Designed Plants," which was submitted to the NRC on June 25, 2001. The BWOOG request followed the staff's approval of similar requests for elimination of PASS requirements from the Combustion Engineering Owners Group (CEOG), the Westinghouse Owners Group (WOG), and the Boiling Water Reactor Owners Group (BWROG).

## APPLICABILITY

This proposed change to remove requirements for PASS from technical specifications (and other elements of the licensing bases) is applicable to B&W plants.

To efficiently process the incoming license amendment applications, the staff requests each licensee applying for the changes addressed by TSTF-442 using the CLIP to address the following plant-specific verifications and regulatory commitments. The CLIP does not prevent licensees from requesting an alternative approach or proposing the changes without the requested verifications and regulatory commitments. Variations from the approach recommended in this notice may, however, require additional review by the NRC staff and may increase the time and resources needed for the review. In making the requested regulatory commitments, each licensee should address: (1) that the subject capability exists (or will be developed) and will be maintained; (2) where the capability or procedure will be described (e.g., severe accident management guidelines, emergency operating procedures, emergency plan implementing procedures); and (3) a schedule for implementation. The amendment request need not provide details about designs or procedures.

Each licensee shall fulfill the actions, verifications or commitments that are identified in section 4.0 of the following proposed safety evaluation.

## PUBLIC NOTICE

This notice requests comments from interested members of the public within 30 days of the date of publication in the *Federal Register*. Following the staff's evaluation of comments received as a result of this notice, the staff may reconsider the proposed change or may proceed with announcing the availability of the change in a subsequent notice (perhaps with some changes to the safety evaluation or proposed no significant hazards consideration determination as a result of public comments). If the staff announces the availability of the change, licensees wishing to adopt the change will submit an application in accordance with

applicable rules and other regulatory requirements. The staff will in turn issue for each application a notice of consideration of issuance of amendment to facility operating license(s), a proposed no significant hazards consideration determination, and an opportunity for a hearing. A notice of issuance of an amendment to operating license(s) will also be issued to announce the elimination of the PASS requirements for each plant that applies for and receives the requested change.

## PROPOSED SAFETY EVALUATION

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

Consolidated Line Item Improvement

Technical Specification Task Force (TSTF) Change TSTF-442

Elimination of the Post Accident Sampling System (PASS) from the

Licensing Basis of Babcock and Wilcox Designed Plants

1.0 INTRODUCTION

In its letter dated June 25, 2001, the BWOG submitted for the NRC staff's review topical report BAW-2387, "Justification for the Elimination of the Post Accident Sampling System (PASS) from the Licensing Basis of Babcock and Wilcox-Designed Plants." The NRC staff's safety evaluation for the BWOG topical report is dated November 14, 2002 (ADAMS Accession Number ML022560119). The BWOG proposed elimination of the PASS requirements from the standard technical specifications by submitting TSTF-442.

In the aftermath of the accident at Three Mile Island (TMI), Unit 2, the Nuclear Regulatory Commission (NRC) imposed requirements on licensees for commercial nuclear power plants to install and maintain the capability to obtain and analyze post-accident samples of the reactor coolant and containment atmosphere. The desired capabilities of the Post Accident Sampling System (PASS) were described in NUREG-0737, "Clarification of TMI Action Plan Requirements." The NRC issued orders to licensees with plants operating at the time of the TMI accident to confirm the installation of PASS capabilities (generally as they had been described in NUREG-0737). A requirement for PASS and related administrative controls was added to the technical specifications (TS) of the operating plants and was included in the initial TS for plants licensed during the 1980s and 90s. Additional expectations regarding PASS

capabilities were included in Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants To Assess Plant and Environs Conditions During and Following an Accident."

Significant improvements have been achieved since the TMI accident in the areas of understanding risks associated with nuclear plant operations and developing better strategies for managing the response to potentially severe accidents at nuclear plants. Recent insights about plant risks and alternate severe accident assessment tools have led the NRC staff to conclude that some TMI Action Plan items can be revised without reducing the ability of licensees to respond to severe accidents. The NRC's efforts to oversee the risks associated with nuclear technology more effectively and to eliminate undue regulatory costs to licensees and the public have prompted the NRC to consider eliminating the requirements for PASS in TS and other parts of the licensing bases of operating reactors.

The staff has completed its review of the topical report submitted by the Babcock and Wilcox Owners Group (BWOG) that proposed the elimination of PASS. The justifications for the proposed elimination of PASS requirements center on evaluations of the various radiological and chemical sampling and their potential usefulness in responding to a severe reactor accident or making decisions regarding actions to protect the public from possible releases of radioactive materials. As explained in more detail in the staff's safety evaluations for the topical report, the staff has reviewed the available sources of information for use by decision-makers in developing protective action recommendations and assessing core damage. Based on this review, the staff found that the information provided by PASS is either unnecessary or is effectively provided by other indications of process parameters or measurement of radiation levels. The staff agrees, therefore, with the owners group that

licensees can remove the TS requirements for PASS, revise (as necessary) other elements of the licensing bases, and pursue possible design changes to alter or remove existing PASS equipment.

## 2.0 REGULATORY EVALUATION

The ways in which the requirements and recommendations for PASS were incorporated into the licensing bases of commercial nuclear power plants varied as a function of when plants were licensed. Plants that were operating at the time of the TMI accident are likely to have been the subject of confirmatory orders that imposed the PASS functions described in NUREG-0737 as obligations. The issuance of plant specific amendments to adopt this change, which would remove PASS and related administrative controls from TS, would also supersede the PASS specific requirements imposed by post-TMI confirmatory orders.

The NRC staff prepared this model safety evaluation (SE) relating to the elimination of requirements on post accident sampling for B&W plants and solicited public comments in [insert FR number] in accordance with the CLIIP. The use of the CLIIP in this matter is intended to help the NRC to efficiently process amendments that propose to remove the PASS requirements from TS. Licensees of nuclear power reactors to which this model apply were informed [insert FR number] that they could request amendments conforming to the model, and, in such requests, should confirm the applicability of the SE to their reactors and provide the requested plant-specific verifications and commitments.

## 3.0 TECHNICAL EVALUATION

The technical evaluations for the elimination of PASS sampling requirements are provided in the safety evaluation dated November 14, 2002, for BWOG topical report BAW-2387. As described in its safety evaluation for the topical report, the staff finds that the post-accident sampling requirements for the following may be eliminated for B&W plants:



1. Reactor coolant dissolved gases.
2. Reactor coolant hydrogen.
3. Reactor coolant oxygen.
4. Reactor coolant chlorides.
5. Reactor coolant pH.
6. Reactor coolant boron.
7. Reactor coolant conductivity.
8. Radionuclides in the reactor coolant.
9. Containment atmosphere hydrogen.
10. Containment atmosphere oxygen.
11. Radionuclides in the containment atmosphere.
12. Radionuclides in the containment sump.
13. Containment sump pH.
14. Chlorides in the containment sump.
15. Boron in the containment sump.

PASS sampling of the above 15 parameters is specified in NUREG-0737 and RG 1.97.

The sampling of the parameters are either not required to manage an accident and recover plant conditions, or not necessary due to redundancy in sampling capabilities. Based upon the detailed justifications provided in topical report BAW-2387 and its associated safety evaluation of November 14, 2002, the staff concludes that the proposals to eliminate PASS sampling of the above parameters is acceptable.

The staff concludes that sampling of radionuclides is not required to support emergency response decision making during the initial phases of an accident because the information

provided by PASS is either unnecessary or is effectively provided by other indications of process parameters or measurement of radiation levels. Therefore, it is not necessary to have dedicated equipment to obtain this sample in a prompt manner.

The staff does, however, believe that there could be significant benefits to having information about the radioisotopes existing post-accident in order to address public concerns and plan for long-term recovery operations. As stated in the safety evaluation for the topical report, the staff has found that licensees could satisfy this function by developing contingency plans to describe existing sampling capabilities and what actions (e.g., assembling temporary shielding) may be necessary to obtain and analyze highly radioactive samples from the reactor coolant system (RCS), containment sump, and containment atmosphere. The use of the contingency plans for obtaining samples would depend on the plant conditions and the need for information by the decision-makers responsible for responding to the accident (see section 4.0 below).

In addition, the staff considers radioisotope sampling information to be useful in classifying certain types of events (such as a reactivity excursion or mechanical damage) that could cause fuel damage without having an indication of a loss of reactor coolant inventory. However, the staff agrees with the topical report's contentions that other indicators of failed fuel, such as radiation monitors, can be correlated to the degree of failed fuel.

In lieu of the information that would have been obtained from PASS, the staff believes that licensees should maintain or develop the capability to monitor radioactive iodines that have been released to offsite environs. This information would be useful for decision makers trying to assess a release of and limit the public's exposure to radioactive materials.

The staff believes that the changes related to the elimination of PASS that are described in the topical report, related safety evaluation and this proposed change to TS are unlikely to result in a decrease in the effectiveness of a licensee's emergency plan. Each licensee,

however, must evaluate possible changes to its emergency plan in accordance with 10 CFR 50.54(q) to determine if the change decreases the effectiveness of its site-specific plan. Evaluations and reporting of changes to emergency plans should be performed in accordance with applicable regulations and procedures.

The staff notes that containment hydrogen concentration monitors are required by 10 CFR 50.44 and are relied upon to meet the data reporting requirements of 10 CFR Part 50, Appendix E, Section VI.2.a.(ii)(3). The staff concludes that these hydrogen monitors provide an adequate capability for monitoring containment hydrogen concentration during the early phases of an accident. The staff sees value in maintaining the capability to obtain grab samples for complementing the information from the hydrogen monitors in the long term (i.e., by confirming the indications from the monitors and providing hydrogen measurements for concentrations outside the range of the monitors). The licensee's contingency plan for obtaining highly radioactive samples will include sampling of the containment atmosphere and may, if deemed necessary and practical by the appropriate decision-makers, be used to supplement the hydrogen monitors.

[Note 1 - Each licensee should specify a desired implementation period for its specific amendment request. The implementation period would be that period necessary to develop and implement the items in section 4.0 below and, as necessary, to make other changes to documentation or equipment to support the elimination of PASS requirements. As an alternative, the licensee may choose to have a shorter implementation period and include the scheduling of items in section 4.0 as part of the regulatory commitments associated with this amendment request. Amendment requests that include commitments for implementation of the items in Section 4 within 6 months of the implementation of the revised TS will remain within the CLIIP.]

[Note 2 - There may be some collateral changes to the TS as a result of the removal of the administrative controls section for PASS. For example, the elimination of the TS and other regulatory requirements for PASS would result in additional changes to TS such as [e.g., the renumbering of sections or pages or the removal of references]. The changes are included in the licensee's application to revise the TS in order to take advantage of the CLIP. The staff has reviewed the changes and agrees that the revisions are necessary due to the removal of the TS section on PASS. The changes do not revise technical requirements beyond that reviewed by the NRC staff in connection with the supporting topical reports or the preparation of the TS improvement incorporated into the CLIP.]

#### 4.0 SUMMARY AND LICENSEE REQUIRED ACTIONS:

The staff concludes that BAW-2387 provides a sufficient technical basis to eliminate sampling the above 15 PASS parameters specified in NUREG-0737 and RG 1.97. The staff has identified the following licensee required actions, verifications or commitments that must be fulfilled by a licensee that eliminates the PASS for sampling the above 15 parameters in accordance with BAW-2387 and this safety evaluation. The licensee shall verify that it has, and make a regulatory commitment to maintain, or a regulatory commitment to develop and maintain:

1. A capability for classifying fuel damage events at the Alert level threshold (typically this is 300 microcuries per ml dose equivalent iodine). This capability may utilize the normal sampling system or correlations of sampling or letdown line dose rates to coolant concentrations.
2. Contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump, and containment atmosphere.
3. Offsite capability to monitor radioactive iodines.

The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments are provided by the licensee's administrative processes, including its commitment management program. Should the licensee choose to incorporate a regulatory commitment into the emergency plan, final safety analysis report, or other document with established regulatory controls, the associated regulations would define the appropriate change-control and reporting requirements. The staff has determined that the commitments do not warrant the creation of regulatory requirements, which would require prior NRC approval of subsequent changes. The NRC staff has agreed that NEI 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes," provides reasonable guidance for the control of regulatory commitments made to the NRC staff. (See Regulatory Issue Summary 2000-17, Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff, dated September 21, 2000 [ADAMS Accession Number ML003741774].) The commitments should be controlled in accordance with the industry guidance or comparable criteria employed by a specific licensee. The staff may choose to verify the implementation and maintenance of these commitments in a future inspection or audit.

#### 5.0 State Consultation

In accordance with the Commission's regulations, the [ ] State official was notified of the proposed issuance of the amendments. The State official had [(1) no comments or (2) the following comments - with subsequent disposition by the staff].

#### 6.0 Environmental Consideration

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that

may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding ( FR ). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 7.0 Conclusion

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

#### PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Description of Amendment Request: The proposed amendments delete requirements from the Technical Specifications (and, as applicable, other elements of the licensing bases) to maintain a Post Accident Sampling System (PASS). Licensees were generally required to implement PASS upgrades as described in NUREG-0737, "Clarification of TMI [Three Mile Island] Action Plan Requirements," and Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." Implementation of these upgrades was an outcome of the lessons learned from the accident that occurred at TMI, Unit 2. Requirements related to PASS were imposed by Order for many facilities and were added to or included in the technical specifications (TS) for nuclear power reactors currently licensed to operate. Lessons learned

and improvements implemented over the last 20 years have shown that the information obtained from PASS can be readily obtained through other means or is of little use in the assessment and mitigation of accident conditions.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

Criterion 1 - The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.

The PASS was originally designed to perform many sampling and analysis functions. These functions were designed and intended to be used in post accident situations and were put into place as a result of the TMI-2 accident. The specific intent of the PASS was to provide a system that has the capability to obtain and analyze samples of plant fluids containing potentially high levels of radioactivity, without exceeding plant personnel radiation exposure limits. Analytical results of these samples would be used largely for verification purposes in aiding the plant staff in assessing the extent of core damage and subsequent offsite radiological dose projections. The system was not intended to and does not serve a function for preventing accidents and its elimination would not affect the probability of accidents previously evaluated.

In the 20 years since the TMI-2 accident and the consequential promulgation of post accident sampling requirements, operating experience has demonstrated that a PASS provides little actual benefit to post accident mitigation. Past experience has indicated that there exists in-plant instrumentation and methodologies available in lieu of a PASS for collecting and assimilating information needed to assess core damage following an accident. Furthermore, the implementation of Severe Accident Management Guidance (SAMG) emphasizes accident management strategies based on in-plant instruments. These strategies provide guidance to

the plant staff for mitigation and recovery from a severe accident. Based on current severe accident management strategies and guidelines, it is determined that the PASS provides little benefit to the plant staff in coping with an accident.

The regulatory requirements for the PASS can be eliminated without degrading the plant emergency response. The emergency response, in this sense, refers to the methodologies used in ascertaining the condition of the reactor core, mitigating the consequences of an accident, assessing and projecting offsite releases of radioactivity, and establishing protective action recommendations to be communicated to offsite authorities. The elimination of the PASS will not prevent an accident management strategy that meets the initial intent of the post-TMI-2 accident guidance through the use of the SAMGs, the emergency plan (EP), the emergency operating procedures (EOP), and site survey monitoring that support modification of emergency plan protective action recommendations (PARs).

Therefore, the elimination of PASS requirements from Technical Specifications (TS) (and other elements of the licensing bases) does not involve a significant increase in the consequences of any accident previously evaluated.

Criterion 2 - The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated.

The elimination of PASS related requirements will not result in any failure mode not previously analyzed. The PASS was intended to allow for verification of the extent of reactor core damage and also to provide an input to offsite dose projection calculations. The PASS is not considered an accident precursor, nor does its existence or elimination have any adverse impact on the pre-accident state of the reactor core or post accident confinement of radioisotopes within the containment building.

Therefore, this change does not create the possibility of a new or different kind of accident from any previously evaluated.



Criterion 3 - The Proposed Change Does Not Involve a Significant Reduction in the Margin of Safety.

The elimination of the PASS, in light of existing plant equipment, instrumentation, procedures, and programs that provide effective mitigation of and recovery from reactor accidents, results in a neutral impact to the margin of safety. Methodologies that are not reliant on PASS are designed to provide rapid assessment of current reactor core conditions and the direction of degradation while effectively responding to the event in order to mitigate the consequences of the accident. The use of a PASS is redundant and does not provide quick recognition of core events or rapid response to events in progress. The intent of the requirements established as a result of the TMI-2 accident can be adequately met without reliance on a PASS.

Therefore, this change does not involve a significant reduction in the margin of safety.

Based upon the reasoning presented above and the previous discussion of the amendment request, the requested change does not involve a significant hazards consideration.

Dated at Rockville, Maryland, this 21<sup>ST</sup> day of February 2003.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Robert L. Dennig, Section Chief  
Technical Specifications Section  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

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Office of Nuclear Reactor Regulation

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\*See previous concurrence

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