Regulatory Guide Number: 1.5, Revision 0

Title: **Assumptions Used for Evaluating the Potential Radiological Consequences of a Steam Line Break for Boiling Water Reactors**

Office/Division/Branch: **NRR/DRA**

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SUBJECT: **Bases for Withdrawal**

(1) What regulation(s) did the Regulatory Guide support?

Regulatory Guide (RG) 1.5, (Safety Guide 5), "Assumptions Used for Evaluating the Potential Radiological Consequences of a Steam Line Break Accident for Boiling Water Reactors," published in March 1971, describes methods that the NRC staff considers acceptable for complying with the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 100.11, "Determination of exclusion area, low population zone, and population center distance."

(2) What was the purpose of the Regulatory Guide?

The information in RG 1.5 describes methods that the U. S. Nuclear Regulatory Commission (NRC) staff considers acceptable for complying with the NRC's regulations regarding the evaluation of the design basis steam line break for boiling-water reactors.

(3) How was the Regulatory Guide used?

The information in RG 1.5 describes methods that the NRC staff considers acceptable for complying with the NRC's regulations regarding the evaluation of the design basis steam line break for boiling-water reactors.

(4) Why is the Regulatory Guide no longer needed?

The guidance contained in RG 1.5 has been updated and incorporated into RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," and RG 1.195, "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors." The information in RG 1.183 provides guidance for new and existing light-water reactor (LWR) plants that have adopted the alternative source term (AST), and RG 1.195 provides guidance for those LWR plants that have not adopted the AST.

(5) What guidance is available once the Regulatory Guide is withdrawn?

The guidance contained in RG 1.5 has been updated and incorporated into RG 1.183 and RG 1.195. The information in RG 1.183 provides guidance for new and existing LWR plants that have adopted the AST, and RG 1.195 provides guidance for those LWR plants that have not adopted the AST.

(6) Is the Regulatory Guide referenced in other documents and what are the "ripple effects" on these documents if it is withdrawn?

RG 1.183 and **RG 1.195** include a statement that several old RGs, including RG 1.5, will not be withdrawn. In future revisions, the staff intends to delete this statement from both RG 1.183 and RG 1.195.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), "Section 2.3.4, "Short-Term Atmospheric Dispersion Estimates for Accident Releases," Revision 3, March 2007, states, in part, that:

> Older plants licensed under 10 CFR Part 50 may have also used the following regulatory guides instead of Regulatory Guide 1.145 for characterizing atmospheric dispersion conditions for evaluating the consequences of radiological releases to the EAB [exclusion area boundary] and LPZ [low-population zone]:
>
> > Regulatory Guide 1.3, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors".
> >
> > Regulatory Guide 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors".
> >
> > Regulatory Guide 1.5, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Steam Line Break Accident for Boiling Water Reactors".
> >
> > Regulatory Guide 1.24, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Pressurized Water Reactor Radioactive Gas Storage Tank Failure".
> >
> > Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors".
> >
> > Regulatory Guide 1.77, "Assumptions Used for Evaluating a Control Rod Ejection Accident for Pressurized Water Reactors".
> >
> > Regulatory Guide 1.98, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Radioactive Offgas System Failure in a Boiling Water Reactor".

The reference to RG 1.5, as well as the other older guides mentioned in this excerpt from SRP Section 2.3.4, are historical in nature. Therefore, the withdrawal of RG 1.5, as well as the withdrawal of other older guides referenced in the above citation, would not necessitate a modification to SRP Section 2.3.4.

SRP Section 4.2, "Fuel System Design," makes several references to old RGs such as RG 1.5. The SRP also states that RG 1.195 and RG 1.196, ["Control Room Habitability at Light-Water Nuclear Power Reactors"] can be used in place of RG 1.3, RG 1.4, RG 1.5, RG 1.25, and RG

1.77. In future revisions to SRP Section 4.2, this language should be changed to state that RG 1.195 and RG 1.196, should be used in place of RG 1.3, RG 1.4, RG 1.5, RG 1.25, and RG 1.77.

SRP Section 15.6.4, "Radiological Consequences of Main Steam Line Failure Outside Containment (BWR)," contains several references to RG 1.5. These should be changed to reference RG 1.195 and RG 1.183, instead of RG 1.5.

(7) What is the basis for believing that no guidance similar to that in the Regulatory Guide will ever be needed?

The guidance contained in RG 1.5 has been updated and incorporated into RG 1.183 and RG 1.195. The information in RG 1.183 provides guidance for new and existing LWR plants that have adopted the AST, and RG 1.195 provides guidance for those LWR plants that have not adopted the AST.

(8) Will generic guidance still be needed?

The guidance contained in RG 1.5 has been updated and incorporated into RG 1.183 and RG 1.195. The information in RG 1.183 provides guidance for new and existing LWR plants that have adopted the AST, and RG 1.195 provides guidance for those LWR plants that have not adopted the AST.

(9) What is the rationale for withdrawing this Regulatory Guide instead of revising it?

The guidance contained in RG 1.5 has been updated and incorporated into RG 1.183 and RG 1.195. The information in RG 1.183 provides guidance for new and existing LWR plants that have adopted the AST, and RG 1.195 provides guidance for those LWR plants that have not adopted the AST.

(10) Do other agencies rely upon the Regulatory Guide (e.g., the Agreement States, National Aeronautical and Space Administration, Department of Energy)?

The staff is unaware of any other agency that uses or relies on this outdated guidance included in RG 1.5. There are documents that reference RG 1.5, however most likely these are historical references. For example, PNNL-18212 Rev 1, "Update of Gap Release Fractions for Non-LOCA [loss-of-coolant accident] Events Utilizing the Revised ANS 5.4 Standard, Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830," makes a historical reference to the guidance for fission product gap release fractions for non-loss-of coolant events as stated in RG 1.5, RG 1.25, RG 1.77 and RG 1.195.