

Document checklist: Used/re-rated boiler design registration

Required documentation

1. Records confirming vessel's original construction was in accordance with the appropriate ASME Boiler and Pressure Vessel codes.
2. Non-destructive examination results establishing the vessels condition.
3. Rubbings, copies of vessel markings or name plates showing items such as Canadian Registration Number (CRN), manufacturer's serial number, National Board Number, Unit ID or BC Unit Identification Number (BC ID) and Manufacturer's Data Report (MDR).
4. Maintenance records, periodic inspection reports, and repair/alteration reports, if applicable.
5. Internal and external visual inspection reports.
6. A thickness evaluation report, based on an ultrasonic examination, which provides the actual thicknesses of shells, heads, nozzles, and any other components forming the pressure containment envelope of the vessel. This examination shall be made on a grid, which shall be established based on the size of the vessel. The grid shall be scaled to provide a representative sample of the vessel's thickness and adequately investigate areas where thinning is suspected.
7. A report of surface and volumetric non-destructive examinations such as fluorescent magnetic particle, dye penetrant, ultrasonic, radiographic or eddie current carried out on the welds and heat affected zones, bends, thickness, shape transitions or any stress-raiser areas to check for cracking and other defects. These examinations shall be on a grid system, which provides a representative sample of the areas, examined.
8. A material (metallurgical) soundness evaluation where there is evidence of damage such as corrosion, thinning, dents, cracking or over-heating.

Drawings

1. Drawing of the vessel showing design and operating conditions for used vessels or the new conditions for re-rated vessel, material specifications, construction, and weld details.

Calculations

1. ASME code calculations verifying that the vessel, in its present condition, is suitable for its intended service.
2. Code calculations, based on the vessel's present condition as determined by the non-destructive examinations, which demonstrate that the vessel is suitable for its intended service conditions and conforms to all ASME code requirements.
3. Calculations shall be based on the original code of construction or the current edition and addenda of the applicable ASME Boiler and Pressure Vessel Code whichever is more stringent.
4. If the vessel does not conform entirely to the ASME code, recognized engineering practices may be used to demonstrate that the vessel can be safely operated at its intended service conditions.

5. Radiography, any other method of NDE ASME Code Cases or later Code addendas which were not utilized for the vessel's original design and construction shall not be used to increase welded-joint efficiencies or allowable material stresses to re-rate an existing vessel to a higher Maximum Allowable Working Pressure (MAWP).