

Contents

Technical Committee on Boilers and Pressure Vessels x

Association of Chief Inspectors Subcommittee xix

Subcommittee on Boilers and Related Components xv

Δ Subcommittee on Pressure Vessels xvi

Δ Editorial Subcommittee xviA

Subcommittee on Parts 2 and 3 of CSA Standard B51 xvii

Preface xviii

Foreword xx

B51-03, Part 1

Boilers, Pressure Vessels, and Pressure Piping

1 Scope 3

2 Reference Publications 4

3 Definitions 6

4 General Requirements 9

4.1 Registration of Designs 9

4.2 Registration of Fittings 9

4.3 Canadian Registration Numbers (CRNs) 11

4.4 Registration of Welding and Brazing Procedures 12

4.5 Welding and Brazing Qualifications 12

4.6 Submission of Manufacturer's Data Report 12

4.7 In-service Repairs and Alterations 13

4.8 Fabrication Inspection 13

4.9 Quality Control Program 14

4.10 Program Implementation for Manufacturers in Canada 14

4.10.1 Holders of ASME Certificate of Authorization 14

4.10.2 Non-holders of ASME Certificate of Authorization 14

4.11 Program Implementation for Manufacturers in the USA 15

4.12 Program Implementation for Manufacturers in Other Countries 15

4.13 Non-destructive Examination 15

4.14 Water Tanks 15

4.15 Requalification of Vessels in Liquefied Petroleum Gas Service 15

4.16 High-Pressure Cylinders for Compressed Natural Gas and Compressed Natural Gas Refuelling Station Pressure Piping Systems and Containers 15

4.17 Piping 15

5 Identification 16

5.1 Nameplates 16

5.2 Additional Nameplates 16

5.3 Stamping 16

5.4 Fittings 17

April 2004

(Replaces p. iii, March 2003)

6 Boilers and Related Components 17

- 6.1 General Requirements 17
- 6.2 Lap-Seam Riveted Boilers 17
- 6.3 Supplementary Construction and Installation Requirements 17
 - 6.3.1 Water Gauges 17
 - 6.3.2 Low-Water Cut-off 17
 - 6.3.3 Fusible Plugs 18
 - 6.3.4 Boiler Installation 18
 - 6.3.5 Boiler Inspection Openings 18
- 6.4 Boiler Outlet Dampers 19
- 6.5 Blowoff Vessels, Systems, and Devices 19
- 6.6 Thermal Fluid Heaters and Piping 19
- 6.7 Cast Iron Steam and Hot Water Boilers 19

7 Pressure Vessels 19

- 7.1 General Requirements 19
- 7.2 Pressure Vessel Installation 20
 - 7.2.1 General Requirements 20
 - 7.2.2 Propane Tanks 20
 - 7.2.3 Other Buried Pressure Vessels 20
- 7.3 Pressure Vessel Inspection Openings 21
- 7.4 Water Heaters and Hot Water, Hydropneumatic, and Cushion Tanks 21
 - 7.4.1 Water Heaters 21
 - 7.4.2 Hot Water Tanks 21
 - 7.4.3 Hydropneumatic Tanks 22
 - 7.4.4 Cushion Tanks 22
- 7.5 Blowoff Vessels 22
 - 7.5.1 Design Requirements 22
 - 7.5.2 Cleaning and Inspection Facilities 22
 - 7.5.3 Inlets and Outlets 22
- 7.6 Anhydrous Ammonia Service 23
- 7.7 Liquefied Petroleum Gas and Natural Gas Liquids Services 23
 - 7.7.1 Liquefied Petroleum Gas Service 23
 - 7.7.2 Natural Gas Liquids Service 24
- 7.8 Installation of Air Receivers 24

8 Piping and Fittings 24**9 Refrigeration Equipment 24****10 Fired-Heater Pressure Coils in Petroleum and Chemical Plant Service 25****11 Repairs and Alterations 25****Tables 26****Figures 28****Annexes**

- A** (informative) — Burial of Pressure Vessels 31
- B** (informative) — Quality Control Program for Defect Prevention and In-service Reliability 32
- C** (informative) — Guidelines for Safety Valve, Relief Valve, and Safety-Relief Valve Repair Organizations 34
- D** (informative) — Sample Forms 39
- E** (informative) — Inspection of Welds in Pressure Coils Exposed to Direct Radiant Heat 62
- F** (informative) — Quality Control Program Manufacturers of Fittings 63