

**SECTION 23 08 11
DEMONSTRATIONS AND TESTS FOR BOILER PLANT**

SPEC WRITER NOTES:

1. Delete between // // if not applicable to project. Also delete any other item or paragraph not applicable in the Section and renumber the paragraphs.
2. The spec writer shall review the Physical Security and Resiliency Design Manual for VA Facilities to determine and include in this section any Mission Critical or Life Safety requirements called out.
3. Provide the year of latest edition to each publication listed in Article 1.3 APPLICABLE PUBLICATIONS.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Procedures for onsite demonstration and testing of equipment and systems, including temporary facilities.
- B. Instruction of Government operating personnel.
- C. All demonstrations, instructions, access platforms, and testing must be completed prior to Government acceptance for beneficial use. All safety devices shall pass 100 percent before the boiler plant can be accepted for beneficial use.
- D. Plumbing and emergency power systems are not included.
- E. Definitions:
 1. Start-Up: Initial inspection, cleaning, lubrication, adjustment, and operation of equipment and systems by the contractor with the assistance of the representatives of the equipment manufacturers.
 2. Pre-Tests: The final stage of the start-up procedure. This occurs after all adjustments have been made except for minor fine-tuning that can be done during the pre-test. Serves as verification that the systems are ready for the final test. Witnessing of pre-test by COR is not required.
 3. Final Tests: Tests, witnessed by the COR or designated representative, which demonstrate that all equipment and systems are in compliance with requirements. At VA expense, VA may utilize the services of an independent testing organization or consultant to witness the tests. If any portion of the final test fail and must be retested the Government shall receive a full credit for any expenses

incurred for services from independent testing organizations or consultant services for all re-inspections or tests.

- F. A complete listing of common acronyms and abbreviations are included in Section 23 05 10, COMMON WORK RESULTS FOR BOILER PLANT AND STEAM GENERATION.

1.2 RELATED WORK

- A. Section 01 00 00, GENERAL REQUIREMENTS.
 B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 C. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
 D. //Section 01 91 00, GENERAL COMMISSIONING REQUIREMENTS.//
 E. Section 23 05 10, COMMON WORK RESULTS FOR BOILER PLANT AND STEAM GENERATION.
 F. Section 23 05 51, NOISE AND VIBRATION CONTROL FOR BOILER PLANT.
 G. //Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//
 H. Section 23 09 11, INSTRUMENTATION AND CONTROL FOR BOILER PLANT.
 I. Section 23 10 00, FACILITY FUEL SYSTEMS.
 J. Section 23 21 11, BOILER PLANT PIPING SYSTEMS.
 K. Section 23 50 11, BOILER PLANT MECHANICAL EQUIPMENT.
 L. Section 23 52 33, WATER-TUBE BOILERS.
 M. Section 23 52 39, FIRE-TUBE BOILERS.

1.3 APPLICABLE PUBLICATIONS

SPEC WRITER NOTE:

1. Make material requirements agree with requirements specified in the referenced Applicable Publications. Verify and update the publication list to that which applies to the project, unless the reference applies to all mechanical systems. Publications that apply to all mechanical systems may not be specifically referenced in the body of the specification, but, shall form a part of this specification.

2. Insert the year of approved latest edition of the publications between the brackets and delete the brackets //----// if applicable this project.

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standard will govern.
- B. Department of Veterans Affairs (VA):

//2008//.....VHA Boiler Plant Safety Devices Testing Manual,
Third Edition

PG-18-10-//2015//.....Physical Security and Resiliency Design Manual

1.4 SUBMITTALS

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 23 08 11, DEMONSTRATIONS AND TESTS FOR BOILER PLANT", with applicable paragraph identification.
- C. Names and qualifications of personnel performing demonstrations, instructions and tests.
- D. Certification that pre-testing is complete. Copies of boiler-burner and feedwater deaerator pre-test data as specified. Copies of the VHA Boiler Plant Safety Devices Testing Manual completely filled out with notes.
- E. Preliminary schedule of all demonstrations, instructions and final tests two weeks prior to proposed dates.
- F. Provide reports within three weeks after satisfactory completion of demonstrations, instructions, and tests. List date, type of work, persons participating, amount of time, test results, calculations of test results, test data.
- G. //Completed System Readiness Checklists provided by the Commissioning Agent and completed by the contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//
- H. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

1.5 QUALITY ASSURANCE

- A. Experienced, trained technical service personnel who are representatives of the equipment manufacturers and system designers shall demonstrate, provide instructions, pre-test and final test, as specified, the following equipment:
 - 1. Boilers and economizers
 - 2. Burners
 - 3. Control systems
 - 4. Instrumentation

5. Deaerating feedwater heater
 6. //Steam turbines//
- B. Experienced technicians shall demonstrate and provide instructions on the following equipment:
1. Pumps and piping systems
 2. Ventilation and heating systems
 3. Compressed air systems
 4. Control and safety valves
- C. The person responsible for programming the computer workstation shall demonstrate and provide instructions on hardware, software and programming.
- D. The COR, upon request, will provide a list of personnel to receive instructions and will coordinate their attendance at agreed upon times.
- E. All safety devices shall comply with the VHA Boiler Plant Safety Devices Testing Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION FOR FINAL TESTS, DEMONSTRATIONS, AND INSTRUCTIONS

- A. Verify that equipment and systems are fully operational. Complete all start-up and pre-test activities for all equipment and systems. Complete all construction and finish work.
- B. Arrange for all test personnel for all equipment to be continuously present during one period of time so that all equipment and systems can be tested in their interrelated functions. For instance, feedwater deaerator will be tested during the boiler testing, and instrumentation performance will be evaluated in conjunction with boiler testing.
- C. Deliver maintenance and operating manuals four weeks prior to instruction period.
- D. Furnish all special tools.

3.2 FINAL TESTS

- A. Demonstrate proper operation of each equipment and system to include demonstration and testing of all safety devices.
- B. Provide tests on equipment as specified in the individual specification sections.

3.3 START-UP AND TESTING

- A. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.

- B. //The Commissioning Agent will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR and Commissioning Agent. Provide a minimum notice of 10 working days prior to startup and testing.//

3.4 //COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.
- B. Components provided under this section of the specification will be tested as part of a larger system.//

3.5 DEMONSTRATIONS AND TRAINING

- A. Demonstrate operation and maintenance of equipment and systems to Government personnel no more than four weeks prior to scheduled Government operation of the plant.
- B. Use operation and maintenance manuals, as-built drawings, and single line drawings as basis of instruction. Review contents of manuals and drawings with personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shut-down of each item of equipment. Allow Government personnel to practice operating the equipment under supervision of instructors.
 - 1. All demonstrations shall follow a contractor provided written step by step standard operating procedure.
 - 2. Demonstrate lockout/tagout locations for all equipment and hazards using a written procedure that clearly identifies lockout points (breakers, disconnects, valves, etc.) for each piece of equipment. Valves are to be identified by a valve tag number, breakers are by number located in breaker box number, disconnect location and number etc.
 - 3. Demonstrate the as-built drawings are correct and provide single line drawings for each system.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

SPEC WRITER NOTE: Provide video specified below if required by the VAMC.

- E. //Provide video with audio of all instructions given orally to VA personnel. Provide four copies of the DVD.//

- F. Provide services of manufacturer's technical representative to instruct VA personnel in operation and maintenance of units.
- G. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

SPEC WRITER NOTE: Consult with the VAMC to establish their needs for training and adjust hours below as appropriate.

3.6 TIME ALLOCATED FOR DEMONSTRATIONS AND INSTRUCTIONS

- A. At least //32// //16// total instructor hours to include boilers, economizers, burners, burner controls, combustion controls, instrumentation.
- B. At least //16// //8// total instructor hours to include computer workstation and programs.
- C. At least //8// //4// total instructor hours to include pumps, steam turbine, feedwater deaerator, and other equipment.
- D. If project includes a temporary boiler plant, provide //32// //16// total instructor hours on the temporary equipment.
- E. Do not exceed three trainees per session, one four-hour session, per day, per trainee.

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