(c) specific requirements for assist equipment (if any); and
(d) specific requirements for testing conditions, i.e., device temperature, ambient temperature, ambient pressure, etc.

Test parameters shall be listed, i.e., time between openings, number of tests, etc.

**NB-7611 General Requirements**

**NB-7600 NONRECLOSING PRESSURE RELIEF DEVICES**

**NB-7610 RUPTURE DISK DEVICES**

Rupture disk devices certified in accordance with NB-7720 are subject to the following:

(a) rupture disk devices shall not be used as the sole pressure relief devices;

(b) rupture disk devices used in conjunction with pressure relief valves shall be located only on the outlet side of the valve (NB-7623).

(17) **NB-7611 Burst Pressure Tolerance**

The burst pressure tolerance at the specified disk temperature shall not exceed ±2 psi (±15 kPa) for stamped burst pressure up to and including 40 psi (300 kPa) and ±5% for stamped burst pressure above 40 psi (300 kPa) as established by the rules of NB-7612, unless other values have been established in the Design Specification and are covered in the Overpressure Protection Report. The specified disk temperature supplied to the rupture disk manufacturer shall be the temperature of the disk when the disk is expected to burst.

(17) **NB-7612 Tests to Establish Stamped Burst Pressure**

(a) Every rupture disk shall have a stamped burst pressure established by rules of NB-7611 within a manufacturing design range at a specified disk temperature, and shall be stamped with a lot number.

(b) Each lot of rupture disks shall be tested in accordance with one of the following methods. A lot of rupture disks is those disks manufactured of a material at one time, of the same size, thickness, type, heat, and manufacturing process, including heat treatment. All tests of disks for a given lot shall be made in a holder of the same form and pressure area dimensions as that being used in service.

(1) At least two sample rupture disks from each lot of rupture disks shall be burst at the specified disk temperature. The stamped burst pressure shall be determined so that the sample rupture disk burst pressures are within the tolerance specified by NB-7611.

(2) At least four sample rupture disks, but not less than 5%, from each lot of rupture disks shall be burst at four different temperatures distributed over the applicable temperature range for which the disks will be used. This data shall be used to establish a smooth curve of burst pressure versus temperature for the lot of disks. The burst pressure for each data point shall not deviate from the curve more than the burst pressure tolerance specified in NB-7611.

The value for the stamped burst pressure shall be established from the curve for a specified disk temperature.

(3) For prebulged solid metal disks or graphite disks only, at least four sample rupture disks using one size of disk from each lot of material shall be burst at four different temperatures, distributed over the applicable temperature range for which this material will be used. This data shall be used to establish a smooth curve of burst pressure versus temperature for the lot of material. The burst pressure for each data point shall not deviate from the curve more than the burst pressure tolerance specified in NB-7611.

At least two disks from each lot of disks, made from this lot of material and of the same size as those to be used, shall be burst at the ambient temperature to establish the room rating of the lot of disks. The curve shall be used to establish the stamped rating at the specified disk temperature for the lot of disks.

**NB-7620 INSTALLATION**

**NB-7621 Provisions for Venting or Draining**

When a rupture disk is used in conjunction with a pressure relief valve, the space between the rupture disk and the pressure relief valve shall be vented and/or drained to controlled thermal dissipation or discharge storage systems.

**NB-7622 System Obstructions**

Piping and other components downstream of the rupture disk shall be constructed so that bursting of the rupture disk will not impair the function of the pressure relief valve by the release of rupture disk material.

**NB-7623 Rupture Disk Devices at the Outlet Side of Pressure Relief Valves**

A rupture disk device may be installed at the outlet side of pressure relief valves if the following provisions are met:

(a) the set pressure of the valve is independent of back pressure, or the set pressure of the valve plus the stamped burst pressure of the rupture disk plus any pressure in the outlet piping does not exceed the limits of NB-7400;

(b) the relieving capacity meets the requirements of NB-7300;

(c) the stamped burst pressure of the rupture disk at the specified disk temperature plus any pressure in the outlet piping from the rupture disk device shall not exceed the secondary Design Pressure of the pressure relief valve and the Design Pressure of any pipe or fittings between the valve and the rupture disk device. However, in no case shall the stamped burst pressure of the rupture
NC-7600 NONRECLOSING PRESSURE RELIEF DEVICES

NC-7610 RUPTURE DISK DEVICES

NC-7611 General Requirements

Rupture disk devices certified in accordance with NC-7720 and NC-7750 are subject to the following:

(a) rupture disk devices may be used as the sole pressure relief devices, except for main steam or liquid service (NC-7625);

(b) rupture disk devices may be used on the inlet side of pressure relief valves only when such valves have no protrusions into the valve bore (NC-7623);

(c) rupture disk devices may be used in conjunction with pressure relief valves on the outlet side (NC-7624).

NC-7612 Burst Pressure Tolerance

The burst pressure tolerance at the specified disk temperature shall not exceed ±2 psi (15 kPa) for stamped burst pressure up to and including 40 psi (300 kPa) and ±5% for stamped burst pressure above 40 psi (300 kPa) as established by the rules of NC-7613, unless other values have been established in the Design Specification and are covered in the Overpressure Protection Report. The specified disk temperature supplied to the rupture disk manufacturer shall be the temperature of the disk when the disk is expected to burst.

NC-7613 Tests to Establish Stamped Burst Pressure

(a) Every rupture disk shall have a stamped burst pressure established by rules of NC-7612 within a manufacturing design range, at a specified disk temperature, and shall be stamped with a lot number.

(b) Each lot of rupture disks shall be tested in accordance with one of the following methods. A lot of rupture disks is those disks manufactured of a material at one time, of the same size, thickness, type, heat, and manufacturing process, including heat treatment. All tests of disks for a given lot shall be made in a holder of the same form and pressure area dimensions as that being used in service.

(1) At least two sample rupture disks from each lot of rupture disks shall be burst at the specified disk temperature. The stamped burst pressure shall be determined so that the sample rupture disk burst pressures are within the tolerance specified by NC-7612.

(2) At least four sample rupture disks, but not less than 5% from each lot of rupture disks, shall be burst at four different temperatures distributed over the applicable temperature range for which the disks will be used. These data shall be used to establish a smooth curve of burst pressure vs. temperature for the lot of disks. The burst pressure for each data point shall not deviate from the curve more than the burst pressure tolerance specified in NC-7612.

The value for the stamped burst pressure shall be established from the curve for a specified disk temperature.

(3) For prebulged solid metal disks or graphite disks only, at least four sample rupture disks using one size of disk from each lot of material shall be burst at four different temperatures, distributed over the applicable temperature range for which this material will be used. These data shall be used to establish a smooth curve of burst pressure vs. temperature for the lot of material. The burst pressure for each data point shall not deviate from the curve more than the burst pressure tolerance specified in NC-7612.

At least two disks from each lot of disks, made from this lot of material and of the same size as those to be used, shall be burst at the ambient temperature to establish the room rating of the lot of disks. The curve shall be used to establish the stamped rating at the specified disk temperature for the lot of disks.

NC-7614 Burst Pressure in Relation to Pressure Relief Valve Set Pressure

The burst pressure of a rupture disk may be either lower or higher than the set pressure of the associated pressure relief valve, but in no case shall the rupture disk burst pressure and valve set pressure be such that the total accumulated pressure during full capacity relief exceeds the permitted limit (NC-7400).

NC-7620 INSTALLATION REQUIREMENTS

NC-7621 Provisions for Venting or Draining

When a rupture disk is used in conjunction with a pressure relief valve, the space between the rupture disk and the associated pressure relief valve shall be vented and/or drained. This space shall be provided with means to monitor its internal pressure during service periods.

NC-7622 System Obstructions

When the release of rupture disk material may occur, piping and other components downstream of the rupture disk shall be constructed such that no obstruction can be caused nor the function of a pressure relief valve impaired.

NC-7623 Rupture Disk Devices at the Inlet Side of Pressure Relief Valves

A rupture disk device may be installed at the inlet side of a pressure relief valve if the following provisions are met:

(a) the combination of the pressure relief valve and the rupture disk device capacity shall meet the requirements of NC-7300;

(b) the stamped burst pressure at the specified disk temperature of the rupture disk does not exceed the limits of NC-7400;
ND-7540  SAFETY AND SAFETY RELIEF VALVES WITH AUXILIARY ACTUATING DEVICES

ND-7541  General Requirements

Safety and safety relief valves with auxiliary actuating devices that operate independently of the spring loading of the valve may be used, provided the requirements of ND-7510 are met except as modified by this subsubarticle.

ND-7542  Construction

(a) The construction shall be such that the valve opens automatically by direct action of the fluid at a pressure not higher than the safety valve set pressure and relieves at the certified relieving capacity in the event of failure of any essential part of the valve's auxiliary devices.

(b) The construction of the auxiliary actuating device shall be such that the safety valve will not be prevented from operating as defined in ND-7510 when the auxiliary actuating device is deenergized.

ND-7550  VACUUM RELIEF VALVES

ND-7551  General Requirements

Vacuum relief valves shall meet the construction requirements applicable to Class 3 valves and the additional requirements of this Article.

ND-7552  Types Permitted

(a) Balanced self-actuating horizontally installed swinging disk valves.

(b) Vertically installed vacuum disk or pallet-type valves.

(c) All vacuum relief valves shall have provisions for adjustment of the differential pressure.

ND-7553  Operating Requirements

Vacuum relief valves, which are operated by indirect means depending on an external energy source, such as electrical, pneumatic, or hydraulic systems, are not acceptable unless at least two independent external power operated valves and control systems are employed so that the required relieving capacity is obtained if any one of the valves or systems should fail to operate.

ND-7560  ALTERNATIVE TEST MEDIA

ND-7561  General Requirements

Pressure relief devices may be subjected to set-pressure tests using a test medium (fluid or temperature) other than that for which they are designed, provided the testing complies with ND-7562 through ND-7564.

Valves designed for steam service shall be tested with steam. Valves designed for compressible fluids shall be tested with a compressible fluid and valves designed for noncompressible fluids shall be tested with a noncompressible fluid.

ND-7562  Correlation

Correlation of pressure relief device operation, with respect to the parameters under test, shall be established for the specified alternative media, as compared with the operating media conditions.

ND-7563  Certification of Correlation Procedure

The Certificate Holder shall ensure that the correlation established in accordance with the procedure will be of sufficient accuracy such that the pressure relief device tested or adjusted, or both, using the alternative media, will comply with the tolerance criteria. Results of the tests performed to verify the adequacy of the alternative test media correlation shall be documented.

ND-7564  Procedure

A written procedure shall be prepared by the Certificate Holder and certified in accordance with the requirements of ND-7563. The procedure shall specify all the test parameters that affect correlation and shall include, but not be limited to, the following:

(a) specific description of test setup;

(b) specific requirements for instrumentation;

(c) specific requirements for assist equipment (if any); and

(d) specific requirements for testing conditions, i.e., device temperature, ambient temperature, ambient pressure, etc.

Test parameters shall be listed, i.e., time between openings, number of tests, etc.

ND-7600  NONRECLOSING PRESSURE RELIEF DEVICES

ND-7610  RUPTURE DISK DEVICES

ND-7611  General Requirements

Rupture disk devices certified in accordance with ND-7720 and ND-7750 are subject to the following:

(a) Rupture disk devices may be used as the sole pressure relief device for services where release of the contents of the protected system is acceptable to the enforcement authority having jurisdiction at the nuclear power plant site;

(b) Rupture disk devices may be used on the inlet side of pressure relief valves only when such valves have no protrusions into the valve bore (ND-7623);

(c) Rupture disk devices may be used in conjunction with pressure relief valves on the outlet side (ND-7624).

ND-7612  Burst Pressure Tolerance

The burst pressure tolerance at the specified disk temperature shall not exceed ±2 psi (±15 kPa) for stamped burst pressure up to and including 40 psi (300 kPa) and ±5% for stamped burst pressure above 40 psi (300 kPa) as established by the rules of ND-7613, unless other...