

ANS Answers a Multiple-Part Inquiry on ANSI/ANS-55.1-1992 (R2009) and ANSI/ANS-55.6-1993 (R2007)

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Part 1 Inquiry:

What is the background and reasons/basis for the differences between Table 1, "Equipment Codes," in both ANSI/ANS-55.1-1992 (R2009), *Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants*, and ANSI/ANS-55.6-1993 (R2007), *Liquid Radioactive Waste Processing System for Light Water Reactor Plants*, to Table 1, "Codes and Standards for the Design of SSC in Radwaste Facilities," in Regulatory (RG) 1.143, *Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants* (Revision 2, November 2001)?

Part 1 Response:

In August 1999, the U.S. Nuclear Regulatory Commission (NRC) issued NUREG/CR-5733, *Re-evaluation of Regulatory Guidance Provided in Regulatory Guides 1.142 and 1.143*, that included descriptions of the potential future changes to RG 1.143. Specifically, changes in Table 1 in RG 1.143 are described on pages 199 through 203 of NUREG/CR-5733. Most of the changes in Table 1 from Revision 1 to Revision 2 of RG 1.143 are also seen on page 200 of NUREG/CR-5733, but some changes were slightly different between the version of Table 1 in NUREG/CR-5733 and the version of Table 1 in Revision 2 of RG 1.143.

A review of the original documents, ANSI/ANS-55.1-1979 (W1992), ANSI/ANS-55.6-1979 (W1993); RG 1.143 and Revision 0 and 1 (1978 and 1979 respectively); and RG 1.143 Revision 2 (2001) was performed. This review was then followed by a comparison review of Table 1 between all reviewed documents. The main difference between RG 1.143 Revision 2 and the two standards is that RG 1.143 Revision 2 also focuses on systems and structures while the standards only focus on components or equipment. This added focus is to provide design guidance acceptable to NRC staff in regards to natural phenomena hazards, internal and external man-induced hazards, and quality group classification and quality assurance provisions for radioactive waste management systems, structures, and components. Moreover, RG 1.143 Revision 2 goes on to state that ANSI/ANS-55.1-1992 (R2009) and ANSI/ANS-55.6-1993 (R2007) provide a wider range of guidance than which is provided in NUREG-0800, *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition*, and, as such, guidance from the ANSI/ANS standards has been incorporated by reference into Revision 2 of the RG.

Furthermore, RG 1.143 Revision 2 changes the piping code to ANSI /ASME B31.3-1999, *Process Piping*, for piping and valves while ANSI/ANS-55.1 and ANSI/ANS-55.6 focus on ANSI/ASME B31.1, *Power Piping*, since they were based on RG 1.143 Revisions 0 and 1. It is pointed out here that the use of ANSI/ASME B31.1 for the application intended will still yield acceptable designs. Finally, Revision 2 of RG 1.143 adds the standard for flexible hoses and connections which is ANSI/ANS-40.37-1993, *Mobile Radioactive Waste Processing Systems*.

Changing ANSI/ANS-55.1 and ANSI/ANS-55.6 to require the use of ANSI/ASME B31.3 will be considered during the next evaluation (for reaffirmation or revision) of these standards so that Table 1 may be more inline and consistent with the current RG 1.143 Revision 2 (2001).

Part 2 Inquiry:

Why are there discrepancies for applying the method of equipment codes for the equipment design, manufacturing, and construction?

Part 2 Response:

There are no discrepancies. RG 1.143 focuses on systems, structures, and components, not just equipment as addressed in ANSI/ANS-55.1-1992 (R2009) and ANSI/ANS-55.6-1993 (R2007). Comparisons of equipment codes lineup well.

Part 3 Inquiry:

If these equipment codes are applied for radioactive waste processing systems of nuclear research reactor (non-power reactor), which one is more recommended as pertinent application?

Part 3 Response:

These standards were intended to be used in designing solid and liquid radwaste systems on power reactors (Division 1) and not for non-power reactors (Division 2). If a user desires to use either or both standards, in part or in whole for a research reactor, it is the responsibility of that party to demonstrate acceptability.