

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

DEC 11 1989

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority) Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) - PROPOSED ALTERNATIVE TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION III, 1971 EDITION THROUGH SUMMER 1973 ADDENDA - SUBPARAGRAPH NA 3451(a)

In accordance with 10 CFR 50.55a(a)(3), TVA requests NRC review and approval of an alternative to the requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, subparagraph NA-3451(a), in order to resolve a deficiency identified during the Heat Code Traceability Corrective Action Program (CAP) Plan team inspection.

This issue was discussed with NRC during the Heat Code Traceability CAP team inspection conducted at WBN on August 14 through 18, 1989. The enclosure provides a description of the alternative and the justification for this request. The documentation providing the basis for this alternative is included in Attachment A of the enclosure. This letter contains no new commitments.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

MJR Ray
Manager, Nuclear Licensing
and Regulatory Affairs

Enclosure
cc: See page 2

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DEC 11 1989

U.S. Nuclear Regulatory Commission

cc (Enclosure):

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P.O. Box 700
Spring City, Tennessee 37381

ENCLOSURE

PROPOSED ALTERNATIVE
TO ASME, SECTION III REQUIREMENTS

This letter requests Nuclear Regulatory Commission (NRC) approval in accordance with 10 CFR 50.55a(a)(3) of an alternative to American Society of Mechanical Engineers (ASME) Section III requirements.

A statistical sample was taken of upgraded loose piping material and attachments (excluding prefabricated spools) used by TVA to fabricate ASME Class 2 and Class 3 piping systems at Watts Bar Nuclear Plant (WBN). From this sample it was determined that approximately 5 percent of the subject material upgraded since plant construction began was received from manufacturers whose quality assurance program may not have been surveyed or qualified by TVA at the time of material procurement. This is contrary to ASME Section III, 1971 through Summer 1973 Addenda, subparagraph NA-3451(a).

TVA wishes to request relief pursuant to 10 CFR 50.55a(a)(3) to apply an alternative for surveying and qualifying the quality assurance program of these material manufacturers.

In order to ensure that an acceptable level of quality and safety would be provided, the following analyses/reviews have been completed as an alternative to NA-3451(a):

All material installed in Unit 1 Class 2 and Class 3 applications was evaluated using NC-3613 (1971 Edition through Summer 1972 Addenda) to determine if additional nondestructive examination (NDE) is required to meet the respective code class requirements.

All welded integral attachments to Unit 1 Class 1 pressure boundary now meet the requirements of NB-2500.

Watts Bar Engineering Project (WBEP) procedure 5.38 has been revised to require a similar confirmation of NDE for any changes in the code "Analysis of Record" that produce design stresses exceeding the allowables of NB-3673 for Class 1 applications or NC-3613 for Class 2 and Class 3 applications.

The materials upgraded at WBN for use on ASME Section III systems were usually procured to the requirements of an American Society for Testing and Material (ASTM) material specification with a Certified Material Test Report (CMTR) from the manufacturer. For the subject material, compliance with subparagraph NB/NC-2110(a), Footnote 1, ASME Section III, 1971 Edition through Summer 1973 Addenda was used as evidence of material compliance with the applicable material specification. The chemical and physical properties of the material were also reviewed with respect to the applicable material specification during the receipt inspection and/or upgrading and were found to be in compliance. Based on review and evaluation of the applicable ASTM material specifications, TVA has determined that the six items comprising the minimum material manufacturers quality assurance requirements from ASME Section III, 1971 Edition through Summer 1973 Addenda, paragraph NB-2610, are met through the compliance with the applicable ASTM material specifications and other referenced specifications and standards. Attachment A contains the documentation and results of this review.

Although the survey and qualification of the manufacturer's quality assurance program are not assured by this specification review, the majority of the particular manufacturers were later surveyed and their quality assurance program qualified by TVA, or they obtained a Quality System Certificate from ASME. However, for the time of procurement of the subject material, no documentation of survey or qualification can be retrieved.

Based on the analysis and discussion for the problem identified above and provisions described in 10 CFR 50.55a(a)(3), TVA requests NRC's review and approval of an alternative to the requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, subparagraph NA-3451(a). Upon receiving approval of this alternative, TVA will revise the Final Safety Analysis Report to document this deviation from ASME Section III requirements. This was previously committed to in the Heat Code Traceability CAP.

ATTACHMENT A

EVALUATION OF ASTM SPECIFICATIONS FOR QUALITY
ASSURANCE ATTRIBUTES EQUAL TO ASME SECTION III,
1971 EDITION THROUGH SUMMER 1973 ADDENDA
PARAGRAPH NB-2610

The following pages document the evaluation of material specifications for each of the materials of interest for the editions at the beginning and end of the timeframes of interest. These specifications, along with the edition years in between, were reviewed in light of ASME Section III, 1971 Edition through Summer 1973 Addenda, Article NC/ND-2000 materials requirements. Based on the documentation supplied, it is assumed that the technical requirements (material specification, NC/ND-2000 nondestructive examination, and special materials testing requirements) for the material have been met. The remaining quality assurance requirements for materials are those of NC/ND-2600. These manufacturer quality assurance requirements are the focus of this evaluation and its associated results.

Based on this review, the material specifications that follow meet the minimum requirements of ASME Section III NC/ND-2600 for the specified ASTM code edition years. These minimum requirements are met through the ASTM material specification requirements, the requirements of ASTM specifications referenced by the material specification, and/or requirements of referenced non-ASTM specifications and standards (ASME Section VIII, primarily).

The evaluation results are also applicable to ASME Section II material specifications. Because the SA material specifications have basically equivalent ASTM counterparts and refer to ASTM support-type specifications, i.e., ASTM "E" series specifications when an ASME counterpart does not exist, the results of the overall evaluation could be applied to SA procurements of the subject materials in cases where the material was not already manufactured/supplied in accordance with ASME Section III requirements.

Please note: On the attached pages, the symbol " ->" means references.

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A105 Year: 1971

Product Description: Carbon Steel Forgings for Piping

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A105 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A105 - para. 13.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A105 - para. 13.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A105

Year: 1981

Product Description: Carbon Steel Forgings for Piping

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A105 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. part B
2) Qualified procedures for applicable NDE methods	A105 -> A275 (MT) -> E709 -> E543: A105 -> E165 (PT) -> E543: E543 - procedure qual. para 4 & 13
3) Qualification of personnel performing and/or interpreting NDE	A105 -> A275 (MT) -> E709 -> E543: A105 -> E165 (PT) -> E543: E543 - personnel qual. para 5 (ASNT)
4) Qualified procedures for all welding in accordance with ASME Section IX	A105 - para 13.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A105 - para 13.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS CLASS 2 AND 3 APPLICATIONS

Material Specification: Year: 1972a
Product Description: Carbon Steel Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following:

ITEM

Specification Coverage

- | | |
|--|---|
| 1) Calibration and performance check of NDE and mechanical test equipment | A106 -> A530 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. - para. 6 & 11: A370 -> E10 (hardness) - calib. Part B |
| 2) Qualified procedures applicable NDE methods | No NDE required |
| 3) Qualification of performing and/or interpreting NDE | No NDE required |
| 4) Qualified procedures all welding in accordance ASME Section IX | A106 -> A530 - para. 18.2 -> Section IX |
| 5) Qualification of welders and welder operators in accordance with ASME Section IX | A106 -> A530 - para. 18.2 -> Section IX |
| 6) Procedure controls for material test coupon heat treatments (per NB-2200 NB-2400) | N/A for Class 2/3 materials |

Based on the Findings of Evaluation Above, this ASTM Material Specification, along with Specifications Referenced by this Specification, Includes Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A106

Year: 1980

Product Description: Seamless Carbon Steel Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A106 -> A530 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. - para. 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A106 -> A530 - para. 19 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A106 -> A530 - para. 19 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A155

Year: 1972a

Product Description: Electric-Fusion-Welded Steel Pipe for High-Pressure Service

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A155 - paragraph 9.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11; A370 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A155 - para. 12, 12.4 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A155 - para. 12 -> Section VIII "UW-51" - ASNT qual.
4) Qualified procedures for all welding in accordance with ASME Section IX	A155 - para. 4.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A155 - para. 4.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A672 (was A155) Year: 1979

Product Description: Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperature

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A672 - paragraph 8.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A672 - para. 6.2.4 & 9.1 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A672 - para. 6.2.4 & 9.1 -> ASME Section VIII - "UW-51" - ASNT qualification
4) Qualified procedures for all welding in accordance with ASME Section IX	A672 - para. 6.2.1 & 10.3.2 -> ASME Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A672 - para. 6.2.1 & 10.3.2 -> ASME Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A181

Year: 1968

Product Description: Forgings or Rolled Fittings and Flanges

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A181 - para. 9 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) calib. para 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A181 -> ASME Section VIII "UF" -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A181 -> ASME Section VIII "UF" -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A181

Year: 1981

Product Description: Carbon Steel Forgings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A181 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. part B
2) Qualified procedures for applicable NDE methods	A181 -> A275/E709 (MT) -> E543: A181 -> E165 (PT) -> E543: E543 - procedure qual. para 4 & 13
3) Qualification of personnel performing and/or interpreting	A181 -> A275/E709 (MT) -> E543: A181 -> E165 (PT) -> E543: E543 - personnel qual. para 5 (ASNT)
4) Qualified procedures for all welding in accordance with ASME Section IX	A181 - para 11.3 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A181 - para 11.3 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A182

Year: 1972

Product Description: Forged or Rolled Alloy Steel Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A182 - para. 9 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) calib. para 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Harter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A182

Year: 1981a

Product Description: Forged or Rolled Alloy Steel Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A182 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. part B
2) Qualified procedures for applicable NDE methods	A182 -> A275 (MT) -> E709 -> E543: A182 -> E165 (PT) -> E543: E543 - procedure qual. para 4 & 13
3) Qualification of personnel performing and/or interpreting NDE	A182 -> A275 (MT) -> E709 -> E543: A182 -> E165 (PT) -> E543: E543 - personnel qual. para 5 (ASNT)
4) Qualified procedures for all welding in accordance with ASME Section IX	A182 - para 12.1.1 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A182 - para 12.1.1 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A193

Year: 1973

Product Description: Stainless and Alloy Steel Bolting

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A193 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A193

Year: 1981a

Product Description: Stainless and Alloy Steel Bolting

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A193 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) calib para 6 & 11; A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A194

Year: 1973

Product Description: Carbon and Alloy Steel Nuts

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A194 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (chapy) calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A194

Year: 1981

Product Description: Carbon and Alloy Steel Nuts

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A194 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A234

Year: 1973

Product Description: Wrought Carbon and Alloy Steel Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A234 -> referenced material specs -> A370 -> E4 (tension) -> E74 - "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A234 - para. 5.2, 13 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A234 - para. 5.3, 13 -> Section VIII "UW-51" - ASNT qual.
4) Qualified procedures for all welding in accordance with ASME Section IX	A234 - para. 5.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A234 - para. 5.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A234

Year: 1981a

Product Description: Wrought Carbon and Alloy Steel Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A234 -> A370 -> E4 (tension) -> E74 - "Calibration": A370 -> E23 (charpy) - calib para 6 & 11 A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A234 - para 5.2 -> ASME Section V "RT"/Section VIII "UW-51" acceptance -> procedure qual: para 5.2 -> E165 (PT): para 5.2 -> E709 (MT): E165 & E709 -> E543 - para 4 & 13 procedure qual.
3) Qualification of personnel performing and/or interpreting NDE	A234 -> Section V (RT) & Section VIII "UW-51" - ASNT qual: A234 -> E165 & E709 (PT&MT) -> E543 - para 5 personnel qual (ASNT)
4) Qualified procedures for all welding in accordance with ASME Section IX	A234 - para. 5.2, 13 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A234 - para. 5.2, 13 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A240

Year: 1972b

Product Description: Stainless Steel Plate, Sheet And Strip

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A240 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Hunter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A240

Year: 1981a

Product Description: Stainless Steel Plate, Sheet And Strip

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A240 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A312 Year: 1973

Product Description: Stainless Seamless and Welded Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A312 -> A530 -> A370 -> E4 (tension) -> E74 - "Calibration": A370 -> E23 (charpy) -calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A312 -> A530 - para 18.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A312 -> A530 - para 18.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A312

Year: 1981

Product Description: Stainless Seamless and Welded Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A312 -> A530 -> A370 -> E4 (tension) -> E74 - "Calibration": A370 -> E23 (charpy) -calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A312 -> A530 - para 19.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A312 -> A530 - para 19.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A320

Year: 1974

Product Description: Alloy Steel Bolting Materials for Low-Temperature Service

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A320 para. 6.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A320

Year: 1979a

Product Description: Alloy Steel Bolting Materials for Low-Temperature Service

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A320 para. 6.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A350 Year: 1974
Product Description: Carbon/Alloy Steel Forgings Requiring Impact
(Notch Toughness) Test For Low Temp. Service

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A350 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	A350 -> E109 (Practice for Dry Powder MT): A350 -> E138 (Practice for Wet PT): A350 -> E165 (Practice for PT)
3) Qualification of personnel performing and/or interpreting NDE	A350 -> E109/E138 (MT): A350 -> E165 (PT): **Personnel Qual. (ASTM E543) did <u>not</u> exist until 1976: MT/PT req'mts are for (a) Repair welds & (B) If Supplemental Req. S7 and/or S8 specified
4) Qualified procedures for all welding in accordance with ASME Section IX	A350 - para 9.3.1 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A350 - para 9.3.1 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, except for Item 3 (if applicable). The NDE was applicable concerning (1) NDE on repair welds, and (2) If supplementary requirements S7 and/or S8 were specified.

James E. Hawley

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A350

Year: 1981

Product Description: Carbon/Alloy Steel Forgings Requiring Impact
(Notch Toughness) Test For Low Temp. Service

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A350 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (charpy) - calib. para. 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	A350 -> A275 (MT) -> E709 -> E543: A350 -> E165 (PT) -> E543: E543 - procedure qual. para 4 & 13
3) Qualification of personnel performing and/or interpreting NDE	A350 -> A275 (MT) -> E709 -> E543: A350 -> E165 (PT) -> E543: E543 - personnel qual. para 5 (ASNT)
4) Qualified procedures for all welding in accordance with ASME Section IX	A350 - para 9.3.1 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A350 - para 9.3.1 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A376

Year: 1972

Product Description: Seamless Stainless Steel Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A376 -> A530 -> A370 -> E4 (tension) -> E74 - "Calibration": A370 -> E23 (charpy) -calib para 6 & 11; A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A376 - para 11.6 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A376 - para 11.6 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda Paragraph NC/ND-2600.

James R. Haueter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A376

Year: 1981

Product Description: Seamless Stainless Steel Pipe

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A376 -> A530 -> A370 -> E4 (tension) -> E74 - "Calibration": A370 -> E23 (charpy) -calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	A376 -> A530 - para 19.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A376 -> A530 - para 19.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A403

Year: 1981

Product Description: Wrought Stainless Steel Pipe Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A403 -> A370 -> E4 (tension) -> E74 "Calibration": A370 -> E23 (chagy) - calib para 6 & 11: A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A403 - para 5.4 & 5.5 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A403 - para 5.4 & 5.5 -> ASME Section VIII "UW-51" - ASNT qual.
4) Qualified procedures for all welding in accordance with ASME Section IX	A403 - para 5.7 & 14 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A403 - para 5.7 & 14 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973. Addenda, Paragraph NC/ND-2600.

James R. Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A403

Year: 1973a

Product Description: Wrought Stainless Steel Pipe Fittings

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A403 -> referenced material specs -> A370 -> E4 (tension) -> E74 - "Calib.": A370 -> E23 (charpy) - calib para 6 & 11; A370 -> E10 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A403 - para. 5.2 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A403 - para. 5.2 -> Section VIII "UW-51" - ASNT qual.
4) Qualified procedures for all welding in accordance with ASME Section IX	A403 - para. 5.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A403 - para. 5.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R Haueter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A420

Year: 1973

Product Description: Wrought Carbon and Alloy Steel Fittings
for Low-Temperature Service

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A420 - paragraph 8.0 -> A370 -> E4 (tension) -> E74 "Calib." A370 -> E23 (charpy) - calib para 6 & 11: A370 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A420 - para. 5.2.2 & 13 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A420 - para. 5.2.2 & 13 -> ASME Section VIII "UW-51" - ASNT qualification
4) Qualified procedures for all welding in accordance with ASME Section IX	A420 - para. 5.0 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A420 - para. 5.0 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Hawter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A420

Year: 1979

Product Description: Wrought Carbon and Alloy Steel Fittings
for Low-Temperature Service

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A420 - para. 2.1 & 9.2.2 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 (hardness) - calib Part B
2) Qualified procedures for applicable NDE methods	A420 - para. 5.2.1 & 13.1 -> ASME Section VIII "UW-51" - RT procedure
3) Qualification of personnel performing and/or interpreting NDE	A420 - paragraph 13.1 -> ASME Section VIII "UW-51" - ASNT qualification
4) Qualified procedures for all welding in accordance with ASME Section IX	A420 - para. 5.2 -> Section IX
5) Qualification of welder and welder operators in accordance with ASME Section IX	A420 - para. 5.2 -> Section IX
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS

Material Specification: A453

Year: 1974

Product Description: Bolting Materials, High-Temperature, 50 to
120 ksi Yield, with Expansion Coefficients
Comparable to Austenitic Steels

Minimum Manufacturer QA Requirements, Based on ASME Section III,
1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600,
Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A453 para. 7.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 9 & 11; A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haweter

**ASTM MATERIAL SPECIFICATION REVIEW FOR MANUFACTURER
QA REQUIREMENTS FOR CLASS 2 AND 3 APPLICATIONS**

Material Specification: A453

Year: 1979

Product Description: Bolting Materials, High-Temperature, 50 to 120 ksi Yield, with Expansion Coefficients Comparable to Austenitic Steels

Minimum Manufacturer QA Requirements, Based on ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600, Include the Following Six Items:

<u>ITEM</u>	<u>Specification Coverage</u>
1) Calibration and periodic check of NDE and mechanical test equipment	A453 para. 7.0 -> A370 -> E4 (tension) -> E74 "Calib.": A370 -> E23 (charpy) - calib para 6 & 11: A370 -> E10 (hardness) - calib. Part B
2) Qualified procedures for applicable NDE methods	No NDE required
3) Qualification of personnel performing and/or interpreting NDE	No NDE required
4) Qualified procedures for all welding in accordance with ASME Section IX	N/A - no welding
5) Qualification of welder and welder operators in accordance with ASME Section IX	N/A - no welding
6) Procedure controls for material test coupon heat treatments (per NB-2200 and NB-2400)	N/A for Class 2/3 materials

Based on the Findings of the Evaluation Above, this ASTM Material Specification, along with other Specifications Referenced by this Specification, Includes the Applicable Minimum QA Requirements of ASME Section III, 1971 Edition through Summer 1973 Addenda, Paragraph NC/ND-2600.

James R. Haueter