

GENERAL ELECTRIC

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NUCLEAR ENERGY
PROJECTS DIVISION

MFN-383-78

✓ U. S. Nuclear Regulatory Commission
Secretary of the Commission
Washington, D. C. 20555

Attention: Chief, Docketing and Service Section

Gentlemen:

SUBJECT: GENERAL ELECTRIC COMMENTS ON REGULATORY GUIDE 1.143,
"DESIGN GUIDANCE FOR RADIOACTIVE WASTE MANAGEMENT SYSTEMS,
STRUCTURES, AND COMPONENTS INSTALLED IN LIGHT-WATER-
COOLED NUCLEAR POWER PLANTS," DATED JULY 1978

The General Electric Company has reviewed the subject guide. As a result of this review, General Electric has developed the comments documented in Attachment 1. The changes recommended in Attachment 1 are intended to improve the meaningfulness and technical accuracy of the guide.

General Electric respectfully requests the NRC to revise Regulatory Guide 1.143 in accordance with the attached recommendations. If you have any questions regarding this letter, please contact Robert J. Murillo of my staff, (408) 925-3406.

Very truly yours,

Glenn G. Sherwood

Glenn G. Sherwood, Manager
Safety and Licensing Operation

GGs:gmm/491

Attachment

cc: G. A. Arlotto (NRC)
L. S. Gifford (GE)



Acknowledged by card... 10/23

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Attachment 1

GENERAL ELECTRIC COMMENTS ON REGULATORY GUIDE 1.143,
"DESIGN GUIDANCE FOR RADIOACTIVE WASTE MANAGEMENT SYSTEMS,
STRUCTURES, AND COMPONENTS INSTALLED IN LIGHT-WATER-COOLED
NUCLEAR POWER PLANTS," DATED JULY 1978

Note: Deletions are indicated by brackets and additions by underlines.

1. Section C.2.1.3 - Last Sentence

Proposed Change: Revise Section C.2.1.3 to read as follows: "For systems that operate near ambient pressure and retain gases on charcoal adsorbers, these criteria should apply to the tank support elements (for example, charcoal delay tanks in a BWR) [and the building housing the tanks]. If a realistic analysis of the site boundary dose due to a failure of the pressure boundary of the charcoal delay tanks exceeds 0.5 Rem, the building housing the charcoal tanks should also conform to these criteria."

Justification: The probability of a catastrophic failure of the 350 psi charcoal vessel is remote, even if the building fell on the vessel. Additionally, the shielding for the charcoal in the GE design is provided by heavy concrete walls and ceilings which are very unlikely to fail in the event of an operating basis earthquake. The potential release effects of a catastrophic failure of a charcoal vessel have been analyzed in the GE Licensing Topical Report NEDE-21056-P, "N66 SJA Offgas Treatment System," February 1977. The release effects have been demonstrated to be significantly less than 0.5 Rem using a very conservative analysis, for example, a 100% release of the noble gases.

There is no benefit accrued to the public health and safety considering the inherent safe design of the charcoal vessels, the additional shielding provided by concrete walls and ceilings, and the release effects of any hypothetical accident. Finally, GE is not aware of any NRC benefit analysis which would justify the increased cost of making the charcoal vault seismic qualified.

2. Section C.4.2 - Fourth Sentence

Proposed Change: Revise the fourth sentence of Section C.4.2 to read as follows: "Screwed connections in which threads provide the only seal should not be used except for instrumentation connections and cast pump body drain and vent connections where welded connections are not suitable."

Justification: Cast pumps acceptable for the intended service and designed and fabricated in accordance with "manufacturer's standards" frequently have integral cast bosses for drains and vents. These drains and vents are connected by screwed connections. Field welding on these components is inadvisable. A change in the present pump installation practice to conform with the field welding requirement would increase the potential for leaks.

3. Section C.4.2 - Last Sentence

Proposed Change: Revise the last sentence of Section C.4.2 to read as follows: "All welding constituting the pressure boundary of [pressure-retaining components] process piping and valves, heat exchangers, 0-15 psig tanks, atmospheric tanks and pressure vessels should be performed in accordance with ASME Boiler and Pressure Vessel Code Section IX²."

Justification: Pumps are designed and fabricated according to "manufacturer's standards". For pumps that are assembled by welding, the standards of ASME Section IX would be inconsistent with manufacturer's standards.

GE has supplied pumps for effluent systems in accordance with manufacturer's standards. To date, the operational history of effluent treatment systems shows no public exposure as a result of an effluent treatment system pump weld failure.

4. Section C.4.3 - First Sentence

Proposed Change: Revise the first sentence of Section C.4.3 to read as follows: "Piping systems should be hydrostatically tested in their entirety except at atmospheric tank connection where no isolation valves exist and where pneumatic testing must be used to prevent damage to system components or to allow subsequent helium leak detection."

Justification: Many system components would be ruined by the water of a hydrostatic test (for example, charcoal). In systems where the acceptable leak rate is 10^{-5} atm cc/sec or smaller, the water from the hydrostatic test that is forced into small crevices will prevent leak detection for a long time (months and even years) unless removed by raising the temperature above 150°C for an extended period of time. Raising the temperature above 150°C is difficult, if not impossible, in the field.

5. Section C

Recommendation: Guidance should be incorporated in Section C which addresses hydrogen detonation design requirements for gaseous radwaste treatment systems. Acceptable guidance is documented in Appendix C, "Acceptable Methods of Design to Contain Detonations," of ANSI N 720, "Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants," Draft 12, dated December 1977.

Justification: The regulatory guide does not address hydrogen detonation design requirements for the offgas system. The discussion section of the Regulatory Guide clearly establishes the need to protect operating personnel, and hydrogen detonation is a pertinent safety consideration. Additionally, Standard Review Plan (SRP) 11.3, "Gaseous Waste Management Systems," Revision 1, requires that gaseous radwaste treatment systems be designed to meet the hydrogen detonation criteria delineated in Sections I.6 and II.6. Therefore, the guide should specify hydrogen detonation guidance in order to implement SRP 11.3 and satisfy the purpose of the guide.