9) Since these devices are for one time use, a visual inspection is the only inspection that can be performed. Rupture disks that are installed using a specified bolting torque procedure cannot be reused after inspection and must be replaced.
10) It is recommended that all rupture disks be periodically replaced to prevent unintended failure while in service due to deterioration of the device.
Rupture disks should be carefully checked for damage prior to installation and handled by the disk edges, if possible. Any damage to the surface of the ruptured disk can affect the burst pressure.

~~**2.5.6 Packaging, Shipping and Transportation of Pressure Relief Devices**~~
(moved to Supplement 4 for repair procedures and combined with similar text)

2.1.5 ~~2.5.7~~ Testing and Operational Inspection of Pressure Relief Devices

a) Pressure relief valves must be periodically tested to ensure that they are free to operate and will operate in accordance with the requirements of the original Code of Construction. Testing should include device set or opening pressure, reclosing pressure, where applicable, and seat leakage evaluation. Tolerances specified for these operating requirements in the original Code of Construction shall be used to determine the acceptability of test results.
b) Testing may be accomplished by the owner on the unit where the valve is installed or at a qualified test facility. In many cases, testing on the unit may be impractical, especially if the service fluid is hazardous or toxic. Testing on the unit may involve the bypassing of operating controls and should only be performed by qualified individuals under carefully controlled conditions. It is recommended that a written procedure be available to conduct this testing.
1) The Inspector should ensure that calibrated equipment has been used to perform this test and the results should be documented by the owner.
2) If the testing was performed at a test facility, the record of this test should be reviewed to ensure the valve meets the requirements of the original Code of Construction. Valves which have been in toxic, flammable, or other hazardous services shall be carefully decontaminated before being tested. In particular, the closed bonnet of valves in these services may contain fluids that are not easily removed or neutralized. If a test cannot be safely performed, the valve shall be disassembled, cleaned, and decontaminated, repaired, and reset.
3) If a valve has been removed for testing, the inlet and outlet connections should be checked for blockage by product buildup or corrosion.
c) Valves may be tested using lift assist devices when testing at full pressure may cause damage to the valve being tested, or it is impractical to test at full pressure due to system design considerations. Lift assist devices apply an auxiliary load to the valve spindle or stem, and using the measured inlet pressure, applied load and other valve data allow the set pressure to be calculated. If a lift assist device is used to determine valve set pressure, the conditions of Part 3, *Repairs and Alterations*, Section 4.5.3 **(need new cross reference here)** shall be met. It should be noted that false set pressure readings may be obtained for valves which are leaking excessively or otherwise damaged.
d) If valves are not tested on the system using the system fluid, the following test mediums shall be used:
1) High pressure boiler safety valves, high temperature hot-water boiler safety relief valves, low pressure steam heating boilers: steam;
2) Hot-water heating boiler safety relief valves: steam, air, or water;
3) Hot water heater temperature and pressure relief valves: air or water;
4) Air and gas service process safety relief valves: air, nitrogen, or other suitable gas;
5) Liquid service process pressure relief valves: water or other suitable fluid;
6) Process steam service safety relief valves: steam or air with manufacturer's steam to air correction factor.

Note: Valves being tested after a repair must be tested on steam except as permitted by Part 3, *Repairs and Alterations*, Section 4.5.2 **(CHECK X-REF).**

e) As an alternative to a pressure test, the valve may be checked by the owner for freedom of operation by activating the test or "try" lever (manual check). For high pressure boiler and process valves, this test should be performed only at a pressure greater than 75% of the stamped set pressure of the valve or the lifting device may be damaged. This test will only indicate that the valve is free to operate and does not provide any information on the actual set pressure. All manual checks should be performed with some pressure under the valve in order to flush out debris from the seat that could cause leakage.

This test proves only that the PRV is not stuck closed and provides no data regarding actual set pressure. Suggest deleting this option.

Note: The manual check at 75% or higher is based on lift lever design requirements for ASME Section I and VIII valves. Code design requirements for lifting levers for Section IV valves require that the valve be capable of being lifted without pressure.

i) Systems with multiple valves will require the lower set valves to be held closed to permit the higher set valves to be tested. A test clamp or "gag" should be used for this purpose. The spring compression screw shall not be tightened. It is recommended that the test clamps be applied in accordance with the valve manufacturer's instructions when the valve is at or near the test temperature, and be applied hand tight only to avoid damage to the valve stem or spindle.
j) Upon completion of set pressure testing, all pressure relief valve gags shall be removed.

2.1.5.1 *CORRECTIVE ACTION*

~~f)~~ If a valve is found to be stuck closed, the system should immediately be taken out of service until the condition can be corrected, unless special provisions have been made to operate on a temporary basis (such as additional relief capacity provided by another valve).

The owner shall be notified and corrective action such as repairing or replacing the inoperable valve shall be taken.

2.1.5.2 *VALVE ADJUSTMENTS*

~~g)~~ a) If a *set* pressure test indicates the valve does not open within the requirements of the original Code of Construction, but otherwise is in acceptable condition, minor adjustments (defined as no more than twice the permitted set pressure tolerance) shall be made by an *qualified* organization accredited by the National Board to reset the valve to the correct opening pressure. All adjustments shall be resealed with a seal identifying the responsible organization and a tag shall be installed identifying the organization and the date of the adjustment. *Qualified organizations are considered to be National Board "VR" stamp holders, or organizations authorized by the Jurisdiction to make adjustments. See Supplement 3 for more information.*
~~h)~~ b) If a major adjustment is needed, this ~~may~~ indicate~~s~~ the valve is in need of repair or has damaged or misapplied parts. Its condition sh~~ould~~all be investigated accordingly.

2.1.6 ~~2.5.8~~ RECOMMENDED INSPECTION AND TEST FREQUENCIES FOR PRESSURE RELIEF DEVICES

a) Power Boilers
1) Pressure less than 400 psig (2.76 MPa):
Manual check every 6 months; pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history.
2) Pressure greater than 400 psig (2.76 MPa):
Pressure test to verify nameplate set pressure every three years or as determined by operating experience as verified by testing history.
3) Pressure tests should be performed prior to bringing the boiler down for planned internal inspection so needed repairs or adjustments can be made while the boiler is down.
b) High-Temperature Hot-Water Boilers
Pressure test annually to verify nameplate set pressure or as determined by operating experience as verified by testing history. For safety reasons, removal and testing on a steam test bench is recommended. Such testing will avoid damaging the safety valve by discharge of a steam water mixture, which could occur if the valve is tested in place.
C) Organic Fluid Vaporizers
Pressure relief valves shall be disconnected from the vaporizer at least once yearly, when they shall be inspected, tested, repaired if necessary, and then replaced on the vaporizer. (From Section I part PVG 12.2)

d) Low-Pressure Steam Heating Boilers
Manual check quarterly; pressure test annually prior to steam heating season to verify nameplate set pressure.
e) Hot-Water Heating Boilers

Manual check quarterly; pressure test annually prior to heating season to verify nameplate set pressure.

Note: The frequencies specified for the testing of pressure relief valves on boilers is primarily based on differences between high pressure boilers that are continuously manned, and lower pressure automatically controlled boilers that are not monitored by a boiler operator at all times. When any boiler experiences an overpressure condition such that the safety or safety relief valves actuate, the valves should be inspected for seat leakage and other damage as soon as possible and any deficiencies corrected.

f) Water Heaters
Manual check every two months. Due to the relatively low cost of safety valves for this service, it is recommended that a defective valve be replaced with a new valve if a repair or resetting is indicated.
g) Pressure Vessels and Piping
Frequency of test and inspection of pressure relief devices for pressure vessel and piping service is greatly dependent on the nature of the contents and operation of the system and only general recommendations can be given. Inspection frequency should be based on previous inspection history. If valves are found to be defective or damaged by system contents during inspection, intervals should be shortened until acceptable inspection results are obtained. Where test records and/or inspection history are not available, the following inspection and test frequencies are suggested.

(following to be presented as a table)

Service	**Inspection Frequency**
Steam	Annual
Air and Clean Dry Gases	Every three years
Pressure relief valves in combination with rupture disks	Every five years
Propane, Refrigerant	Every five years
All Others	Per inspection history

2.1.6.1 ~~g)~~ **Establishment of Inspection and Test Intervals**

Where a recommended test frequency is not listed, the valve user and Inspector must determine and agree on a suitable interval for inspection and test. Some items to be considered in making this determination are:
1) Jurisdictional requirements;
2) Records of test data and inspections from similar processes and similar devices in operation at that facility;
3) Recommendations from the device manufacturer. In particular, when the valve includes non-metallic parts such as a diaphragm *or soft seat*, periodic replacement of those parts may be specified;
4) Operating history of the system. Systems with frequent upsets where a valve has actuated require more frequent inspection;
5) Results of visual inspection of the device and installation conditions. Signs of valve leakage, corrosion or damaged parts all indicate more frequent operational inspections;
6) Installation of a valve in a system with a common discharge header. Valves discharging into a common collection pipe may be affected by the discharge of other valves by the corrosion of parts in the outlet portion of the valve or the buildup of products discharged from those valves;
7) Ability to coordinate with planned system shutdowns. The shutdown of a system for other maintenance or inspection activities is an ideal time for the operational inspection and test of a pressure relief valve;
8) Critical nature of the system. Systems that are critical to plant operation or where the effects of the discharge of fluids from the system are particularly detrimental due to fire hazard, environmental damage, or toxicity concerns all call for more frequent inspection intervals to ensure devices are operating properly;
9) Where the effects of corrosion, blockage by system fluid, or ability of the valve to operate under given service conditions are unknown (such as in a new process or installation), a relatively short inspection interval, not to exceed one year or the first planned shutdown, whichever is shorter, shall be established. At that time the device shall be visually inspected and tested. If unacceptable test results are obtained, the inspection interval shall be reduced by 50% until suitable results are obtained.

2.1.6.2 ~~h)~~ **Establishment of Service Intervals**

1) The above intervals are guidelines for periodic inspection and testing. Typically if there are no adverse findings, a pressure relief valve would be placed back in service until the next inspection. Any unacceptable conditions that are found by the inspection shall be corrected immediately by repair or replacement of the device. Many users will maintain spare pressure relief devices so the process or system is not affected by excessive downtime.
2) Pressure relief valves are mechanical devices that require periodic preventive maintenance even though external inspection and test results indicate acceptable performance. There may be wear on internal parts, galling between sliding surfaces or internal corrosion, and fouling which will not be evident from an external inspection or test. Periodic re-establishment of seating surfaces and the replacement of soft goods such as o-rings and diaphragms are also well advised preventive maintenance activities that can prevent future problems. If the valve is serviced, a complete disassembly, internal inspection, and repair as necessary, such that the valve's condition and performance are restored to a like new condition, should be done by an organization accredited by the National Board.
3) Service records with test results and findings should be maintained for all overpressure protection devices. A service interval of no more than three inspection intervals or ten years, whichever is less, is recommended to maintain device condition. Results of the internal inspection and maintenance findings can then be used to establish future service intervals.

REPAIR (previously in Part 3)

3.0 ~~S7.1~~ REPAIR OF PRESSURE RELIEF DEVICES, SCOPE

This *section* ~~supplement~~ provides general requirements that apply to repairs to pressure relief valves. Repairs may be required because of defects found during periodic inspections, because testing has identified that valve performance does not meet the original code of construction requirements, failure during operation, or for routine preventative preventive maintenance.

preventive |priˈventiv|
adjective
designed to keep something undesirable such as illness, harm, or accidents from occurring: *preventive medicine*.

Since pressure relief devices are provided for safety and the protection of personnel and property, repairs are often regulated by the jurisdiction where the pressure relief device is installed. The jurisdiction should be contacted for their specific requirements.

3.1 ~~S7.2~~ GENERAL REQUIREMENTS

a) Repair of a pressure relief valve is considered to include the disassembly, replacement, re-machining, or cleaning of any critical part, lapping of a seat and disc, reassembly, adjustment, testing, or any other operation that may affect the flow passage, capacity, function, or pressure-retaining integrity.
b) Conversions, changes, or adjustments affecting critical parts are also considered repairs. The scope of conversions may include changes in service fluid and changes such as bellows, soft seats, and other changes that may affect Type/Model number provided such changes are recorded on the document as required for a quality system and the repair nameplate. (See 5.9.1 check cross reference).
c) The scope of repair activities shall not include changes in ASME Code status.

3.1.1 ~~d~~) When a repair is being performed under the administrative requirements for National Board Accreditation, a repair shall consist of the following operations as a minimum:
1) Complete disassembly, cleaning, and inspection of parts, repair or replacement of parts found to be defective, reassembly, testing as required by 4.5 (check x-ref), sealing and application of a repair nameplate. When completed, the valve's condition and performance shall be equivalent to the standards for new valves.
2) The administrative requirements for National Board Accreditation apply only to valves that are stamped with an ASME "V," "UV," or "NV" Code symbol or marked with an ASME "HV" symbol and have been capacity certified on the applicable fluid by the National Board. Consider effect of new ASME Certification Mark?

3.1.2 ~~1.2~~ Construction Standards for pressure *relief devices* ~~retaining items~~

d) For pressure relief ~~ving~~ devices, the applicable *new construction* standard ~~for new valves~~ to be used for reference during repairs is the ASME Code. ASME code cases shall be used for repairs when they were used in the original construction of the valve. ASME code cases may be used when they have been accepted for use by the NBIC committee and the Jurisdiction where the pressure-retaining item is installed.
1) For pressure relief ~~ving~~ devices, the code case number shall be noted on the repair document and, when required by the code case, stamped on the repair nameplate.
2) The Jurisdiction where the pressure retaining item is installed shall be consulted for any unique requirements it may have established.

3.1.3 INSTALLATION OF PRESSURE RELIEF DEVICES

Installation of a pressure relief device by mechanical methods is not considered to be a repair, as long as no changes or adjustments are made to the device. Seals installed by the device manufacturer or repair organization shall not be removed when the device is installed.

When a pressure relief device is to be installed by welding on an existing pressure retaining item, the requirements of Part 3 of the NBIC for welded repairs shall be followed.

A. If a pressure relief valve must be disassembled or its adjustments changed as part of the installation process, the reassembly, resetting, retesting or other such activities shall be done by a qualified organization which meets the requirements of NBIC, Part 4. For a new pressure relief valve, the original valve manufacturer ~~shall~~ may perform this activity as required by the original code of construction.
These activities meet the definition of repair. Therefore, change to "shall to may" otherwise this conflicts with 3.1.4 below.
The installation of a non-reclosing pressure relief device or the replaceable element of a non-reclosing pressure relief device such as a rupture disk is not considered to be a repair. The manufacturer's procedures and instruction shall be followed for the installation of these devices.

3.1.4 ~~S7.6~~ INITIAL ADJUSTMENTS TO PRESSURE RELIEF VALVES

The initial installation testing and adjustments of a new pressure relief valve on a boiler or pressure vessel are not considered a repair if made by the manufacturer or assembler of the valve.

3.2 ~~S7.4~~ MATERIALS FOR PRESSURE RELIEF DEVICE *REPAIR*

The materials used in making repairs shall conform to the requirements of the original code of construction. The "VR" Certificate Holder is responsible for verifying identification of existing materials from original data, drawings, or unit records and identification of the materials to be installed.

3.2.1 ~~S7.5~~ REPLACEMENT PARTS FOR PRESSURE RELIEF DEVICES

a) Critical parts shall be fabricated by the valve manufacturer or to the manufacturer's specifications. Critical parts are those that may affect the valve flow passage, capacity, function, or pressure-retaining integrity.
b) Critical parts not fabricated by the valve manufacturer shall be supplied with material test certification for the material used to fabricate the part.
c) Replacement critical parts receiving records shall be attached or be traceable to the valve repair document (see S7.3[a] check x-ref). These records shall conform to at least one of the following.
1) Receiving records documenting the shipping origin of the part fabricated by the valve manufacturer (such as packing list) from the valve manufacturer or assembler of the valve type.
2) A document prepared by the "VR" Certificate holder certifying that the replacement part used in the repair has the manufacturer's identification on the part or is otherwise labeled or tagged by the manufacturer and meets the manufacturer's acceptance criteria (e.g., critical dimensions found in maintenance manual).
3) Receiving records for replacement critical parts obtained from a source other than the valve manufacturer or assembler of the valve type shall include a *Certificate of Compliance* that provides as a minimum:
a. The part manufacturer and part designation.
b. A certifying statement that either:
1. The part was fabricated by the valve manufacturer and meets the manufacturer's acceptance criteria (e.g., critical dimensions found in maintenance manual), or
2. The part meets the manufacturer's specifications and was fabricated from material as identified by the attached material test report.
c. The signature of an authorized individual of the part source.
d. The name and address of the part source for whom the authorized individual is signing.
d) Material for bolting shall meet the manufacturer's specification, but does not require material test certification if marked as required by the material specification.

3.3 ~~S7.12~~ WELDING FOR PRESSURE RELIEF VALVES

When welding is used as a repair technique during a pressure relief valve repair, the following requirements shall apply.

a) Welding shall be performed in accordance with the requirements of the original code of construction used for the pressure relief valve.
b) Cast iron and carbon or alloy steel having a carbon content of more than 0.35% shall not be welded.
c) Defects in pressure relief valve parts such as cracks, pits, or corrosion that will be repaired by welding shall be completely removed before the weld repair of the part is performed. Removal of the defect shall be verified by suitable NDE as required.
d) Consideration shall be given to the condition of the existing material, especially in the weld preparation area.

3.3.1 ~~S7.12.1~~ WELDING PROCEDURE SPECIFICATIONS

Welding shall be performed in accordance with Welding Procedure Specifications (WPS) qualified in accordance with the original code of construction. When this is not possible or practicable, the WPS may be qualified in accordance with Section IX of the ASME Code.

3.3.2 ~~S7.12.2~~ STANDARD WELDING PROCEDURE SPECIFICATIONS

A "VR" Certificate Holder may use one or more applicable Standard Welding Procedure Specifications shown in 2.3 of Part 3 ~~of this part.~~

3.3.3 ~~S7.12.3~~ PERFORMANCE QUALIFICATION

Welders or welding operators shall be qualified for the welding processes that are used. Such qualification shall be in accordance with the requirements of the original code of construction or Section IX of the ASME Code.

3.3.4 ~~S7.12.4~~ WELDING RECORDS

The "VR" Certificate Holder shall maintain a record of the results obtained in welding procedure qualifications, except for those qualifications for which the provisions of Supplement S7.12.2 are used, and of the results obtained in welding performance qualifications. These records shall be certified by the "VR" Certificate Holder and shall be available to the National Board.

3.3.5 ~~S7.12.5~~ WELDERS' IDENTIFICATION

The "VR" Certificate Holder shall establish a system for the assignment of a unique identification mark to each welder/welding operator qualified in accordance with the requirements of the NBIC. The "VR" Certificate Holder shall also establish a written procedure whereby welded joints can be identified as to the welder or welding operator who made them. This procedure shall use one or more of the following methods and shall be described in the quality control system written description. The welder's or welding operator's identification mark may be stamped (low stress stamp) adjacent to welded joints made by the individual, or the "VR" Certificate Holder may keep a documented record of welded joints and the welders or welding operators used in making the joints.

3.3.6 ~~S7.12.6~~ WELDERS' CONTINUITY

The performance qualification of a welder or welding operator shall be affected when one of the following conditions occur:
a) When the welder or welding operator has not welded using a specific process during a period of six months or more, their qualifications for that process shall expire.
b) When there is specific reason to question their ability to make welds that meet the specification, the qualification that supports the welding that is being performed shall be revoked. All other qualifications not questioned remain in effect.

3.3.7 ~~S7.3~~ WELD REPAIRS TO PRESSURE RELIEF VALVE PARTS *BY AN "R" STAMP HOLDER*

(MOVED HERE SO ALL WELDING REQUIREMENTS ARE IN ONE LOCATION)

a) The quality system manual may include controls for the "VR" Certificate Holder to have the pressure relief valve part repaired by a National Board "R" Certificate Holder, ~~per this Supplement~~ provided the following documentation is provided to the "R" Certificate Holder:
1) Code of Construction, year built;
2) Part identification;
3) Part material specified; and
4) "VR" Certificate Holder's unique identifier for traceability as required by the Repair Inspection Program.
b) Prior to performing weld repairs to pressure relief valve (PRV) parts, the "R" Certificate Holder shall receive repair information required by Supplement S7.3(a) check x-ref from the "VR" Certificate Holder responsible for the pressure relief valve repair.
1) PRV part weld repairs shall be performed under the "R" Certificate Holder's quality system; however, the requirements for in-process involvement of the Inspector (see *Part 1*, 1.3.2 check x-ref) may be waived. The requirement for stamping is waived.
2) The process of identifying and controlling repairs shall be documented in the "R" Certificate Holder's quality system.
3) PRV part repairs shall be documented on a Form R-1 with a statement under Remarks "PRV Part Repair." The owner's name and location of installation shall be that of the "VR" Certificate Holder. The information received from the "VR" Certificate Holder as required in Supplement S7.3(a) check x-ref shall be noted under "Description of Work."
4) Upon completion of the repair, the repaired part and completed Form R-1 shall be returned to the "VR" Certificate Holder responsible for completing the PRV repair.

3.4. ~~S7.13~~ HEAT TREATMENT

3.4.1 ~~S7.13.1~~ PREHEATING

Preheating may be employed during welding to assist in completion of the welded joint (2.5.1 of this part check x-ref). The need for and the temperature of preheat are dependent on a number of factors, such as chemical analysis, degree of restraint of the items being joined, material thickness, and mechanical properties. The welding procedure specification for the material being welded shall specify the preheat temperature requirements.

3.4.2 ~~S7.13.2~~ POSTWELD HEAT TREATMENT

Postweld heat treatment shall be performed as required by the original code of construction in accordance with a written procedure. The procedure shall contain the parameters for postweld heat treatment. *A time and temperature report or temperature record shall be maintained to document the work performed.*

3.5 ~~4.5~~ PRESSURE RELIEF VALVE PERFORMANCE TESTING AND TESTING EQUIPMENT
05/13/12
Each pressure relief valve to which the "VR" repair symbol stamp is to be applied shall be subjected to the following tests by the repair certificate holder.

3.5.1 ~~4.5.1~~ TEST MEDIUM AND TESTING EQUIPMENT

Valves marked for steam service, or having special internal parts for steam service, shall be tested on steam. Valves marked for air, gas,or vapor service shall be tested with air or gas. Valves marked for liquid service shall be tested with water or other suitable liquid. ASME Code, Section IV hot-water valves, shall be tested on water, steam, or air.
a) Each valve shall be tested to demonstrate the following:
1) Set pressure (as defined by the valve manufacturer and as listed in NB-18, (*Pressure Relief Device Certifications*);
2) Response to blowdown, when required by the original code of construction; ***Discuss Deletion or Revision***
3) Seat tightness; and
4) For valves designed to discharge to a closed system, the tightness of the secondary pressure zone shall be tested as required by the original code of construction.
b) The equipment used for the performance testing prescribed above shall meet the following requirements:

1) The performance testing equipment shall include a pressure vessel of adequate volume and pressure source capacity to ensure compliance with 4.5.1a)1).
2) Prior to use, all performance testing equipment shall be qualified by the certificate holder to ensure that the equipment and testing procedures will provide accurate results when used within the ranges established for that equipment. This qualification may be accomplished by benchmark testing, comparisons to equipment used for verification testing as specified in the quality system, or comparisons to field performance. This qualification shall be documented and provisions made to retain such documentation for a period of at least five years after the testing equipment is retired. Documentation of this qualification shall include but not be limited to:

a. Schematic of the performance test equipment;
b. Size and pressure ranges of valves to be tested and the test fluid to be used;
c. Dimensions of test vessels;
d. Accuracy of pressure measuring equipment;
e. Size and design type of valves used to control flow; and
f. Method of qualifying.

3) Prior to the implementation of any addition or modification to the testing equipment that would alter the contents of the document required in 4.5.1(b)(2), the certificate holder shall re-qualify the performance test equipment in accordance with 4.5.1(b)(2).
If the equipment changed was used to satisfy the requirements of verification testing, the certificate holder shall notify the National Board and additional verification testing, in accordance with the quality system, may be required.

3.5.2 ~~4.5.2~~ OWNER-USER ASME CODE SECTION VIII STEAM TESTING

When ASME Code Section VIII valves are repaired by the owner for the owner's own use, valves for steam service may be tested on air for set pressure and, if possible, blowdown adjustment, provided the valve manufacturer's corrections for differential in set pressure between steam and air are applied to the set pressure.

3.5.3 ~~4.5.3~~ LIFT ASSIST TESTING

a) A device may be used to apply an auxiliary lifting load on the spring of a repaired valve to establish the set pressure in lieu of the tests required in 4.5.1a)1) when such testing at full pressure:
1) may cause damage to the valve being tested; or
2) is impractical when system design considerations preclude testing at full pressure.
b) While actual valve blowdown and valve performance characteristics cannot be verified, valve set pressure may be determined to an acceptable degree of accuracy using this testing technique provided, as a minimum, that:
1) equipment utilized is calibrated as required in the quality system;
2) the device and test procedures that have proved to give accurate results are used and followed;
3) a static inlet pressure is applied with the test medium specified in 4.5.1; and
4) adjustments are made in accordance with the valve manufacturer's recommendations to ensure proper lift and blowdown. ***What about qualification of Lift Assist Devices?***

3.5.4 ~~4.5.4~~ PRESSURE TEST OF PARTS

a) Parts used in repaired valves shall be pressure tested and documentation provided according to the following categories:

1) Replacement Parts
The "VR" certificate holder is responsible for documentation that the appropriate pressure test has been completed as required by the original code of construction.
2) Parts Repaired by Welding
These parts shall be subjected to a pressure test required by the original code of construction. The "VR" certificate holder shall be responsible for documentation of such test.
b) Parts repaired by re-machining within part specifications, lapping, or polishing do not require a pressure test.

3.6 ~~5.9~~ STAMPING REQUIREMENTS FOR PRESSURE RELIEF DEVICES

3.6.1 ~~5.9.1~~ NAMEPLATES

Proper marking and identification of tested or repaired valves is critical to ensuring acceptance during subsequent inspections, and also provide for traceability and identification of any changes made to the valve. All operations that require the valve's seals to be replaced shall be identified by a nameplate as described in 5.9.2 or 5.9.4 check x-ref.

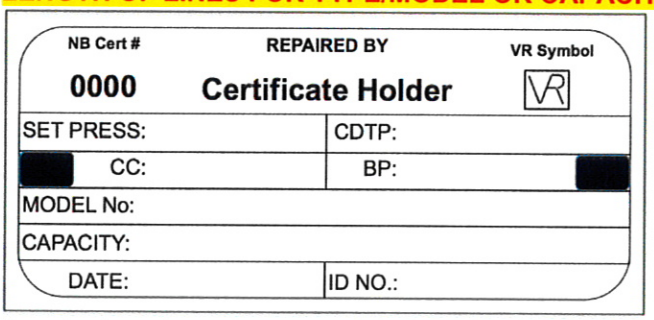
3.6.2 ~~5.9.2~~ REPAIR NAMEPLATE

When a pressure relief valve is repaired, a metal repair nameplate stamped with the information required below shall be securely attached to the valve adjacent to the original manufacturer's stamping or nameplate. If not installed ~~mounted~~ directly on the valve, the nameplate shall be securely attached so as not to interfere with valve operation and sealed in accordance with the quality system. *independent from PRV external adjustments consider this clarification for test only purposes.*
a) Prior to attachment of the repair nameplate, the previous repair nameplate, if applicable, shall be removed from the repaired valve.

b) As a minimum, the information on the valve repair nameplate (see Figure 5.7.5-e check x-ref) shall include:
1) The name of the repair organization preceded by the words "repaired by";
2) The "VR" repair symbol stamp and the "VR" certificate number;
3) Unique identifier (e.g., repair serial number, shop order number, etc.);
4) Date of repair;
5) Set pressure;
6) Capacity and capacity units (if changed from original nameplate due to set pressure or service fluid change);
7) Type/Model number (if changed from original nameplate by a conversion. See Supplement S7.2 check x-ref); and
8) When an adjustment is made to correct for service conditions of superimposed back pressure and/or temperature or the differential between popping pressure between steam and air (see 4.5.2 check x-ref), the information on the valve repair nameplate shall include the:
a. Cold Differential Test Pressure (CDTP); and
b. Superimposed Back Pressure (BP) (only when applicable).

(need nameplate figures here)

FIGURE 5.7.5-e SUGGESTED REVISION TO EXHIBIT. CURRENT EXHIBIT DOES NOT REFLECT LENGTH OF LINES FOR TYPE/MODEL OR CAPACITY.



Required markings for repair of ASME/National Board "V," "UV," and "HV"-stamped pressure relief valves ®
REPAIRED BY CERTIFICATE HOLDER
(1)
TYPE/MODEL NUMBER
(1)
SET PRESSURE CAPACITY
(1) (1)
CDTP BP
REPAIR IDENTIFICATION

NATIONAL BOARD "VR" DATE REPAIRED
CERTIFICATE NUMBER

FIGURE 5.7.5-g
Required markings for repair or replacement of nuclear pressure relief valves

CERTIFICATE HOLDER
DATE OF REPAIR OR REPLACEMENT
NATIONAL BOARD
CERTIFICATE NOS.
COMPLETED IN ACCORDANCE WITH ASME SECTION XI
EDITION ADDENDA CODE CASE(S)
REPAIR
REPLACEMENT
®
NR VR
SET PRESSURE CAPACITY
(IF CHANGE IN SET PRESSURE)

Note 1. *Required* ~~To be indicated~~ only when changed

3.6.3 ~~5.9.3~~ CHANGES TO ORIGINAL PRESSURE RELIEF VALVE NAMEPLATE INFORMATION

a) If the set pressure is changed, the set pressure, capacity, and blowdown, if applicable, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified.
b) If the service fluid is changed, the capacity, including units, on the original nameplate or stamping shall be marked out but left legible. The new capacity shall be based on that for which the valve was originally certified, or if a conversion has been made, as described in S7.2 (check x-ref) on the capacity certification for the valve as converted.
c) If the Type/Model number is changed, the Type/Model number on the original nameplate shall be marked out but left legible.
d) If the blowdown is changed, the blowdown on the original nameplate or stamping shall be marked out but left legible. The new blowdown may be based on the current ASME Code requirements.
e) Incorrect information on the original manufacturer's nameplate shall be marked out but left legible. Corrected information shall be indicated on the repair nameplate and noted on the document as required by the quality system.

3.6.4 ~~5.9.4~~ TEST ONLY NAMEPLATE

SUGGESTED EXHIBIT.

a) Where a valve has been tested and adjusted, as permitted by S7.10.1, (check x-ref) but not otherwise repaired, a "Test Only" nameplate shall be applied that contains the following information:
1) Name of responsible organization;
2) Date of test;
3) Set Pressure; and
4) Identification, such as "Test Only."
b) A "Test Only" nameplate is also recommended when periodic testing has been performed, even when no adjustments have been made, for the purpose of identifying the date the valve was tested.
c) The existing repair nameplates, if applicable, shall not be removed during such testing.

3.6.5 ~~5.9.5~~ REPLACEMENT OF ILLEGIBLE OR MISSING NAMEPLATES

DUPLICATE NAMEPLATE	
MANUFACTURER:	
MODEL:	
SIZE:	SET:
BACK PRESS.:	CDTP:
CAPACITY:	
S/N:	CODE SEC.:

SUGGESTED EXHIBIT.

a) Illegible Nameplates
When the information on the original manufacturer's or assembler's nameplate or stamping is illegible, but traceability can be confirmed, the nameplate or stamping will be augmented by a nameplate furnished by the "VR" stamp holder stamped "Duplicate." It shall contain all information that originally appeared on the nameplate or valve, as required by the applicable section of the ASME Code, except the "V," "HV," or "UV" symbol and the National Board mark. The repair organization's nameplate, with the "VR" stamp and other required data specified in 5.9.2, will make the repairer responsible to the owner and the Jurisdiction that the information on the duplicate nameplate is correct.
b) Missing Nameplates
When the original valve nameplate is missing, the repair organization is not authorized to perform repairs to the valve under the "VR" program, unless positive identification can be made to that specific valve and verification that the valve was originally stamped with an ASME "V" or UV" symbol or marked with an ASME "HV" symbol. Valves that can be positively identified will be equipped with a duplicate nameplate, as described in this section, in addition to the repairer's "VR"-stamped nameplate. The repairer's responsibilities for accurate data, as defined in 5.9.5(a) (Illegible Nameplates), shall apply.
c) Marking of Original Code Stamp
When a duplicate nameplate is affixed to a valve, as required by this section, it shall be marked "Sec. I," "Sec. IV," or "Sec. VIII," as applicable, to indicate the original ASME Code stamping.

3.7 ~~1.7~~ ACCREDITATION OF "VR" REPAIR ORGANIZATIONS

3.7.1 ~~1.7.1~~ SCOPE

a) These administrative rules and procedures are provided for those who wish to obtain a National Board *Certificate of Authorization* for use of the "VR" (Repair of Pressure Relief Valves) symbol stamp. It should be noted that the issuance of the "VR" stamp is not restricted to companies whose primary business is the repair of pressure relief valves, nor to manufacturers or assemblers that hold an ASME "V," "HV," "UV," or "NV" Code symbol stamp. Owners and users of boilers and pressure vessels and other organizations that qualify in accordance with the National Board Rules and Regulations may also obtain the "VR" Certificate and stamp.
b) In order to provide due process in the issuance, renewal, and revocation of "VR" symbol stamps and certificates of authorization, the National Board Appeals Committee procedures provide an affected "VR" *Certificate of Authorization* applicant the right of appeal, or to provide additional information that may affect the Committee's decision.

3.7.2 ~~1.7.2~~ JURISDICTIONAL PARTICIPATION

The National Board member jurisdiction in which the "VR" organization is located is encouraged to participate in the review and demonstration of the applicant's quality system. The Jurisdiction may require participation in the review of the repair organization and the demonstration and acceptance of the repair organization's quality system manual.

3.7.3 ~~1.7.3~~ GENERAL RULES

The general rules of the National Board "VR" certification program apply only to the repair of National Board capacity certified ASME Code Section I "V" stamped, Section IV "HV" marked, and Section VIII "UV" stamped pressure relief valves that:
a) Have been in service or have been exposed to environmental or other conditions such that there is reason to question their ability to perform equivalent to the standards for new valves; or
b) Any or all of the valve's external adjustment seals have been broken, opened, or otherwise disturbed,

regardless of the valve's age or service status.

3.7.4 ~~1.7.4~~ REPAIR OF NUCLEAR VALVES

Provided that the requirements of Supplement 9 check x-ref and applicable requirements of these rules are met, the "VR" certificate may be extended to apply to the repair of any ASME Code Section III, Class 1, 2, or 3, pressure relief devices that have been capacity certified by the National Board and have been in service, regardless of their intended function, in a nuclear system.

3.7.5 ~~1.7.5~~ ISSUANCE AND RENEWAL OF THE "VR" *CERTIFICATE OF AUTHORIZATION*

3.7.5.1 ~~1.7.5.1~~ GENERAL

Authorization to use the stamp bearing the official National Board "VR" symbol as shown in Section 5 of this Part, will be granted by the National Board pursuant to the provisions of the following administrative rules and procedures. Supplement 9 check x-ref of this Part, provides rules for the repair of ASME Section III "NV" stamped pressure relief devices.

3.7.5.2 ~~1.7.5.2~~ ISSUANCE OF CERTIFICATE

a) Repair organizations, manufacturers, assemblers, or users that make repairs to the American Society of Mechanical Engineers (ASME) Code symbol, stamped or marked (as applicable), and The National Board of Boiler and Pressure Vessel Inspectors (National Board) capacity certified pressure relief valves may apply to the National Board for a *Certificate of Authorization* to use the "VR" symbol. The National Board may at any time, through the NBIC Committee, modify the regulations concerning the issuance and use of such valve repair symbol. All such modified regulations shall become binding upon holders of valid Valve Repair *Certificates of Authorization*.
b) Authorization to use the "VR" stamp may be granted or withheld by the National Board in its absolute discretion. If authorization is granted and proper administrative fees paid, a *Certificate of Authorization* will be issued evidencing permission to use such a symbol, expiring on the triennial anniversary date. The certificate will be signed by the National Board Chairman of the National Board of Trustees, the Executive Director, or any other duly authorized officer.
c) The certificate shall list the physical, permanent address of record for the certificate holder's shop/plant. For field-only scopes, this address of record shown on the *Certificate of Authorization* is where administrative, technical, and quality aspects of the business are controlled.

3.7.5.3 ~~1.7.5.3~~ RENEWAL OF CERTIFICATE

The *Certificate of Authorization* is renewable every three (3) years subject to a review of the Quality System by a representative of the National Board, review and acceptance of the representative's report by the National Board, and successful completion of capacity verification tests. See 1.7.8 check x-ref for exceptions. The applicant should apply to the National Board for renewal of authorization and re-issuance of the certificate prior to the date of expiration. The National Board reserves the absolute right to cancel, refuse to issue, or renew such authorization.

3.7.5.4 ~~1.7.5.4~~ REVIEW OF APPLICANT'S FACILITY

a) Before issuance or renewal of pressure relief "VR" *Certificates of Authorization*, the repair organization, its written quality system, and its facilities are subject to a review and verification of implementation of its quality system by a representative of the National Board. The implementation demonstration shall include, as a minimum, disassembly, inspection, repair, application of special processes, reassembly, setting, and testing of valves within the scope of the applicant's quality system.
b) The applicant shall repair and submit for verification testing one (1) valve for each Code section (except Section III) and test fluid (steam, air/gas, liquid) which will appear on the *Certificate of Authorization*. A minimum of two (2) valves are required regardless of Code sections or test fluid. The valves shall be within the capabilities of the National Board accepted laboratory. When an applicant is using the provisions of 4.5.2, the applicant shall submit one additional Section VIII steam valve set on air for verification testing on steam.
c) The applicant shall have a copy of the *National Board Pressure Relief Device Certifications* publication, NB-18, dated within one year (available from the National Board Web page), the latest edition and

addenda of the *National Board Inspection Code* (NBIC), all parts; and the ASME Code section(s) that the organization is including in its scope.
d) It is the responsibility of the valve repair organization to make arrangements for this review. Certificates cannot be issued or renewed until the National Board is in receipt of approval of this review. Wherever possible, National Board reviews of valve repair organizations shall be coordinated with ASME reviews, when applicable.
e) For field-only repair scopes, the review shall encompass both the applicant's address of record and field repair demonstration site. The demonstration site shall be representative of that typically encountered by the applicant (see 1.7.5.6).

3.7.5.5 ~~1.7.5.5~~ VERIFICATION TESTING

a) Before the "VR" *Certificate of Authorization* and stamps may be issued or renewed, the demonstration valves must successfully complete capacity and operational verification tests at a National Board accepted testing laboratory. See 1.7.5.6 and 1.7.8 check x-ref for exceptions. The valves shall be typical of those repaired by the organization and within the capabilities of the testing laboratory.
b) Tests conducted at the accepted testing laboratory shall be witnessed by a representative of the National Board. The purpose of the tests is to ensure that the repairs have been satisfactorily carried out and the function and operation of the valves meet the requirements of the section of the ASME Code to which they were manufactured.
c) Valves not meeting the function or operational requirements of the section of the ASME Code to which they were manufactured shall be considered to have failed. Replacement valves shall be repaired and selected for testing as stated above, at a rate of two (2) valves for each one (1) that failed.
1) If either or both of these replacement valves fail to meet the above criteria, the applicant shall document the cause of the noted deficiencies and actions taken to guard against future occurrence. Upon acceptance of this information by the National Board, one (1) additional valve for each replacement valve that failed shall be repaired and tested. The valve(s) shall be of the same ASME Code Section, fluid and set pressure scope, as the valve previously failing to meet the test requirement.
2) Failure of this valve(s) to meet the ASME Code to which the valve was manufactured shall be cause for consideration by the National Board of revocation of the "VR" *Certificate of Authorization* or acceptance of alternative corrective action.

3.7.5.6 ~~1.7.5.6~~ VERIFICATION TESTING ALTERNATIVES

a) In such cases where all valves repaired by the applicant for a specified ASME Code Section or test fluid exceed the capabilities of the accepted testing laboratory, valves for that ASME Code Section or test fluid shall be selected as specified in 1.7.5.4, and a demonstration test shall be successfully performed in lieu of verification testing specified in 1.7.5.5 above. The demonstration tests shall be conducted at a facility mutually agreeable to the National Board representative, the facility owner, and the applicant. The purpose of these tests is to demonstrate, in the presence of a National Board representative, that the repaired valves shall have adequate seat tightness at the maximum expected operating pressure prior to lifting, shall open within the required set pressure tolerance, operate consistently without chatter, and reclose within the required blowdown.
b) If a valve lift-assist device is used by the applicant to establish set pressure after repairs, this device must also be used to set the demonstration valves.
c) If either of these valves fail to meet the above criteria, then replacement valves shall be repaired and tested at a rate of two valves for each one that failed.
1) If either or both of these replacement valves fail to meet the above criteria, the applicant shall document the cause of the noted deficiencies and actions taken to guard against future occurrence. Upon acceptance of this information by the National Board, one (1) additional valve for each replacement valve that failed shall be repaired and tested. The valve(s) shall be of the same ASME Code section, fluid, and set pressure scope as the valve previously failing to meet the test requirement.
2) Failure of this valve(s) to meet the ASME Code to which the valve was manufactured shall be cause for consideration by the National Board of revocation of the "VR" *Certificate of Authorization* or acceptance of alternative corrective action.

3.7.6 ~~1.7.6~~ USE OF THE "VR" AUTHORIZATION

3.7.6.1 ~~1.7.6.1~~ TECHNICAL REQUIREMENTS

The administrative requirements of 1.7 for use of the "VR" stamp shall be used in conjunction with the technical requirements for valve repair as described in *NBIC Part 4, sections 3.0 through 3.6* ~~Supplement 7 of the NBIC~~. Those requirements shall be mandatory when a "VR" repair is performed.

3.7.6.2 ~~1.7.6.2~~ STAMP USE

Each "VR" symbol stamp shall be used only by the repair firm within the scope, limitations, and restrictions under which it was issued.

3.7.6.3 ~~1.7.6.3~~ RETURN OF STAMP

Each applicant shall agree, if authorization to use the stamp is granted, that the stamp is at all times the property of the National Board and will be promptly returned upon demand. If the applicant discontinues the repair of such valves or if the "VR" *Certificate of Authorization* issued to such applicant has expired and no new certificate has been issued, the stamp will be returned to the National Board.

3.7.6.4 ~~1.7.6.4~~ MULTIPLE LOCATIONS

A holder of a National Board "VR" stamp shall not permit any others to use the "VR" symbol stamp loaned to it by the National Board. When a repair organization, manufacturer, or user has a repair department and/or equipment in fixed plants or shops located in more than one geographical area, it must submit separate applications for each plant or shop with the addresses of all such repair locations.

3.7.6.5 ~~1.7.6.5~~ *CERTIFICATE OF AUTHORIZATION* CONTENTS

Qualification for repair location (shop, shop and field, or field only), code section (Section I, III, IV, and/or VIII valves), special processes, and test media shall be specified on the repair organization's "VR" *Certificate of Authorization*.

3.7.6.6 ~~1.7.6.6~~ CHANGES TO VR CERTIFICATES OF AUTHORIZATION

a) When a "VR" Certificate Holder intends to change the address of record (location), the certificate holder shall notify the National Board in writing prior to relocating. The new facilities and related quality system for the new location shall be reviewed in accordance with 1.7.5.4. Issuance of a new *Certificate of Authorization* is subject to the procedures herein.
b) When a "VR" Certificate Holder intends to change ownership or scope, the certificate holder shall notify the National Board in writing prior to the change. A review, in accordance with 1.7.5.4, may be required depending upon the nature and extent of the change to the quality system manual, repair procedures, or facilities. Issuance of a new *Certificate of Authorization* is subject to the procedures herein.

3.7.6.7 ~~1.7.6.7~~ ISSUANCE OF MORE THAN ONE "VR" SYMBOL STAMP TO A CERTIFICATE OF AUTHORIZATION HOLDER

The holder of a *Certificate of Authorization* may obtain more than one "VR" symbol stamp provided its quality system manual controls the use of such stamps from the address of record shown on the *Certificate of Authorization*.

3.7.7 ~~1.7.7~~ QUALITY SYSTEM

3.7.7.1 ~~1.7.7.1~~ GENERAL

Each applicant for a new or renewed "VR" *Certificate of Authorization* shall have and maintain a quality system which shall establish that all of these rules and administrative procedures and applicable ASME Code requirements, including material control, fabrication, machining, welding, examination, setting, testing, inspection, sealing, and stamping will be met.

3.7.7.2 ~~1.7.7.2~~ WRITTEN DESCRIPTION

A written description, in the English language, of the system the applicant will use shall be available for review and shall contain, as a minimum, the features set forth in 1.7.7.5. This description may be brief or

voluminous, depending upon the projected scope of work, and shall be treated confidentially. In general, the quality system shall describe and explain what documents and procedures the repair firm will use to validate a valve repair.

3.7.7.3 ~~1.7.7.3~~ REVIEW

A review of the applicant's quality system will be performed by a representative of the National Board. The review will include a demonstration of the implementation of the provisions of the applicant's quality system.

3.7.7.4 ~~1.7.7.4~~ MAINTENANCE OF CONTROLLED COPY

Each applicant to whom a "VR" *Certificate of Authorization* is issued shall maintain thereafter a controlled copy of the accepted quality system manual with the National Board. Except for changes that do not affect the quality system, revisions to the quality system manual shall not be implemented until such revisions are accepted by the National Board.

3.7.7.5 ~~1.7.7.5~~ OUTLINE OF REQUIREMENTS FOR A QUALITY SYSTEM

The following establishes the minimum requirements of the written description of the quality system. It is required that each valve repair organization develop its own quality system that meets the requirements of its organization. For this reason it is not possible to develop one quality system that could apply to more than one organization. The written description shall include, as a minimum, the following features:
a) Title Page
The title page shall include the name and address of the company to which the National Board *Certificate of Authorization* is to be issued.
b) Revision Log
A revision log is required to assure revision control of the quality system manual. The log should contain sufficient space for date, description and section of revision, company approval, and National Board acceptance.
c) Contents Page
The contents page should list and reference, by paragraph and page number, the subjects and exhibits contained therein.
d) Statement of Authority and Responsibility
A statement of authority and responsibility shall be dated and signed by an officer of the company. It shall include:
1) A statement that the "VR" stamp shall be applied only to pressure relief valves
that meet both of the following conditions:
a. Are stamped with an ASME "V", "UV", or "NV" Code symbol or marked with an ASME "HV" symbol and have been capacity certified by the National Board; and
b. Have been disassembled, inspected, and repaired by the Certificate Holder such that the valves' condition and performance are equivalent to the standards for new valves.
2) The title of the individual responsible to ensure that the quality system is followed and who has authority and freedom to effect the responsibility;
3) A statement that if there is a disagreement in the implementation of the written quality system, the matter is to be referred to a higher authority in the company for resolution; and
4) The title of the individual authorized to approve revisions to the written quality system and the method by which such revisions are to be submitted to the National Board for acceptance before implementation.
e) Organization Chart
A chart showing the relationship between management, purchasing, repairing, inspection, and quality control personnel is required and shall reflect the actual organization in place.
f) Scope of Work
1) The scope of work section shall indicate the scope and type of valve repairs, including conversions the organization is capable of and intends to perform. The location of repairs (shop, shop and field, or field only), ASME Code Section(s) to which the repairs apply, the test medium (air, gas, liquid, or steam, or combinations thereof), and special processes (machining, welding, postweld heat treatment, or nondestructive examination, or combinations thereof) shall be specifically addressed.
2) The types and sizes of valves to be repaired, pressure ranges and other limitations, such as engineering and test facilities, should also be addressed.
g) Drawings and Specification Control

The drawings and specification control system shall provide procedures assuring that the latest applicable drawings, specifications, and instructions required are used for valve repair, including conversions, inspection, and testing.

h) Material and Part Control

The material and part control section shall describe purchasing, receiving, storage, and issuing of parts.

1) State the title of the individual responsible for the purchasing of all material.

2) State the title of the individual responsible for certification and other records as required.

3) All incoming material and parts shall be checked for conformance with the purchase order and, where applicable, the material specifications or drawings. Indicate how material or part is identified and how identity is maintained by the quality system.

i) Repair and Inspection Program

The repair and inspection program section shall include reference to a document (such as a report, traveler, or checklist) that outlines the specific repair and inspection procedures used in the repair of pressure relief valves. Repair procedures shall require verification that the critical parts meet the valve manufacturer's specification. Supplement S7.14 outlines recommended procedures covering some specific items. Provisions shall be made to retain this document for a period of at least five years.

1) Each valve or group of valves shall be accompanied by the document referred to above for processing through the plant. Each valve shall have a unique identifier (i.e., repair serial number, shop order number, etc.) appearing on the repair documentation and repair nameplate such that traceability is established.

2) The document referred to above shall describe the original nameplate information, including the ASME Code symbol stamping and the repair nameplate information, if applicable. In addition, it shall include material checks, replacement parts, conversion parts (or both), reference to items such as the welding procedure specifications (WPS), fitup, NDE technique, heat treatment, and pressure test methods to be used. Application of the "VR" stamp to the repair nameplate shall be recorded in this document. Specific conversions performed with the new Type/Model number shall be recorded on the document. There shall be a space for "signoffs" at each operation to verify that each step has been properly performed.

3) The system shall include a method of controlling the repair or replacement of critical valve parts. The method of identifying each spring shall be indicated.

4) The system shall also describe the controls used to ensure that any personnel engaged in the repair of pressure relief valves are trained and qualified in accordance with Supplement S7.

j) Welding, NDE, and Heat Treatment (when applicable)

The quality system manual shall indicate the title of the person(s) responsible for and describe the system used in the selection, development, approval, and qualification of welding procedure specifications, and the qualification of welders and welding operators in accordance with the provisions of S7.

1) The quality system manual may include controls for the "VR" Certificate Holder to have the pressure relief valve part repaired by a National Board "R" Certificate Holder, per Supplement S7.

2) The completed Form R-1 shall be noted on and attached to the "VR" Certificate Holder's document required in 1.7.7.5(i).

Similarly, NDE and heat treatment techniques must be covered in the quality system manual. When outside services are used for NDE and heat treatment, the quality system manual shall describe the system whereby the use of such services meet the requirements of the applicable section of the ASME Code.

k) Valve Testing, Setting, and Sealing

The system shall include provisions that each valve shall be tested, set, and all external adjustments sealed according to the requirements of the applicable ASME Code Section and the National Board. The seal shall identify the "VR" Certificate Holder making the repair. Abbreviations or initials shall be permitted, provided such identification is acceptable to the National Board.

l) Valve Repair Nameplates

An effective valve stamping system shall be established to ensure proper stamping of each valve as required by 5.9.2. The manual shall include a description of the nameplate or a drawing.

m) Calibration

1) The manual shall describe a system for the calibration of examination, measuring, and test equipment used in the performance of repairs. Documentation of these calibrations shall include the standard used and the results.

2) All calibration standards shall be calibrated against certified equipment having known valid relationships to nationally recognized standards.

n) Manual Control

The quality system shall include:

1) Measures to control the issuance of and revisions to the quality system manual;

2) Provisions for a review of the system in order to maintain the manual current with these rules and the applicable sections of the ASME Code;
3) The title(s) of the individual(s) responsible for control, revisions, and review of the manual;
4) Provision of a controlled copy of the written quality system manual to be submitted to the National Board; and
5) Revisions shall be submitted for acceptance by the National Board prior to being implemented.
o) Nonconformities
The system shall establish measures for the identification, documentation, evaluation, segregation, and disposition of nonconformities. A nonconformity is a condition of any material, item, product, or process in which one or more characteristics do not conform to the established requirements.
These may include, but are not limited to, data discrepancies, procedural and/or documentation deficiencies, or material defects. Also, the title(s) of the individual(s) involved in this process shall be included.
p) Exhibits
Forms used in the quality system shall be included in the manual with a written description. Forms exhibited should be marked SAMPLE and completed in a manner typical of actual valve repair procedures.
q) Testing Equipment (See Supplement 5 *for a guide on the sizing of pressure vessels used as part of pressure relief valve test equipment*)
The system shall include a means to control the development, addition, or modification of testing equipment to ensure the requirements of 4.5.1(b) are met.
r) Field Repairs (See ~~Supplement S7.7~~ check x-ref)
If field repairs are included in the scope of work, the system shall address any differences or additions to the quality system required to properly control this activity, including the following:
1) Provisions for annual audits of field activities shall be included;
2) Provisions for receipt and inspection of replacement parts, including parts received from the owner-user, shall be addressed;
3) If owner-user personnel will assist with repairs, provisions for the use of owner user personnel shall be included; and
4) Provisions for use of owner-user measurement and test equipment, if applicable, shall be addressed.

3.7.8 ~~1.7.8~~ ASME "V," "HV," OR "UV" CERTIFICATE HOLDERS

a) A manufacturer holding a valid ASME Certificate of Authorization for use of an ASME "V", "HV", or "UV" Code symbol stamp may obtain the "VR" Certificate of Authorization for the repair of pressure relief valves covered by the ASME Certificate of Authorization and that meet the requirements of 1.7.3 check x-ref. This can be accomplished without a review of the facilities provided there is a written quality system to cover the scope of the repairs to be made and the repairs are carried out at the same location where the ASME valves are manufactured. Unless the repaired valves are tested on the same facilities and to the same procedures as new valves, two (2) repaired valves shall be selected by a National Board representative
for verification tests.
b) The initial Certificate of Authorization shall be issued to expire concurrent with the ASME Certificate of Authorization. Subsequent certificates shall be renewed upon a successful review and verification of implementation of its quality system by a National Board representative. This review shall be performed concurrently with the ASME Certificate renewal review.
c) A manufacturer may also perform field repairs of pressure relief valves covered by the ASME Certificate of Authorization provided the provisions of Supplement S7.7 are met.
d) Assemblers holding ASME Certificates of Authorization shall qualify for the "VR" Certificate of Authorization as required elsewhere in these rules.
e) The quality system manual shall be submitted for review and acceptance by the National Board.
f) In order for an ASME Code symbol stamp holder to qualify for the National Board "VR" stamp, the following areas to the written quality system usually require attention.
1) Statement of Authority and Responsibility
This should clearly indicate that valve repairs are carried out in accordance with the requirements and the rules of the National Board and the quality system manual. In addition, the scope and type of valve repairs covered by the manual should be indicated.
2) Organization
Unless the functions which affect the quality of valve repairs are carried out by individuals other than those responsible for manufacturing or assembly, it should not be necessary to revise the organization

chart.
3) General Quality Functions
Usually quality system requirements regarding valve repairs may be controlled in the same manner as for ASME manufacturing or assembly provided applicable shop and/or field activities are covered. If this is the case, the applicant for the "VR" stamp should include in its quality system manual a separate section covering valve repairs that references the applicable section of the manual. For a more explicit explanation see 1.7.7.5, *Outline of Requirements for a Quality System*.

3.7.9 ~~S7.7~~ FIELD REPAIR

Repair organizations may obtain a "VR" *Certificate of Authorization* for field repair, either as an extension to their in-shop/plant scope, or as a field-only scope, provided that:
a) Qualified technicians in the employ of the certificate holder perform such repairs;
b) An acceptable quality system covering field repairs, including field audits, is maintained;
c) Functions affecting the quality of the repaired valves are supervised from the address of record where the "VR" certification is issued.

3.7.9.1 ~~S7.8~~ AUDIT REQUIREMENTS

Upon issuance of a *Certificate of Authorization*, provided field repairs are performed, annual audits of the work carried out in the field shall be performed to ensure that the requirements of the certificate holder's quality system are met.
The audit shall include, but not be limited to, performance testing, in accordance with 4.5, of valve(s) that were repaired in the field. The audits shall be documented.

3.7.9.2 ~~S7.9~~ USE OF OWNER-USER PERSONNEL

For the repair of pressure relief valves at an owner-user's facility for the owner-user's own use, the "VR" Certificate Holder may utilize owner-user personnel to assist certificate holder technician(s) in the performance of repairs provided:
a) The use of such personnel is addressed in the "VR" Certificate Holder's quality system;
b) The owner-user personnel are trained and qualified in accordance with Supplement S7.10 check x-ref;
c) Owner-user personnel work under direct supervision and control of the "VR" Certificate Holder's technician(s) during any stage of the repair when they are utilized;
d) The "VR" Certificate Holder shall have the authority to assign and remove owner-user personnel at its own discretion; and
e) The names of the owner-user personnel utilized are recorded on the document as required for a quality system.

3.8 ~~S7.11~~ TRAINING AND QUALIFICATION OF PERSONNEL

~~**S7.11.1 GENERAL**~~

3.8.1 ~~S7.11.2~~ CONTENTS OF TRAINING PROGRAM

The repair organization shall establish a documented in-house training program. This program shall establish training objectives and provide a method of evaluating training effectiveness. As a minimum, training objectives for knowledge level shall include:
a) Applicable ASME Code and NBIC requirements;
b) Responsibilities within the organization's quality system; and
c) Knowledge of the technical aspects and mechanical skills for the applicable position held.

3.8.2 ~~S7.11.3~~ QUALIFICATION OF PERSONNEL

Each repair organization shall establish minimum qualification requirements for those positions within the organization as they directly relate to pressure relief valve repair. Each repair organization shall document the evaluation and acceptance of an individual's qualification for the applicable position.

3.8.3 ~~S7.11.4~~ ANNUAL REVIEW OF QUALIFICATION

The repair organization shall annually review the qualifications of repair personnel to verify proficiency as well as compliance with the certificate holder's quality system. This review shall include training records, documented evidence of work performed, and when necessary, monitoring job performance. The review shall be documented.