ANS Answers Inquiry on ANSI/ANS-56.8-1987/1994, *Containment System Leakage Testing Requirements* (historical standards).

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Inquiry (slightly edited):

The value for Absolute Pressure "repeatability" (+/-0.001% of full scale) changed from the ANSI/ANS-56.8-1987 edition to the later editions (i.e., 1994, 2002, etc.) (repeatability requirement of +/-0.005 psi (0.0345 kPa). What is the basis for this change?

Response:

The pressure measurement in question is of the containment atmosphere made during performance of the integrated leakage rate test (ILRT). ILRT pressure for all light water reactor designs included within the scope of this standard range between approximately 12 and 65 psig. The accuracy required of this measurement, based upon over 40 years of ILRT experience by working group members, is specified by ANSI/ANS-56.8 to be 0.025 psi. We use the same value of accuracy for all containments because this is a pressure decay test. We are primarily interested in the accuracy of the measured change in pressure rather than the accuracy of the actual pressure measurement. So it is the repeatability of the pressure measurement combined with the accuracy that is of primary concern for this testing.

We have found that a 0.005 psi repeatability is far better than we require for a good test at most containments. The 0.001% of full scale value was too severe. Since the high range used is 100 psia, this required a repeatability of 0.001 psi. This value is only marginally achievable by most calibration laboratories at these pressures but unnecessary even for the most severe tests. The larger the containment the better the repeatability is required. The limiting ILRT was at the standard temperature and pressure with a free air volume of approximately 3,000,000 ft^3. The value of 0.005 psi was found to be more than adequate even for this limiting case, and is thus conservative for all other current sites and for units under current design and construction.