

**ISTC-3620 Containment Isolation Valves.** Containment isolation valves with a leakage rate requirement based on Appendix J program commitment shall be tested in accordance with the Owner's 10 CFR 50, Appendix J program. Containment isolation valves with a leakage requirement based on other functions shall be tested in accordance with **ISTC-3630**. Examples of these other functions are reactor coolant system pressure isolation valves and certain Owner-defined system functions such as inventory preservation, system protection, or flooding protection.

**ISTC-3630 Leakage Rate for Other Than Containment Isolation Valves.** Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied.

(a) *Frequency.* Tests shall be conducted at least once every 2 yr.

(b) *Differential Test Pressure.* Valve seat tests shall be made with the pressure differential in the same direction as when the valve is performing its function, with the following exceptions:

(1) Globe-type valves may be tested with pressure under the seat.

(2) Butterfly valves may be tested in either direction, provided their seat construction is designed for sealing against pressure on either side.

(3) Double-disk gate valves may be tested by pressurizing between the disks.

(4) Leakage tests involving pressure differential lower than function pressure differentials are permitted in those types of valves in which service pressure will tend to diminish the overall leakage channel opening, as by pressing the disk into or onto the seat with greater force. Gate valves, check valves, and globe-type valves, having function pressure differential applied over the seat, are examples of valve applications satisfying this requirement. When leakage tests are made in such cases using pressures lower than function maximum pressure differential, the observed leakage shall be adjusted to the function maximum pressure differential value. The adjustment shall be by calculation appropriate to the test media and the ratio between the test and function pressure differential, assuming leakage to be directly proportional to the pressure differential to the one-half power.

(5) Valves not qualifying for reduced pressure testing as defined above shall be tested at full maximum function pressure differential.

(c) *Seat Leakage Measurement.* Valve seat leakage shall be determined by one of the following methods:

(1) measuring leakage through a downstream tell-tale connection while maintaining test pressure on one side of the valve

(2) measuring the feed rate required to maintain test pressure in the test volume or between two seats of a gate valve, provided the total apparent leakage rate is charged to the valve or valve combination or gate valve seat being tested and the conditions required by (b) are satisfied

(3) determining leakage by measuring pressure decay in the test volume, provided the total apparent leakage rate is charged to the valve or valve combination or gate valve seat being tested and the conditions required by (b) are satisfied

(d) *Test Medium.* The test medium shall be specified by the Owner.

(e) *Analysis of Leakage Rates.* Leakage rate measurements shall be compared with the permissible leakage rates specified by the plant Owner for a specific valve or valve combination. If leakage rates are not specified by the Owner, the following rates shall be permissible:

(1) for water, 0.5D gal/min (12.4d mL/s) or 5 gal/min (315 mL/s), whichever is less, at function pressure differential

(2) for air, at function pressure differential, 7.5D standard ft<sup>3</sup>/day (58d std. cc/min)

where

D = nominal valve size, in.

d = nominal valve size, cm

(f) *Corrective Action.* Valves or valve combinations with leakage rates exceeding the valves specified by the Owner per (e) shall be declared inoperable and either repaired or replaced. A retest demonstrating acceptable operation shall be performed following any required corrective action before the valve is returned to service.

## ISTC-3700 Position Verification Testing

Valves with remote position indicators shall be observed locally at least once every 2 yr to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation.

Position verification for active MOVs shall be tested in accordance with **Division 1, Mandatory Appendix III**.

## ISTC-4000 INSTRUMENTATION AND TEST EQUIPMENT

(20)

Instrumentation and test equipment accuracy shall be considered when establishing valve test acceptance criteria.

Replace " valves" with " values"