Bulletin on Referenced Standards For Committee 6, Standardization of Valves and Wellhead Equipment

API BULLETIN 6RS (BUL 6RS)
FIRST EDITION, JULY 1, 1990

American Petroleum Institute
1220 L Street, Northwest
Washington, DC 20005

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OFFICIAL PUBLICATION

REG U S PATENT OFFICE

This supplement covers revisions to API Bul 6RS (First Edition, July 1, 1990) approved by letter ballot of the Committee on Standardization of Valves and Wellhead Equipment.

Page 13, Materials. *Add BS1501-224-490 Lt Grades, BS4360-50B, BS4360-50D and BS 970709 M40T as acceptable alternative API Spec 6D material standards.*

TABLE OF CONTENTS

TABLE OF CONTENTS CONT'D.

The first edition of API Bulletin 6RS, Referenced Standards, for Committee 6, Standardization of Valves and Wellhead Equipment, was formulated by the API Committee on Standardization of Valves and Wellhead Equipment. It was approved for publication at the 1987 Standardization Conference and later ratified by letter ballot.

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FOREWORD

This Bulletin was formulated by the API Production Department Committee on Standardization of Valves and Wellhead Equipment.

American Petroleum Institute (API) Bulletins are published to provide information for which there is a broad industry need but which does not constitute either Specifications or Recommended Practices.

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This Standard shall become effective on the date printed on the cover but may be used voluntarily from the date of distribution.

Other publications formulated by this committee are:

Spec 6A: Wellhead and Christmas Tree Equipment.

Bul 6AF: Bulletin on Capabilities of API Flanges Under Combinations of Load.

Spec 6AR: Repair and Remanufacture of Wellhead and Christmas Tree Equipment.

Spec 6D: Pipeline Valves (Steel Gate, Plug, Ball, and Check Valves).

Spec 6FA: Fire Test for Valves.

Spec 6FB: Fire Test for End Connections.

Spec 6FC: Fire Test for Valves with Selective Backseats.

Bul 6F1: Performance of API and ANSI End Connections in a Fire Test According to API Specification 6FA.

Bul 6F2: Fire Resistance Improvements for API Flanges.

IMPORTANT INFORMATION CONCERNING USE OF ASBESTOS OR ALTERNATIVE MATERIALS

Asbestos is specified or referenced for certain components of the equipment described in some API standards. It has been of great usefulness in minimizing fire hazards associated with petroleum processing. It has also been a universal sealing material, compatible with most petroleum fluid services.

Certain serious adverse health effects are associated with asbestos, among them the serious and often fatal diseases of lung cancer, asbestosis, and mesothelioma (a cancer of the chest and abdominal linings). The degree of exposure to asbestos varies with the product and the work practices involved.

Consult the most recent edition of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Health Standard for Asbestos, 29 *Code of Federal Regulations* Section 1910:1001; the U.S. Environmental Protection Agency's National Emission Standard for Hazardous Air Pollutants concerning Asbestos, 40 *Code of Federal Regulations* Sections 61.140 through 61.156; and the proposed rule by the U.S. Environmental Protection Agency (EPA), proposing labeling requirements and phased banning of asbestos products, published at 51 *Federal Register* 3738-3759 (January 29, 1986).

There are currently in use and under development a number of substitute materials to replace asbestos in certain applications. Manufacturers and users are encouraged to develop and use effective substitute materials which can meet the specifications for, and operating requirements of, the equipment to which they would apply.

SAFETY AND HEALTH INFORMATION WITH RESPECT TO PARTICULAR PRODUCTS OR MATERIALS CAN BE OBTAINED FROM THE EMPLOYER, THE MANUFACTURER OR SUPPLIER OF THAT PRODUCT OR MATERIAL, OR THE MATERIAL SAFETY DATA SHEET.

1. SCOPE

1.1 COVERAGE. This bulletin was developed to identify to the industry the applicability of standards, or sections thereof, referenced in publications under the jurisdiction of the API Committee on Standardization of Valves and Wellhead Equipment.

1.2 EQUIVALENT STANDARDS. Other nationally or internationally recognized standards shall be submitted to and approved by the API Committee on Standardization of Valves and Wellhead Equipment for inclusion in this bulletin prior to their use as equivalent standards.

1.3 ABBREVIATIONS

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASTM	American Society for Testing and Materials
MIL STD	Military Standard, U.S.A.
MSS	Manufacturers Standardization Society of the Valves and Fittings Industry
NACE	National Association of Corrosion Engineers

2. REFERENCED STANDARDS

2.1 TESTING

DOCUMENT

ASTM Specification A370-77, "Standard Method and Definitions for Mechanical Testing of Steel Products."

APPROVED REVISIONS

Edition June 24, 1977, Published August 1977, a copy in all volumes containing metallic materials, originally published as A370-53T, last previous edition A370-76.

SYNOPSIS

These methods cover procedures and definitions for the mechanical testing of wrought and cast steel products. The various mechanical tests herein described are used to determine properties required in the product specifications.

The following mechanical tests are described which are applicable to the sections cited in API 6A 16th Edition

TEST	SECTION
TENSION	5 TO 13
HARDNESS	
BRINELL	16 & 17
ROCKWELL	18
IMPACT	19 TO 23

APPLICABILITY OF REFERENCED DOCUMENT

All the sections of ASTM A370-77 apply, except sections 2 (Documents) and 14 (Bends). The following reference to second tier specifications will be considered as part of this API Spec 6A.

ASTM SECTION	ASTM REF. STANDARDS
TENSION	E 4-83a All Sections
	E 6-85a All Sections
	E 8-85b All Sections
	E 83-85 All Sections
HARDNESS BRINELL	E 10-84 All Sections
HARDNESS ROCKWELL	E 18-84 All Sections
*IMPACT	E 23-82 All Sections

*Note: ASTM E23-82 is not included in Table 104.1 of API Spec 6A, 16th Ed.

DOCUMENT

ASTM Specification A703/A703M-87b, "Specification for Steel Castings, General Requirements, for Pressure-Containing Parts."

APPROVED REVISION

Edition approved August 28, 1987. Published October 1987. Originally published as A703-74. Last previous edition A703/A703M-87a.

SYNOPSIS

This specification covers a group of common requirements which apply to castings specified for use as pressure containing parts. In addition, this document covers a group of Supplementary Requirements or additional testing or inspection as specified individually by the purchaser in the order.

APPLICABILITY OF REFERENCED DOCUMENT

Only Figure 1 of ASTM A703/A703M-87b is referenced in API 6A as being comparable to an equivalent round (ER) of 2½ inches for castings.

DOCUMENT

ASTM Standard ASTM E 10-84, "Standard Test Methods for Brinell Hardness of Metallic Materials."

APPROVED REVISIONS

Edition April 27, 1984, Published June 1984 in ASTM Vol. 03.01. Originally published as ASTM E 10-24T. Last previous edition E 10-78.

SYNOPSIS

This method covers the test procedure for determining the Brinell hardness of metallic materials by using calibrated equipment to apply a specific load to a surface of the metal to be tested through a hard ball of specified diameter and to measure the diameter of the resulting impression.

The resulting Brinell Hardness Number (HB) is related to the area of the permanent impression made, usually by a 10mm diameter ball indenter pressed into the surface of the metal under load. For carbon and low alloy steels, there is a direct correlation between an HB number and the ultimate tensile strength of the material.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of ASTM E10-84 shall apply.

DOCUMENT

ASTM Standard ASTM E 18-84, "Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials."

APPROVED REVISIONS

Edition April 27, 1984, Published June 1984 in ASTM Vol. 03.01. Originally published as ASTM E 18-32T. Last previous edition E 18-79.

SYNOPSIS

This method covers the test procedure for determining the Rockwell hardness of metallic materials. The Rockwell Hardness Number (HR) is a number derived from the net increase in depth of impression as the load on a penetrator is increased from a fixed minimum load to a higher load and then returned to the minimum load. Penetrators for the Rockwell test include steel balls of several specified diameters and a diamond cone penetrator having an included angle of 120°. Rockwell Hardness numbers are always quoted with a scale symbol representing the penetrator, load, and dial used.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of ASTM E18-84 shall apply.

DOCUMENT

ASTM E 23-82, "Standard Methods for Notched Bar Impact Testing of Metallic Materials."

APPROVED REVISIONS

Edition March 5, 1982, Published July 1982 in ASTM Vol. 03.01. Originally published as ASTM E23-33T, last previous edition ASTM E23-81.

SYNOPSIS

These methods describe notched-bar impact testing of metallic materials by the Charpy specimen in simple beam, and the Izod specimen in cantilever-beam. A description of the apparatus, the requirements for inspection and calibration, safety precautions, sampling, dimensions and preparation of specimens, testing procedure, precision and accuracy. These methods of impact testing relate specifically to the behavior of metal when subjected to single application of a load resulting in multiaxial stresses associated with the notch. For some materials and temperatures, impact test on notched specimens have found to predict the likelihood of brittle fracture better than tension tests.

The appendix of this specification contains further information on limitations and significance of the notch, in Section XI "Notes on Significance of Notched-Bar Testing."

APPLICABILITY OF REFERENCED DOCUMENT

Only the Charpy notched test (simple beam) in ASTM E23-82 shall apply to the API Spec 6A Impact Testing of materials when specified therein.

This Specification shall be used as the test method when referenced in ASTM A370.

DOCUMENT

ASTM Specification E 92-82, "Standard Test Method for Vickers Hardness of Metallic Materials."

APPROVED REVISIONS

Edition July 30, 1982, Published December 1982 in ASTM Vol. 03.01. Originally published as E 92-52T. Last previous edition E 92-72 (1977).

SYNOPSIS

This test method covers the determination of the Vickers hardness of metallic materials, using applied loads of 1kgf to 120 kgf, the verification of Vickers hardness test block. This test consists of using an indentor which is pressed into the material using a calibrated machine to force a square-based pyramidal diamond indenter having specified face angles, under a predetermined load. The Vickers hardness number (HV) is a number related to the applied load and the surface area of the permanent impression by measuring the diagonals of the resulting impression after removal of the load.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of ASTM E 92-82 shall apply.

DOCUMENT

ASTM Standard ASTM E140-84, "Standard Hardness Conversion Table for Metals."

APPROVED REVISIONS

Edition July 27, 1984, published November 1984, in ASTM Volume 03 01, originally published ASTM E 104-58, last previous Edition E140-83.

SYNOPSIS

This Standard provides the relationship between Brinell Hardness, Diamond Pyramid Hardness, Rockwell Hardness, and Rockwell Superficial Hardness, in carbon, low alloy, tool steels and some nonferrous alloys Tests have proved that even the most reliable data cannot be fitted to a single conversion relationship for all metals Indentation hardness is not a single fundamental property but a combination of properties and the contribution of each to the hardness number varies with the test.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of ASTM E140-84 shall apply except: Section 2 "Applicable Documents."

DOCUMENT

ASTM D395, "Standard Test Method for Rubbery Property-Compression Set."

APPROVED REVISIONS

1984 Revision

SYNOPSIS

This Standard covers the methods of testing rubber for use where it will be subjected to compressive stresses in air or liquid media.

APPLICABILITY OF REFERENCED DOCUMENT

Method B-Compression Set under constant deflection in air shall apply.

DOCUMENT

ASTM D412, "Standard Test Method for Rubber Properties in Tension "

APPROVED REVISIONS

1983 Revision

SYNOPSIS

This Standard covers the tensile testing of rubber at various temperatures Measures tensile stress at given elongations, tensile strength, ultimate elongation and tensile set

APPLICABILITY OF REFERENCED DOCUMENT

Method A or Method B is applicable.

DOCUMENT

ASTM D471, "Standard Test Method for Rubber Property — Effect of Liquids."

APPROVED REVISIONS

1979 Revision

SYNOPSIS

This method measures the comparative ability of rubber and rubber-like compositions to withstand the effect of liquids It is not applicable to cellular rubbers or porous compositions

APPLICABILITY OF REFERENCED DOCUMENT

All sections shall apply.

DOCUMENT

ASTM D573, "Standard Test Method for Rubber-Deterioration in an Air Oven "

APPROVED REVISIONS

1981 Revision

SYNOPSIS

This method describes a procedure to determine the influence of elevated temperature on the physical properties of vulcanized rubber The results of this test may not give an exact correlation with service performance but does serve to evaluate rubber compounds on a laboratory comparison basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections shall apply.

DOCUMENT

ASTM D1415, "Rubber Property-International Hardness."

APPROVED REVISIONS

1983 Revision

SYNOPSIS

This test method describes a procedure for measuring the hardness of rubber The international Hardness Test is based on the measurement of the penetration of a rigid ball into the rubber specimen under specified conditions Two procedures are given to accommodate specimens of different dimensions.

ASME BPVC VIII.1.4 | 2.1 TESTING (continued) | ASME BPVC VIII.2.4

APPLICABILITY OF REFERENCED DOCUMENT

All sections of reference document shall apply

DOCUMENT

ASTM D2240, "Standard Test Method for Rubber Property-Durometer Hardness."

APPROVED REVISIONS

1985 Revision

SYNOPSIS

This specification outlines the procedure for determining the indentation hardness of homogeneous materials, ranging from soft vulcanized rubber to rigid plastics.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of referenced document shall apply.

DOCUMENT

ASME Boiler and Pressure Vessel Code 1983 Section VIII Div. 1, Appendix 4 "Rounded Indications Chart Acceptance Standard for Radiographically Determined Rounded Indications in Welds."

APPROVED REVISIONS

Edition 1983, Published July 1, 1983. This is an ANSI/ASME BPV-VIII Div 1 Document.

SYNOPSIS

ASME acceptance criteria and relevant chart of rounded indications permitted in welds in ferritic, austenitic and nonferrous materials. Appendix 4, which is mandatory, defines the terminology and acceptance criteria for rounded defects permitted in welds.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of Appendix 4 shall apply.

2.2 DESIGN

DOCUMENT

ASME Boiler and Pressure Vessel Code, Section VIII, Division 2, Appendix 6, Pressure Vessels, Alternate Rules.

APPROVED REVISIONS

Winter 1985, Addenda

SYNOPSIS

Appendix 6 provides means to conduct tests to determine governing stress and collapse load, based upon experimental stress analysis. The following parameters are specified:

A. Means for determination of governing stresses

Strain measurement tests—type of gage and gage length specified, provision for use of models, location of gage specified.

Photoelastic test procedure—provision for two or three dimensional techniques.

Brittle coating tests only to locate strain gage.

Method of application of pressure specified.

B. Means for determining collapse load

Strain measurement tests in A.

Distortion measurement tests are permitted under specified conditions.

Only full scale model permitted.

Pressure application specified loads plotted vs. deflections.

APPLICABILITY OF REFERENCED DOCUMENT

Sections 6-100 6-160

(All sections except those dealing with fatigue analysis)

DOCUMENT

ASME Boiler and Pressure Vessel Code, Section VIII, Division 2, Appendix 4, Pressure Vessels, Alternate Rules.

APPROVED REVISIONS

Winter 1985, Addenda

SYNOPSIS

Essential points of Appendix 4 are the use of Maximum Shear Stress (Tresca) theory of Failure, the requirement for detailed calculations, classification of all stresses and application of different stress limits to different classes of stress, and calculation of thermal stress with allowable stress levels.

The stress limits of Division 2 are intended to prevent two different types of failure as follows:

(1) Bursting and gross distortion from a single application of pressure are prevented by the limits placed on primary stresses.

(2) Progressive distortion is prevented by the limits placed on primary-plus-secondary stresses. These limits assure shake-down to elastic action after a few repetitions of the loading.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except those concerned with fatigue analysis and localized bearing stresses, shall apply.

2.3 PROCESSES

DOCUMENT

ASME Boiler and Pressure Vessel Code 1986 Edition, Section IX, "Qualification Standard for Welding and Brazing Procedures, Welders, Brazers and Welding and Brazing Operators."

APPROVED REVISIONS

Edition 1986 Published July 1, 1986. This is an ANSI/ASME BV-IX Standard.

SYNOPSIS

Section IX of the ANSI/ASME BPV-IX relates to the welding requirements, qualification of welding procedures, and qualification of welders, and welding machine operators. This Code establishes the basic criteria for welding which are to be observed in the preparation of welding requirements that affect welding procedures and product performance after welding.

The purpose of Welding Procedure Specification (WPS) and Procedure Qualification Records (PQR) is to determine that the weldment proposed for construction of pressure vessels is capable of having the required mechanical properties for the intended application. It is presupposed that the welder or welding machine operator performing the welding is a qualified and skilled workman.

APPLICABILITY OF REFERENCED DOCUMENT

For overlay for corrosion protection all paragraphs of QW-214 shall apply and the minimum qualified thickness, referred to in QW-462.5 shall be .125", for the PQR. In the event that the chemistry is taken from the actual groove, it is permissible to use the chips removed from the final machining operation provided that the machining for the chips intended for the chemical evaluation commences at least $^1/_{16}$" from the minimum qualified thickness as defined in QW-462.5.

2.4 QUALITY CONTROL

DOCUMENT

ASTM E94-84a, "Standard Guide for Radiographic Testing."

APPROVED REVISIONS

1984a

SYNOPSIS

This specification covers X-ray and gamma ray radiographic testing as applied to industrial radiographic film recording.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E94-84a shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM E165-80 (83), "Standard Practice for Liquid Penetrant Inspection."

APPROVED REVISIONS

1980 (Reapproved 1983).

SYNOPSIS

This specification covers liquid penetrant inspection of materials to aid in the detection of discontinuities open to the surface, such as cracks, seams and laminations.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E165-80 (83) shall apply except:

Paragraph 2, titled "Applicable Documents"

DOCUMENT

ASTM E186-84, "Standard Reference Radiographs for heavy Walled (2 to 4½ in. (51 to 114 mm) Steel Castings."

APPROVED REVISIONS

1984

SYNOPSIS

This reference consists of 3 sets of radiographs:

(1 MV X-rays and Iridium 192; 2 MV X-rays and Cobalt 60; 4 MV to 30 MV X-rays) to be used as a means for establishing the categories and severity levels of discontinuities in steel castings.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E186-84 shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM E280-84, "Standard Reference Radiographs for (4½ to 12 in. (114 to 305 mm)) Steel Castings."

APPROVED REVISIONS

1984

SYNOPSIS

This reference consists of 2 sets of radiographs:

(2 MV X-rays and Cobalt 60 and 4 MV to 30 MV X-rays) to be used as a means for establishing the categories and severity levels of discontinuities in steel castings.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E280-84 shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM A388-84, "Standard Practice for Ultrasonic Examination of Heavy Steel Forgings."

APPROVED REVISIONS

1984

SYNOPSIS

This specification covers the procedures for the contact, pulse echo ultrasonic examination of heavy steel forgings by the straight and angle beam techniques.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist, all sections of A388-84 shall apply except:

Paragraph 1	— Scope
Paragraph 2	— Applicable Documents
Paragraph 4 1 1	— Calibration
Paragraph 5	— Personnel Qualification
Paragraph 6 1	— Preparation of Forging for Ultrasonic Examination
Paragraph 10	— Quality Levels

Additionally, those sub-paragraphs and/or parts of sub-paragraphs that specifically address the back reflection or angle beam technique are not applicable.

DOCUMENT

ASTM E428-71 (80), "Standard Recommended Practice for Fabrication and Control of Steel Reference Blocks Used in Ultrasonic Inspection."

APPROVED REVISIONS

1971, Reapproved 1980

SYNOPSIS

This specification covers the fabrication and control of flat bottom hole metal alloy reference blocks used for: (1) checking the performance of ultrasonic testing instruments and (2) the standardization of ultrasonic testing of metal alloy products.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E428-71 (80) shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM E446-84, "Standard Reference Radiographs for Steel Castings up to 2 in. (51 mm) in thickness."

APPROVED REVISIONS

1984

SYNOPSIS

This reference consists of 3 sets of radiographs:

(250 kVp X-rays, 1 MV X-ray and Iridium 192; 2 MV-4MV X-rays and Cobalt 60) to be used as a means for establishing the categories and severity levels of discontinuities in steel castings.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E446-84 shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM E709-80 (85), "Standard Practice for Magnetic Particle Examination."

APPROVED REVISIONS

1980 (Reapproved 1985)

SYNOPSIS

This specification describes the techniques for both wet and dry magnetic particle examination to aid in the detection of discontinuities on or near the surface in ferromagnetic materials.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E709-80 (85) shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

ASTM E747-84a, "Standard Method for Controlling Quality of Radiographic Testing Using Wire Penetrameters."

APPROVED REVISIONS

1984a

SYNOPSIS

This specification covers the radiographic testing of materials for discontinuities using wire penetrameters as the controlling image quality indicator for the material thickness range from .25 to 6 in. (6.4 to 115 mm).

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in ASTM E747-84a shall apply except:

Paragraph 2, titled 'Applicable Documents'

DOCUMENT

MIL-STD-105-D, "Sampling Procedures for Inspections by Attributes."

REVISION

12 December 1980, with Chg. Notice #1, 9 September 1983.

SYNOPSIS

This standard utilizes operating characteristic curves for the specified Acceptance Quality Level (AQL) which are based on binomial distribution for sample sizes of 80 or less and upon Poisson distribution for sample sizes of greater than 80.

APPLICABILITY OF REFERENCED DOCUMENT

All single sampling plans for normal, reduced and tightened inspection shall apply.

DOCUMENT

ASNT Recommended Practice No. SNT-TC-1A.

APPROVED REVISIONS

August 1984 Edition

SYNOPSIS

This specification establishes a general framework for a qualification and certification program for personnel performing nondestructive examination. Included are requirements for education, experience, and training for the different methods of NDE — radiography, ultrasonics, magnetic particle, liquid penetrant, acoustic emission and leak testing. Supplementary documents provide questions and answers for composing examinations.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in SNT-TC-1A, 1984 shall apply

MSS-SP55 | 2.4 QUALITY CONTROL (continued) | ASTM A194

DOCUMENT

MSS-SP55, "Quality Standard for Steel Castings for Valves, Flanges and Fittings and other Components (Visual Method)"

APPROVED REVISIONS

1985 Edition

SYNOPSIS

This specification provides a series of reference photographs of typical surface irregularities common to steel castings and is intended to be used as a means of acceptance

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist all sections in MSS-WP55 shall apply except:

Annex A

Annex B

DOCUMENT

ASME Boiler and Pressure Vessel Code, Section V, Nondestructive Examination, Article 5, Ultrasonic Examination Methods for Materials and Fabrication; Paragraphs T522, Written Procedure Requirements and Paragraph T-542, Welds.

APPROVED REVISIONS

1983 including Summer 1985 Addendum

SYNOPSIS

ASME Section V, Article 5, describes requirements for selecting and developing ultrasonic examination procedures for welds, parts, components, materials and thickness determinations. Paragraph T-522 specifically addresses the requirements for a written procedure and Paragraph T-542 the requirements for ultrasonic examination of full penetration welds.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist, sections T-522 and T-542 of ASME Section V, Article 5 shall apply.

2.5 MATERIALS

DOCUMENT

ASTM A193, "Alloy Steel and Stainless Steel Bolting Material for High Temperature Service."

APPROVED REVISIONS

1984

SYNOPSIS

This specification covers alloy and stainless steel bolting material for pressure vessels, valves, flanges and fittings for high temperature service. Several grades are covered, including ferritic steels and austenitic stainless steels. Requirements for the process of manufacture, heat treatment, chemical composition, mechanical properties (tensile, yield, hardness), threading and marking are included in the specification. Chemical and mechanical testing is required on per heat basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except Section 2, and the Supplementary Requirements shall apply.

DOCUMENT

ASTM A194, "Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service."

APPROVED REVISIONS

1984

SYNOPSIS

This specification covers a variety of carbon, alloy, and martensitic stainless steel nuts in size range ¼ through 4 inch nominal. It also covers austenitic stainless steel nuts in the size range ¼ nominal and above. Requirements for the process of manufacture, heat treatment, chemical composition, mechanical properties (tensile, yield, hardness), dimensions and marking are included in the specification. Chemical and mechanical testing is required on a per heat basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except Section 2, "Applicable Documents" and the Supplementary Requirements shall apply.

DOCUMENT

ASTM A307, "Carbon Steel Externally Threaded Standard Fasteners."

APPROVED REVISIONS

1984

SYNOPSIS

This specification covers the chemical and mechanical requirements of two grades of carbon steel externally threaded standard fasteners in sizes ¼ in. through 4 in. Requirements for materials and manufacture, chemical composition, mechanical properties (tensile, hardness), and dimensions are included in the specification. Chemical and mechanical testing is done on a sampling basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except Section 2, "Applicable Documents" and the Supplementary Requirements shall apply.

DOCUMENT

ASTM A320, "Alloy Steel Bolting Materials for Low Temperature Service."

APPROVED REVISIONS

1985

SYNOPSIS

This specification covers alloy steel, rolled, forged, or strain hardened bars, bolts, screws, studs and stud bolts. Several grades are covered including ferritic and austenitic steels. Requirements for the process of manufacture, chemical composition, mechanical properties (tensile, yield, impacts, hardness), threading and marking are included in the specification. Chemical and mechanical testing is required on a per heat basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except Section 2 "Applicable Documents" and the Supplementary Requirements shall apply.

DOCUMENT

ASTM A453, "Bolting Materials, High Temperature, 50 to 120 KSI Yield Strength, with expansion Coefficients Comparable to Austenitic Steel."

APPROVED REVISIONS

1984

SYNOPSIS

This specification covers four grades of bolting materials with seven classes of yield strength ranging from 50 to 120 ksi. Requirements for process of manufacturer, heat treatment, chemical composition, mechanical properties (tensile, yield, stress-rupture, hardness), dimensions and marking are included in the specification. Chemical and mechanical testing is required on a per heat basis.

APPLICABILITY OF REFERENCED DOCUMENT

All sections except Section 2 "Applicable Documents" and Supplementary Requirements shall apply.

DOCUMENT

ASTM A609-83, "Standard Specification for Steel Castings, Carbon and Low Alloy, Ultrasonic Examination Thereof."

APPROVED REVISIONS

1983

SYNOPSIS

This specification covers the standards and procedures for the pulse echo ultrasonic examination of heat treated carbon and low alloy steel castings by the longitudinal beam method.

APPLICABILITY OF REFERENCED DOCUMENT

For the purpose of this checklist, all sections of ASTM A609-83 shall apply except:

Paragraph 2	— Applicable Documents
S-1	— Supplementary Requirements

DOCUMENT

ASTM D1414, "Rubber O-Rings."

APPROVED REVISIONS

1978

SYNOPSIS

The methods in this Standard describe the procedures for determining the physical properties of O-rings and changes in these properties due to aging. These methods provide acceptable procedures for quality control purposes and for the determination of engineering characteristics.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of referenced document shall apply.

DOCUMENT

ASTM D1418, "Standard Practice for Rubber and Rubber Latices—Nomenclature."

APPROVED REVISIONS

1985 Revision

SYNOPSIS

This standard established a system of general classification for the basic rubbers both in dry and latex forms determined from the chemical composition of the polymer chain.

APPLICABILITY OF REFERENCED DOCUMENT

All sections of referenced document shall apply.

DOCUMENT

NACE MR-01-75, "Sulfide Stress Cracking Resistance Metallic Materials for Oil Field Equipment."

APPROVED REVISIONS

Edition 1984 Editorial Revision

SYNOPSIS

This standard covers metallic material requirements to resist sulfide stress cracking (SSC) for petroleum production and drilling facilities in H_2S bearing hydrocarbon service. This standard lists the permissible materials and their accepted hardness levels. This standard restricts low alloy steels at a nickel content of less than one (1)%. Most ferrous and martensitic stainless steels are limited to a maximum hardness of HRC22. The document covers the minimum stress relief temperature to be used to 1150°F, to ensure hardness control for equipment fabricated by fusion welding.

APPLICABILITY OF REFERENCED DOCUMENT

Paragraphs 3.1 through 4.4 shall apply, paragraphs 5.2 through 5.3 shall also apply. Tables 1 through Table 5 (incl.) shall apply.

2.6 THREADS

DOCUMENT

ANSI B1.1, "Unified Inch Screw Threads."

APPROVED REVISIONS

May 31, 1985

SYNOPSIS

This Standard specified thread form, series, class, allowance, tolerance and designator for Unified Inch Screw Threads.

APPLICABILITY OF REFERENCED DOCUMENT

The following Sections of the Specification shall apply:

Section 2	Screw Thread Profile
Table 3A	Limits of Size for Standard Series Threads
Table 20	Allowances & Tolerance for 8 Thread Series

DOCUMENT

ANSI B1.2, "Gages & Gauging for Unified Inch Screw Threads."

APPROVED REVISIONS

1983

SYNOPSIS

This Standard specified Thread Form Series, classes, allowances, tolerances, and gaging practice for standard gages used in gaging threads that meet Unified Inch Screw Thread.

APPLICABILITY OF REFERENCED DOCUMENT

Pages 42-82 and Table 10" Gages for Standard Thread Series Limits of Sizes shall apply.

DOCUMENT

ANSI B18.2.2-1983, "Square and Hex Nuts"

APPROVED REVISIONS

1983

SYNOPSIS

This Standard specifies sizes, series materials and description of Hex Nuts. Heavy Pattern used in Stud and Nut Combination for bolting flanges together.

APPLICABILITY OF REFERENCED DOCUMENT

Sections 1, 2 and Table 9 (including notes)

DOCUMENT

API Specification 5B, "Threading, Gaging and Thread Inspection of Casing, Tubing and Line Pipe Threads."

APPROVED REVISIONS

May 31, 1988

SYNOPSIS

This specification covers dimensional requirements on threads and thread gages and stipulations on gaging practice, gage specifications and certification as well as the instruments and methods for the inspection of threads.

APPLICABILITY OF REFERENCED DOCUMENT

Tables 2.1 thru 2.9 and Section 3 shall apply.