

1 Scope

This Standard covers design, protection, and installation of nuclear safety-related instrument-sensing lines and sampling lines for nuclear power plants. The Standard covers the pressure boundary requirements for sensing lines up to and including one inch (25.4 mm) outside diameter or three-quarter inch nominal pipe (19 mm). The boundaries of this Standard for instrument-sensing lines span from the root valve/piping class change, up to but not including, the manufacturer-supplied instrument connection. The boundaries of this Standard for sampling lines span from the process tap to the upstream side of the sample panel, bulkhead fitting, or analyzer shutoff valve, and include in-line sample probes.

2 Purpose

This Standard establishes the applicable code requirements and code boundaries for the design and installation of instrument-sensing lines interconnecting nuclear safety-related power plant processes with both nuclear safety-related and nonnuclear safety-related instrumentation. This Standard also establishes the applicable requirements and limits for the design and installation of sample lines interconnecting nuclear safety-related power plant processes with sampling instrumentation. This Standard addresses the pressure boundary integrity of an instrument-sensing line and sampling line in accordance with the appropriate parts of Section III, Boiler and Pressure Vessel Code, American Society of Mechanical Engineers (ASME) or American National Standards Institute (ANSI) B31.1, as applicable, and the assurance that the safety function of the nuclear safety-related instruments and process sampling is available.

3 Definitions

3.1 accessible isolation valve:

the isolation valve nearest the measured process on an instrument-sensing line, which is available to personnel during normal plant operation. The root valve may or may not perform the function of the accessible isolation valve, dependent on its location.

3.2 backflush:

the injection of a fluid in a reverse flow manner to remove line fluid or obstructions.

3.3 flush:

the injection of a fluid into the line at an upstream point to remove line fluid from the downstream line.

3.4 grab-sample point:

the point in the sample line where the flow of sample fluid can be directed to a portable container. It may be referred to as "sample point."

3.5 inaccessible area:

an area for which the radiation level precludes personnel entry during power operations and other operational situations. These areas typically are indicated by "zones," which depict accessibility based on various plant evolutions.

3.6 instrument channel:

a collection of instrument loops, including their sensing lines or sample lines, that may be treated or routed as a group while being separated from instrument loops assigned to other redundant groups.

3.7 instrument shutoff valve:

the valve or valve manifold nearest the instrument.