

BOILER OPERATION

1. Version, Date. 1, 23 January 2008 (EMS)

2. Purpose

a. This procedure establishes the requirements for boiler operations at Marine Corp Base, Quantico (MCBQ). Complying with these requirements assists with the management of boilers at MCBQ, in accordance with the Base's air operating permit(s) and Virginia State Air Pollution Control Regulations (SAPCR).

3. Applicability

a. Audience. The procedure applies to all personnel responsible for the operation and maintenance of boilers.

b. Scope. Boilers throughout the Base are regulated through various air permits, which have specific operating requirements. Given the numerous requirements that are tailored for each boiler, this ESOP focuses on the broader procedures in place for environmental compliance. If one has a technical question concerning boiler operation or maintenance, they should refer to the manufacturer's operation manual. Procedures that are associated with boiler operations, but are provided as separate ESOPS include: Fuel Storage-Above Ground Storage Tanks (ASTs) and Fuel Storage - Underground Storage Tanks (USTs).

4. Definitions. The following definitions are provided to support this procedure:

a. Boiler - "Fuel burning equipment", any furnace, with fuel burning equipment appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat to be utilized by indirect heat transfer, or by indirect production of power. This includes facilities that are designed as boilers to produce steam or heated water and are designed to burn either fossil fuel or refuse derived fuel.

b. Boiler owner/operator - person responsible for performing maintenance on a boiler and reporting monthly inspection data to the Air Program Manager (APM).

(1) If the boiler is addressed in the Performance Work Statement, then Facilities Logistics Service Section (FLSS) is responsible for work on the boiler. FLSS ensures that inspection and service of the boiler are conducted in accordance with this ESOP.

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(2) If the boiler is serviced under contract with Ameresco, they are responsible for that boiler's maintenance. Ameresco ensures that inspection and service of the boiler are conducted in accordance with this ESOP.

(3) If the boiler is not owned by FLSS or Ameresco, it is the responsibility of the facility owner/operator which utilizes the boiler to ensure that inspection and service of the boiler are conducted in accordance with this ESOP.

5. Responsible Parties. The following parties are responsible for activities associated with the O&M of boilers at MCB, Quantico.

a. Boiler owner/operators

(1) FLSS

(2) Ameresco

(3) Other contractors or maintenance personnel

b. Designated Government Representative (DGR)

c. Natural Resources & Environmental Affairs (NREA) Branch, Air Program Manager (APM)

d. NREA Branch, Training Coordinator

6. Procedures (Instructions for Operational Control) for Boilers

a. A copy of all relevant operation, maintenance, and specification documentation, as provided by the boiler manufacturer, shall be maintained on the premises of the facility. Each unit shall be operated and maintained in adherence with that documentation to the degree appropriate and practicable with the intention of minimizing Nitrogen Oxides (NO_x) emissions (per Virginia Administrative Code, 9 VAC 5-40-310 and 9 VAC 5-40-311).

b. Fuel Requirements - If a boiler uses natural gas, propane, or petroleum fuel (provided through the MCBQ, Bulk Fuel Farm or contractor delivery), the fuel type must be in compliance with Base air permits for both the fuel type and record keeping requirements.

(1) If the #2 fuel oil for the boiler is not provided by the MCBQ, Bulk Fuel Farm, each fuel delivery must be certified or tested to verify that the sulfur content is less than 0.05 percent. Fuel certification and test results must be maintained onsite for a period of at least 5 years, and provided to APM. Fuel certificates must include the following:

(a) Name of fuel supplier

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(b) Date on which the fuel was received

(c) Volume of fuel delivered

(d) The sulfur content of the fuel

(2) Each #6 fuel oil delivery to the Camp Barrett Heat Plant must be certified or tested to verify that the sulfur content is less than 0.5 percent. Fuel certification and test results must be maintained onsite for a period of at least 5 years, and provided to the APM. Fuel certificates must include the following:

(a) Name of fuel supplier

(b) Date on which the fuel was received

(c) Volume of fuel delivered

(d) The sulfur content of the fuel

(3) Fuel certifications are not required for natural gas or propane.

c. Permitting - If a facility requires a new boiler, it must undergo an applicability determination review, performed by the APM of the NREA Branch. Any boiler that is determined by the APM to be subject to SAPCR, requires a formal review by the Virginia Department of Environmental Quality (DEQ). The APM is responsible for coordinating all permitting activities with the DEQ.

(1) A formal DEQ determination must be obtained prior to the installation of any boiler unit. Obtaining a timely determination from the DEQ requires a permit application. Once a permit application has been submitted to the DEQ, obtaining a permitting determination may take a minimum of 180 days; large capital projects may require significantly more time. Boiler construction projects that break ground prior to obtaining the necessary permits are out of compliance with the SAPCR and may be subject to enforcement and significant construction delays.

(2) All boilers with a rated capacity over 10 million Btu (No. 2 Fuel Oil) or over 50 million Btu (Natural Gas) will require a permit from the DEQ prior to the start of construction. Smaller units must be evaluated as part of the entire project. In order to evaluate the entire project, manufacturer specification sheets (or equivalent) must be sent to the attention of the APM, NREA Branch, who will communicate the information to the DEQ.

(3) Any changes to previously submitted boiler equipment designs (e.g. - change in fuel type) must be immediately submitted to the APM. Equipment shall not be installed prior to receiving a formal permitting determination from the DEQ. Failure to comply with this

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requirement may result in a notice of violation being sent to the Commander.

(4) Should any regulatory requirements change, NREA will notify the boiler owner of these changes and they shall comply with the new requirements.

d. The boiler owner/operator is responsible for developing a maintenance schedule that meets or exceeds the boiler manufacture's recommendations and should include:

(1) Records of all scheduled and non-scheduled maintenance.

(2) An inventory of all spare parts.

(3) All facilities with boilers must have logbooks of maintenance performed and inspection observations (refer to paragraph 7).

(4) Records of maintenance must be maintained on site for a period of five years, and be made available to DEQ personnel upon request (per 9 VAC 5-50-20 E).

e. Emissions. Whenever boiler emissions appear to be exceeding the permitted or regulatory visible emissions limit, the boiler owner/operator will notify the APM immediately and facilitate corrective actions, per paragraph 7 of this ESOP, in order to return the boiler to proper operation. This condition applies at all times except during startup, shutdown, and malfunction.

f. The quantity of fuel consumed by each boiler must be reported to the NREA APM on a monthly basis for the purpose of calculating air emissions (e.g. NO_x, Total Suspended Particulate, etc.). The NREA APM will maintain the annual throughput of boiler fuels, calculated as the sum of each consecutive 12-month period. These records shall be made available for inspection by the DEQ and shall be maintained for a period of five years.

g. Water Treatment Program. Not all boilers on Base use water that requires treatment, refer to the manufacture's boiler manual, recommended maintenance procedures to determine the need.

(1) To prevent boiler failure, boiler water shall be treated in accordance with NAVFACINST 11300.37A, NAVFAC MO-225 and the boiler manufacturer's guidelines.

(2) Water standards shall be maintained within the parameters listed in the Consensus on Operating Practices for the Control of Feedwater and Boiler Water Chemistry in Modern Industrial Boilers guidebook.

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(3) Water treatment program logbooks shall include the frequency of sampling and analysis and be in consensus with 40 CFR 60 Subpart Dc. Water treatment program logbooks are maintained by the boiler owner/operator for periods of at least one year before starting a new log.

7. Inspection and Corrective Action

a. Boiler Certification. If a boiler has a heating value of 400,000 British Thermal Units (BTUs) or greater, the boiler owner/operator is responsible for having a NAVFAC-certified boiler inspector certify the boiler annually.

(1) The boiler owner/operator shall provide inspectors with all material and labor necessary to prepare boilers for inspection in accordance with the National Board of Boiler and Pressure Vessel Inspection Code (NBBI Code) and in accordance with all procedures specified in Unified Facilities Criteria (UFC) 3-430-07 (supersedes Military Handbook 1152).

(2) The boiler owner/operator shall assist the inspector and take corrective actions, including any adjustments or repairs, necessary for certification.

(3) Inspection reports must be provided or made available to the APM.

b. Inspection. In addition to the annual certification inspections mentioned above, all boiler owner/operators must ensure that boiler inspections and maintenance are performed as recommended by the manufacturer.

c. Corrective Actions. Boiler emissions shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction. During boiler operation, if visible emissions appear to exceed applicable limits, boiler owner/operators will:

(1) Immediately notify the APM.

(2) Remove the unit from service and determine what maintenance or repairs are required to bring the boiler into compliance with permit limits.

(3) Document the maintenance and repairs performed on the boiler that result in repairing or replacing any component of the boiler, the boiler's pollution control device(s), or the boiler as a whole, and provide that information to the APM.

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(4) Modify or replace boiler components or pollution control devices after receiving approval from the APM or replacing the component or device with part(s) like (i.e., same model number) existing parts.

(5) The APM (not the boiler owner/operator) will perform a visible emission evaluation to demonstrate compliance with the opacity limit before the unit is returned to service.

(6) If the boiler cannot meet the opacity standard, appropriate action must be agreed upon and implemented by MCBQ and the DEQ before the boiler is returned to service. The APM is responsible for working with the DEQ to reach any agreement.

8. Internal Communication. Included in paragraphs 6 and 7 of this ESOP.

9. Training/Awareness

a. FLSS and Ameresco provide and document initial and annual instructions to enable employees to conduct their work in a safe manner and to recognize and report hazardous conditions. Training responsibilities include:

- (1) Safe practices
- (2) Proper use, care, and maintenance of tools and equipment
- (3) Accident reports and individual responsibility for accident prevention
- (4) Known hazards in work areas
- (5) Manufacturer's recommended training on the operation and maintenance of the applicable boiler
- (6) Applicable regulations and/or permits and their effect on the operation of the boiler
- (7) Training to conduct visible emissions observations.
- (8) The boiler owner/operator also develops procedures to ensure newly hired employees are properly trained prior to work assignment.
- (9) Boiler owners/operators are responsible for maintaining a file of employees who have attended training, including the name of the employee, date of training, location of training, and nature of training received.

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b. Boiler owner/operators shall conduct/attend safety training that includes, but is not limited to, the following topics as applicable:

- (1) Petroleum, Oil, and Lubricants (POL) handling and storage
- (2) Vehicle operations
- (3) Packaging and shipping
- (4) Proper techniques in lifting and stretching
- (5) CPR
- (6) Hazardous materials (HAZMAT) storage, shipping, and handling
- (7) Confined space entry
- (8) Respiratory protection
- (9) Hazard Communication (HAZCOM)
- (10) Lock out/Tag out
- (11) Personal Protective Equipment (PPE)

c. The NREA Training Coordinator trains boiler owners/operators and the APM on the applicable provisions of this ESOP.

d. The NREA Training Coordinator and NREA APM provide or facilitate an annual combustion sources class to ensure all responsible parties are aware of any and all regulatory or MCB Quantico permit requirements.

e. The APM provides additional guidance to appropriate personnel regarding this procedure. Guidance may include, but is not limited to, clarification of the information process, and recordkeeping requirements.

10. Emergency Preparedness and Response

a. Boiler owners/operators witnessing a fire or accident call the fire department by dialing 911. The boiler operator must maintain a log recording the time of notification, the person notified, and scope of the emergency.

b. Boiler owners/operators must comply with installation, OSHA and other regulatory agency requirements for record keeping and reporting of all accidents in the course of work which result in death, trauma, occupational disease, or environmental damage. Contracted boiler owners/operators must provide a verbal report to the applicable Public Works Officer within two hours of occurrence and a

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written follow-up report within two working days whenever an accident involving personal injury occurs.

c. If an emergency event involves violations of air regulations, the APM must be notified. The APM contacts the DEQ regarding any compliance issues with SAPCR or MCB Quantico's air operating permit(s).

11. References and Related Documents

a. Ameresco Boiler Maintenance and Inspection Procedures

b. Boiler Water Chemistry in Modern Industrial Boilers prepared by ASME Boiler Manufacturer's Instructions

c. MCB Quantico Minor New Source Review permit (facility ID# NVRO70267), effective 08/01/05

d. MCB Quantico Title V Air Permit (facility ID# NVRO70267), effective 09/02/03

e. Virginia State Air Pollution Control Regulations (SAPCR) (9 VAC 5-40-50 and 9 VAC 5-20-160)

f. National Board of Boiler and Pressure Vessel Inspection Code (NBBI Code)

g. NAVFACINST 11300.37A, NAVFAC MO-225

h. Performance Work Statement (10/2000)

i. Unified Facilities Criteria (UFC) 3-430-07 (supersedes Military Handbook 1152).

12. Document Revision History. The following provides a history of revisions of this ESOP:

Revision Number	Date	Revision Made By	Section	Page	Summary of Change and Reason	Signature

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13. Document Owner. This document has been reviewed and approved by the document owner. Any revisions or future updates to the procedure will be completed by the document owner as needed.

a. Document Owner. Air Program Manager, NREA Branch

b. Document Approval. Chair, EMS Core Team, NREA Branch

