	QUALITY ASSURANCE SPECIFICATION	**QAS: 2.02**
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MATERIAL PURCHASING – Code Material Purchase Specification for Pipe, Valves, Fitting, and Flanges		**PAGE 1 OF 8**

1.0 Purpose

The purpose of this specification is to define the NRG requirements for purchasing code pipe, valves, fittings, and flanges.

2.0 Scope

This specification applies to ASME piping, valves, fittings, and flanges. It is NRG's responsibility to identify the applicable ASME code for the material being purchased.

3.0 Definitions

3.1 ANSI – American National Standards Institute

3.2 ASME – American Society of Mechanical Engineers

3.3 ISO – International Organization for Standardization

3.4 NRG – NRG Energy Inc.

3.5 Manufacturer – The organization making the piping, valves, fittings or flanges

3.6 MSS – Manufacturers Standardization Society of the Valve and Fitting Industry

3.7 Supplier – The organization providing the piping, valves, fittings, or flanges

4.0 References

4.1 ANSI/ASME B1.20.1, “Pipe Threads, General Purpose (Inch)”

4.2 ANSI/MSS SP-55, “Quality Standard for Steel Castings for Valves, Flanges, Fittings, and Other Piping Components - Visual Method for Evaluation of Surface Irregularities”

4.3 ASME Boiler & Pressure Vessel Code Section I, “Rules for Construction of Power Boilers”

4.4 ASME Boiler & Pressure Vessel Code Section II, Part A, “Ferrous Material Specifications”

4.5 ASME Boiler & Pressure Vessel Code Section II, Part B, “Non ferrous Material Specifications”

4.6 ASME B16.5, “Pipe Flanges and Flanged Fittings”

4.7 ASME B16.9, “Factory-Made Wrought Buttwelding Fittings”

4.8 ASME B16.10, “Face-to-Face and End-to-End Dimensions of Valves

4.9 ASME B16.11, “Forged Fittings, Socket-Welding and Threaded”

4.10 ASME B16.28, “Wrought Steel Buttwelding Short Radius Elbows and Returns

4.11 ASME B16.34, “Valves – Flanged, Threaded and Welding End”

4.12 ASME B31.1, “Power Piping”

4.13 ASME SA-530/SA-530M, “Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe”

4.14 ASME SA-703/SA-703M, “Specification for Steel Castings, General Requirements, for Pressure-Containing Parts”

4.15 ASME SA-788/SA-788M, “Specification for Steel Forgings, General Requirements”

4.16 ASME SA-960/SA-960M, “Specification for Common Requirements for Wrought Steel Piping Fittings”

4.17 ASME SA-961/SA-961M, “Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications”

4.18 ASME SB-366/SB-366M, “Specification for Factory-Made Wrought Nickel and Nickel Alloy Fittings”

4.19 ASME SB-462/SB-462M, “Specification for Forged or Rolled UNS N06030, UNS N06022, UNS N06035, UNS N06200, UNS N06059, UNS N06686, UNS N08020, UNS N08024, UNS N08026, UNS N08367, UNS N10276, UNS N10665, UNS N10675, UNS N10629, UNS N08031, UNS N06045, UNS N06025, and UNS R20033 Alloy Pipe Flanges, Forged Fittings, and Valves and Parts for Corrosive High-Temperature Service”

4.21 MSS SP-25, “Standard Marking System for Valves, Fittings, Flanges, and Unions”

4.22 MSS SP-114, “Corrosion Resistant Pipe Fittings Threaded and Socket Welding Class 150 and 1000”

The latest edition of the above codes and specifications shall apply. In the event of conflicts between this specification and the references cited above, the Supplier shall notify NRG, who will make the final judgment and interpretation.

5.0 Responsibility

5.1 The Supplier shall be responsible for fulfilling the requirements as set forth in this specification. Exceptions to and deviations from this specification shall be clearly delineated in the Supplier’s bid for disposition by NRG.

5.2 The Manufacturer shall have a Quality Program in compliance with and certified to ISO 9001.

5.3 In the event that the Supplier is not the Manufacturer, the Supplier must have a formal program for qualifying their manufacturers and must have evidence of periodically monitoring their performance.

5.4 NRG Supply Chain Department shall include the ordering information from the applicable ASME specification in the purchase order. This information includes, but is not limited to:

5.4.1 Description of the product
5.4.2 ASME material specification number and grade
5.4.3 Size
5.4.4 Pressure class rating or schedule number
5.4.5 End treatment – butt weld, socket weld, flanged, or threaded (when applicable)
5.4.6 Quantity
5.4.7 Requirement that Supplier provide CMTRs for piping material
5.4.8 Supplementary requirements

6.0 Pipe

6.1 Pipe shall be manufactured in accordance with the requirements of ASME SA-530/SA-530M and the applicable ASME material specification.

6.2 The Supplier shall provide certified material test reports (CMTRs) for all pipe. All CMTRs shall report chemical and mechanical test data as required. CMTRs shall be in English units or if in another language with conversions to English units.

6.3 Pipe shall be seamless unless otherwise specified.

6.4 All materials of construction shall be new.

6.5 Weld repairs are prohibited unless approved by NRG.

6.6 Material identification markings shall be stenciled on the pipe once every three to four feet. Markings shall include the following as a minimum:

6.5.1 ASME specification number and grade
6.5.2 Pipe size, schedule/wall thickness, and length requirements
6.5.3 Heat Number

6.7 Tagging of pipe size 1/8” thru 3/8” is acceptable.

6.8 All pipe shall be internally clean and free of dirt, rust, oil or other foreign matter.

6.9 All ferrous piping shall be supplied with a protective external coating applied to prevent corrosion. Oil dipped pipe will not be accepted.

7.0 Pipe Nipples

7.1 Pipe nipples shall be manufactured in accordance with the requirements of ASME SA-530/SA-530M and the applicable ASME material specification.

7.2 Pipe nipples shall be seamless, threaded and extra strong (Sch. 80).

7.3 Threads shall be in accordance with ANSI/ASME B1.20.1.

7.4 Traceable material identification markings shall be stenciled or tagged on each pipe nipple. Markings shall include the following as a minimum:

7.4.1 ASME specification number and grade
7.4.2 Pipe Size and Schedule
7.4.3 Heat Number

7.5 For small items delivered in larger quantities where stenciling or tagging is not possible because of physical size or packaging, each box must be marked as noted in Paragraph 7.4.

8.0 Forged Valves, Fittings, and Flanges

8.1 Forged valves, fittings, flanges or similar piping components shall be manufactured in accordance with the requirements of ASME SA-961/SA-961M and the applicable ASME material specification.

8.2 Substitute material is prohibited.

8.3 All forged valves shall be manufactured in accordance with ASME B16.34 and MSS SP-25.

8.4 All fittings and flanges shall be manufactured in accordance with ASME B16.5 and MSS SP-25.

8.5 Weld repairs are prohibited unless approved by NRG.

8.6 SA-788 applies to SA-182 forgings.

8.7 For SA-182 forgings, Supplementary Requirement S8.2 applies. In addition, Supplementary Requirement S6 applies for ferritic alloys.

8.8 Valve pressure-boundary components (body, bonnet, and disc) are to be made of materials manufactured to ASME specifications.

8.9 Threaded valves that are machined to make socket weld valves will not be accepted, unless it is clearly evident that threads were removed completely, no minimum wall violations have occurred and all metal filings have been removed from the inside. Furthermore, the bottom of the socket weld bore must be at a right angle to the socket weld wall. Drilling of the socket weld bore with a tapered bit will not be accepted.

8.10 Forged valves, fittings, flanges and similar components shall be marked in accordance with the proper ASME material specification and shall include as a minimum:

8.10.1 Manufacturer's symbol or name
8.10.2 Heat number or manufacturer’s heat I.D. number
8.10.3 Pressure class rating, class designation or schedule number
8.10.4 ASME specification number and grade
8.10.5 Size

The markings shall be forged or legibly stamped on each forging or attached tag and in such a position as not to injure the usefulness of the forging.

8.11 In cases where the items are too small to be marked (i.e.; bushings, plugs, etc.), they shall be packaged and the container shall be marked as noted in Paragraph 8.10.

8.12 Valves shall be marked with any special warnings and installation guidelines such as flow direction. Tags or plates must be attached to or accompany each valve to indicate this information.

8.13 Valve end connections shall be suitably capped, in order to prevent foreign matter and possible damage of end connections.

9.0 Cast Valves and Fittings

9.1 Cast valves, fittings, or similar piping components shall be manufactured in accordance with the requirements of ASME SA-703/SA-703M and the applicable ASME material specification.

9.2 Substitute material is prohibited.

9.3 All cast valves and fittings shall comply with the latest issue of ASME B16.34 and MSS SP-55.

9.4 Butt weld valves of class #4500 made of A217-WC9 material should be manufactured to ASME B16.34 "Special Class" requirements.

9.5 Valve pressure-boundary components (body, bonnet, and disc) are to be made of materials manufactured to ASME specifications.

9.6 Cast valves, fittings, and similar components shall be marked in accordance with the proper ASTM/ASME material specification and shall include as a minimum:

9.6.1 Manufacturer's symbol or name
9.6.2 Heat number or manufacturer’s heat I.D. number
9.6.3 Pressure class rating or class designation
9.6.4 Casting grade
9.6.5 Size

Markings shall be in such a position as not to injure the usefulness of the casting.

9.7 Valves shall be marked with any special warnings and installation guidelines such as flow direction. Tags or plates must be attached to or accompany each valve to indicate this information.

9.8 Valve end connections shall be suitably capped, in order to prevent foreign matter and possible damage of end connections.

10.0 Wrought Fittings

10.1 Wrought fittings or similar piping components shall be manufactured in accordance with the requirements of ASME SA-960/SA-960M and the applicable ASME material specification.

10.2 Substitute material is prohibited.

10.3 All fittings shall comply with the latest issue of ASME B16.9, B16.28 and MSS SP-25.

10.4 All wrought fittings shall be furnished as seamless with no weld repairs permitted on the fitting.

10.5 All fittings shall be marked in accordance with the proper ASME material specification and shall include as a minimum:

10.5.1 Manufacturer's name or trademark
10.5.2 Schedule or minimum wall thickness for butt welded fittings/pressure class rating for socket-welded fittings
10.5.3 Size
10.5.4 ASME specification number and/or grade

Markings shall be in such a position as not to injure the usefulness of the fitting.

11.0 Documentation

The Supplier’s final documentation package shall include the following:

11.1 CMTRs (for pipe only)
11.2 Manufacturer’s ISO certificate