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1.0 SCOPE

1.1 This Practice covers supplemental requirements for valves. Specific requirements for each valve type are provided in a separate Practice, see RP 5-3-1 .

1.2 Any deviation from this Practice must be approved by the procedure described in RP 0-1-3 .

1.3 An asterisk (*) indicates that a decision by the Owner's Engineer or Owner is required, or that additional information is furnished by the Purchaser.

1.4 A revision bar indicates all changes made to this Revision.

2.0 REFERENCES

The latest edition of the following standards and publications are referred to herein, and shall be used with this Practice.

STANDARDS AND PUBLICATIONS

BP Oil Refining Practices

RP 0-1-3	Deviations to BP Oil Refining Practices
RP 5-1-2	Piping Layout
RP 5-2-3	BP Oil Piping Standards (BPOPS)
RP 5-2-5	Valve Data Sheets
RP 5-3-1	Valve Design and Selection Criteria
RP 5-3-14	Pressure Relief Valves
RP 5-3-19	Valve Inspection and Testing
RP 5-3-19 IC	Valve Inspection and Testing Inspection Checklist
RP 18-4-1	Export Protection and Packaging of Equipment
RP 20-1-4	Positive Materials Identification (PMI)

ASME/ANSI Standards

B35.10	Welded and Seamless Wrought Steel Pipe
B36.19	Stainless Steel Pipe

ASME Codes

Sec. 1	Power Boilers
Sec. VIII	Pressure Vessels, Division

API Standards

RP 591	User Acceptance of Refinery Valves
Std 526	Flanged Steel Pressure Relief Valves
Std 607	Fire Test for Soft-Seated Quarter-Turn Valves

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

3.0 DEFINITIONS

3.1 Certificates of Compliance – A document by which the material manufacturer (or Seller to the extent that the Code allows) certifies that the material represented has been produced and tested in accordance with the requirements of the basic material specification shown on the certificate. Objective evidence of compliance with the requirements of the material specification shall be maintained in the records of the material manufacturer. However, certificates of compliance shall include reports or results of tests required by the material specification or the Order.

3.2 Certified Material Test Report (CMTR) – A document, or documents, on which are recorded the results of tests, examinations, repairs, or treatments required by the Material Specification. Supplementary or special requirements, in addition to the requirements of the Material Specification, as required by the Purchase Order shall also be included on the CMTR. The specification of the material being represented including the year of issue, and the material heat number shall also be included on the CMTR. All such documents shall identify the applicable Material Specification and shall be identified to the material represented.

3.3 Inspector – A BP Oil Company appointed engineer or inspector.

3.4 Manufacturer – The recipient of a direct or indirect purchase order for materials and/or equipment. In this context, a direct order is one issued to a manufacturer by a contractor or the Owner. An indirect order is one issued to a manufacturer by a vendor (recipient of a direct order) for materials, fabricated components, or subassemblies.

3.5 Owner – BP Company.

3.6 Owner's Engineer – A BP Company appointed engineer.

3.7 Purchase Order – The contractual document given to the Manufacturer to authorize a purchase.

3.8 Purchaser – The party placing a direct purchase order. The purchaser is the Owner's designated representative.

3.9 Quality Control System – The Manufacturer's documented system for ensuring that all applicable code requirements for the manufacturing process including material handling and identification, design, fabrication, inspection and testing are followed.

4.0 DATA FURNISHED BY THE PURCHASER

4.1 The Purchaser shall provide the following information:

1. Procurement documents
2. Completed Valve Data Sheet per the applicable BP Practice, see RP 5-3-1 or RP 5-2-5 .
3. Applicable BP Practices with approved addenda.
4. Inspection Checklist per RP 5-3-19 IC if applicable, see RP 5-3-19 .

4.2 As a minimum, a schedule for receipt of the following information and the required number of copies will be specified by the Purchaser.

1. Completed valve data sheet
2. Completed valve inspection checklist per RP 5-3-19
3. Subvendor names and addresses
4. Material mill test reports or certificates of compliance
5. Welding Procedure Specifications (WPS) and Procedure Qualification Records (PQR), weld maps, welder or welding operator qualification tests
6. Quality control system
7. NDE procedures, Personnel qualification Certificates for NDE, and Required Code Reports for NDE (see paragraph 6.5)
8. Recommended spare parts list for non-standard valves
9. Detailed fabrication drawings for fabricated or prototype valves (see paragraph 6.7)
10. PMI Report per RP 5-3-19 and RP 20-1-4
11. Pressure Test Results and API 598 certification per RP 5-3-19
12. Fire test certification API 607 per RP 5-3-19
13. Casting drawings and documentation package for special purpose valves per RP 5-3-19

5.0 MANUFACTURER'S RESPONSIBILITY

5.1 General

1. The Manufacturer shall assume responsibility for designing, fabricating, or procuring all valve(s) to perform in accordance with the requirements of the Purchaser.

2. The Manufacturer shall provide the information described in paragraph 4.2. The number of copies and schedules shall conform to the Purchaser's requirements.

3. The Manufacturer shall supply valves only from Manufacturers approved by the Purchaser.

5.2 Conflicting Requirements

The Manufacturer shall refer all conflicting requirements contained in the Purchase Order to the Purchaser in writing for clarification and resolution before proceeding with the manufacture or procurement of the affected part. The Manufacturer is not at liberty to assume which requirements govern.

5.3 Quality Control

1. The Manufacturer shall have as part of his usual business practice an established, routine, and documented quality control program. This program shall be used to provide verifiable evidence that the materials, design, fabrication, examination, inspection, and testing of the valve(s) conform to the specifications and requirements established in the Purchase Order.

2. The Manufacturer's quality control program shall meet or exceed the quality assurance guidelines stipulated in API 591.

3. When requested, the Manufacturer shall submit his quality control program for the Purchaser's review and acceptance.

5.4 Marking

1. All valves, except pressure relief valves, shall be marked in accordance with the industry standard to which they are manufactured. If a marking criteria does not exist, MSS SP-25 shall be used as the minimum guideline. Pressure relief valves shall be marked as follows:

   a. All pressure relief valves not specified to be stamped in accordance with ASME Section I shall be stamped in accordance with ASME Section VIII, Division 1.
   b. Each pressure relief valve shall have a stainless steel nameplate permanently attached to the body or bonnet. The nameplate shall be stamped with the data specified in Appendix A of API 526.

2. Stamping on all austenitic stainless steels and impact tested materials shall be with "low-stress" steel stamps having round or "U" shaped cross sections or with "interrupted-dot" die stamps.

3. Marking with paint or ink on all austenitic stainless steels shall be with a water insoluble material that contains no harmful substance; e.g., metallic pigments, sulfur, or chlorides, which would harmfully affect austenitic stainless steels at ambient or elevated temperatures.

4. In addition to the requirements of paragraph 5.4.1, all valves shall be identified by the BP Oil Valve Identification Tag per RP 5-2-3 and the valve manufacture date stamped in characters approximately 3/16 inch, preferably on the Manufacturer's valve name plate or on a corrosion resistant metal tag. Metal tags, if used, shall be attached to the valve by riveting (preferably) or by corrosion resistant wire.

5. All valves having a preferred direction of flow shall have their bodies legibly marked with an arrow cast on the valve body or the word "in" or "inlet" cast or stamped on the inlet end of the body to indicate the direction of flow.

6. Buttwelded end valves shall have supplementary tagging with information as specified in the Requisition/Purchase Order or Data Sheets. Supplementary tagging shall contain the following information: Valve Commodity Number, Valve Bore (per ASME/ANSI B36.10 or B36.19), Line Number Identification and Valve size. An example of a supplementary tag is shown below.

Valve ID Tag	: VCDAHCRH
Valve Size	: NPS 4 inch
Valve Bore	: STD WT
Line No.	: S 1005

7. All valves shall be marked "Fire-Safe PER API 607" when specified in the valve purchase description.

8. Manufacturer's standard valves shall be permanently marked or tagged with the valve temperature pressure rating at 100°F and at maximum rated temperature.

9. Soft seated welding end, socket welding, and threaded end valves requiring seal welds, shall be provided with a warning tag to require removal of all soft sealing materials from valve prior to welding.

10. Valves which have been tested for leakage through the open body bleed shall be permanently marked or tagged "Bleed-Tested".

11. Valves for underground service or for installation at bottom of vessels shall require additional tagging as specified in the order.

12. Emergency Block Valves (EBV) per RP 5-1-2 shall be tagged with the applicable Type designation.

13. All markings shall be in English.

5.5 Packaging and Shipping

1. Unmachined exterior surfaces of valves shall be painted in accordance with the manufacturer's standard; however, austenitic and non-ferrous surfaces shall not be painted. Exposed machined metal surfaces shall be clean, covered with two layers of Marvelpac #12 or equivalent preservative paper, and secured at the loose end(s) with rubberbacked waterproof tape.

2. Austenitic stainless steels and high nickel alloy materials shall not be in contact with any substance which contains chlorides.

3. Threaded or socket weld end connections on valves shall have a tight fitting metal or plastic plug. Additional end protection, if required, will be specified in the Purchaser Order.

4. Flanged end connections on valves shall have a tight fitting metal or plastic plug. Additional end protection, if required, will be specified in the Purchaser Order.

5. The inside of all valves and components shall be dry and free of debris before the covers or caps are attached.

6. All soft seated plug, gate and ball valves shall be shipped in the open position. Butterfly valves shall be shipped in the closed position. All other valves shall be shipped in the closed position.

7. The Manufacturer shall be responsible for suitably packaging the valve to protect it from damage or loss during handling and shipment and any special requirements or storage conditions specified in the Purchase Order.

8. Valves shall be prepared for shipment in such a manner so as to minimize damage or atmospheric corrosion to inside or outside surfaces, or parts, during storage or while in transit. Particular attention shall be given to the protection of austenitic stainless steel from exposure to salt water or salt spray during shipment and storage.

9. The Manufacturer shall optimize the size, weight, and complexity of the packaging and packaging materials to minimize the cost of transport, handling, storage, and field removal of packaging material. Containerized and unitized packing procedures shall be utilized to the greatest extent possible. The valve shall be packed to ensure an even distribution of weight within the package and shall include lifting lugs or designated lifting points.

10. Threaded and socketwelded valves shall be packed in wooden boxes or kegs. Net contents per container shall not exceed 200 lbs.

11. All packaging and protective material shall maintain its integrity and perform its intended function through all phases of handling, transport, and storage.

12. Each shipping package shall be durably marked with the receiving address, Purchaser's valve number, Purchase Order Number, Requisition number, and Project Number.

13. Valves shall not be transported as open above deck cargo without prior written approval of the Purchaser.

14. In addition to the requirements stated herein, shipping and packaging shall be in accordance with the specifications referenced in the Purchase Order.

15. Additional requirements for export packaging and shipping are covered in RP 18-4-1 .

6.0 DOCUMENTATION

6.1 Documentation requirements for vlaves are covered in Table 1. Copes of the Quality Control System and NDE procedures and test results are not required unless specified by the Owner's Engineer.

6.2 All records indicated herein shall be fully identified with the specific materials they represent. All records shall be available for examination by the Purchaser or its representative at the time and place of inspection, whether at the point of manufacture or at the distributor's location. These records shall be kept for five years after the valve(s) have been shipped.

6.3 Unless otherwise specified in the Purchase Order, Certified Material Test Reports are required for all valve pressure containing components except for bronze, cast iron and ductile iron valves. Certificates of Compliance are permitted in lieu of Certified Material Test Reports for the following cases:

1. For valve or valve components acquired from stock for which material test reports are not obtainable.

2. When the marking of materials covered in paragraph 6.1 are missing or are removed during fabrication operations, provided certification of the unmarked material is acceptable to the Inspector; to the governing standard, specification, or code; and provided the Manufacturer can furnish evidence that the certification is accurate. The use of a certificate of compliance shall be permitted in this case, only if accompanied by material test reports whose number shall be listed in the certificate.

6.4 When the examinations, tests, or operations referred to in the following subparagraphs are included in the fabrication sequence, the Manufacturer shall retain the following records.

1. Written procedures and personnel qualification certificates for all applied nondestructive testing, such as radiographic, ultrasonic, magnetic particle, and liquid penetrant.

2. Examination reports for the results of required magnetic particle, liquid penetrant, radiographic, ultrasonic, or other methods of examination; and certified results of all impact tests.

3. Charts or other records of required hydrostatic, pneumatic and other tests. Test logs shall include the date, testing fluid, duration of the test, temperature of the test fluid, test pressure, a description of the tested valve, a traceable identifying number such as a shop order number, and the signature of the manufacturer's shop inspector witnessing the test.

4. Pyrometer charts or other detailed records of heat treatment performed such as postweld, normalizing, and heating for forming.

5. A detailed description of all repair, including a sketch, photo, or drawing indicating the location and size of the repaired area.

6. Other material records when specified by the applicable code or the material specification or as required by the purchaser.

*6.5 When welding is included in the fabrication sequence of the manufacturer or any of his subvendors, records and forms shall be handled as follows:

1. For commodity valves, Welding Procedure Specifications (WPS) and the Procedure Qualification Records (PQR) shall be made available to the Owner's Engineer. For non–commodity, special order valve, WPS and PQR shall be submitted to and approved by the Owner's Engineer before fabrication can start.

2. Welder/welding operator qualification test results shall be retained by the Manufacturer for five years.

3. Radiographic film is to be retained in the shop for review by the Inspector.

6.6 Engineering data requirements shall conform to the following:

1. Certified dimensional drawings of valves shall be submitted to the Purchaser for review and approval, when catalog dimensional data are not available.

2. Certified dimensional drawings shall include all valve components complete with the respective material specification and description.

6.7 The Inspector may require documentation in addition to that specified as a basis for acceptance of valves which are not properly marked, exhibit insufficient markings, or those of suspect quality. The nature of the documentation shall be as determined by the purchaser to ensure the quality of the material.

6.8 Supplemental requirements for valve inspection, other than pressure relief valves, are covered in RP 5-3-19 . Supplemental requirements for pressure relief valve inspection and testing are covered in RP 5-3-14 .

6.9 Design calculations shall be provided for all prototype and custom valves. These calculations shall be provided in sufficient detail to show compliance with the stipulated design standard.

7.0 INSPECTION AND REJECTION

7.1 All Manufacturer's facilities, materials, and fabrication work shall be subject to inspection by the Inspector.

7.2 All shop drawings of the valve(s) shall be available to the Inspector at the time of inspection. Surfaces shall not be painted nor the valve shipped until the inspection is complete.

7.3 The Inspector is not the authorized inspector responsible for performing ASME Code inspections.

7.4 Completed valves, parts of valves, or materials containing defects originating with the Manufacturer's design, materials, or workmanship; or that are not in complete compliance with the requirements of the Purchase Order will be rejected.

TABLE 1
DOCUMENTATION REQUIREMENTS
FOR VALVES PER RP 5-3-16

Item	Description	Format	As-Built
1	Completed Valve Data Sheet per RP 5-2-5 .	CALS G4 TIFF (Compressed)	Yes
2	Completed Valve Inspection Checklist per RP 5-3-19	CALS G4 TIFF (Compressed)	Yes
3	Material Test Reports or Certificates of Compliance per paragraphs 6.3.	CALS G4 TIFF (Compressed)	Yes
4	Welding Procedure Specifications (WPS), Procedure Qualification Records (PQR), Weld Maps and Welding Operator Qualification Tests per paragraph 6.5.	CALS G4 TIFF (Compressed)	Yes
5	Quality Control System per paragraph 6.1.	CALS G4 TIFF (Compressed)	Yes
6	Copies of NDE procedures, test results and repairs per paragraph 6.4.	CALS G4 TIFF (Compressed)	Yes
7	Recommended spare parts lists for non-standard valves.	CALS G4 TIFF (Compressed)	Yes
8	Detailed fabrication drawings for fabricated or prototype valves per paragraph 6.7.	CALS G4 TIFF (Compressed)	Yes
9	PMI Report per RP 5-3-19 and RP 20-1-4	CALS G4 TIFF (Compressed)	Yes
10	API 598 certification per RP 5-3-19 .	CALS G4 TIFF (Compressed)	Yes
11	API 607 fire test certification per RP 5-3-19 .	CALS G4 TIFF (Compressed)	Yes
12	Casting drawings and documentation package for special purpose valves per RP 5-3-19 .	CALS G4 TIFF (Compressed)	Yes
13	Design calculations per paragraph 6.10.	CALS G4 TIFF (Compressed)	Yes