

## CLEAN SHIPBOARD VENTILATION SYSTEMS

### 1. SCOPE

1.1 Scope. This standard specification describes the requirements for the Contractor to clean the shipboard ventilation systems onboard Coast Guard vessels.

### 2. APPLICABLE DOCUMENTS

None

### 3. REQUIREMENTS

#### 3.1 General.

3.1.1 Personnel qualification. The Contractor shall demonstrate that all personnel are competently trained and adequately supervised, to ensure that all ventilation cleaning and inspection requirements are carried out in accordance with this standard specification.

3.1.2 Ventilation. The Contractor shall provide equipment to adequately ventilate (positively or negatively) each compartment that is affected by shipboard ventilation ductwork cleaning or by securing associated fans. Ensure that the volumetric rate of ventilating airflow provided by the Contractor is no less than is required by the existing shipboard ventilation system.

3.1.3 Protective measures. The Contractor shall wrap, cover, or mask equipment and machinery in the immediate area of the vent system access covers and screen removals, to prevent contamination while vent work is in progress.

3.1.4 Marking. Mark the positions of all dampers and any air-directional mechanical devices within the ventilation systems before cleaning, and to return the settings to their marked positions upon completion of ventilation cleaning.

3.2 Flow rate measurements. Before any disassembly and cleaning, the Contractor shall obtain flow rate readings (in cubic feet per minute) at each intake and exhaust location while the installed ventilation system is running. Submit all findings to the (Contracting Officer Representative) COR within 24 hours

after taking the measurements.

3.3 Mechanical cleaning. The Contractor shall mechanically clean all interior surfaces of the vent ductwork system including all internal associated equipment to a condition free from dirt, grease, lint, impurities, and any other foreign matter. Clean the vent system in its entirety from the point where the air enters the system to the point where the air is discharged from the system.

3.3.1 Remove all intake and exhaust screens. Tag each removed screen with an identifying mark and a corresponding mark on the flange from which the screen is removed

3.3.2 Remove all vent system access covers or remove sections of ductwork as required, to completely clean all vent interior surfaces. Vacuum the ductwork using a brush-type vacuum attachment.

3.3.3 Wipe down the vent system fan blades and vacuum the fan motor exterior, to remove accumulated dirt.

3.3.4 Vacuum and inspect dampers and venturi tubes to ensure there are no obstructions to restrict airflow.

3.3.5 Clean, inspect, lubricate, and exercise all directional closures and other vent fittings to ensure smooth operation.

3.3.6 Scrub with hot soapy water to remove the grease, and thoroughly dry vent ducts found to have grease accumulation. If vent ducts are inaccessible, remove first the section closest to the grease contamination source. Remove other sections as required to complete cleaning of all grease-contaminated vent ducts.

3.3.7 If vent ducts are scrubbed in place, ensure water does not damage the surrounding area and equipment.

3.4 Dry ice blast cleaning. The Contractor may use dry ice blast cleaning method in lieu or in combination with mechanical cleaning methods when performing vent duct cleaning. However, dry ice blast cleaning shall not be used on heavy grease contaminated areas such as the Gaylord hood and galley vent ductwork.

3.4.1 Provide a high pressure air compressor with after coolers, palletized dry ice, a dry ice accelerator and a variety of nozzles for the specific cleaning application.

3.4.2 Clean all interior surfaces of the vent ductwork system

including all internal associated equipment to a condition free from dirt, grease, lint, impurities, and any other foreign matter using dry ice blasting method. Clean the vent system in its entirety from the point where the air enters the system to the point where the air is discharged from the system.

3.4.3 Provide a suction blower and filter system on the outboard end of the system being cleaned to capture all the dirt and debris dislodged from the blast cleaning.

3.4.4 Any areas where the dry ice blast cleaning is ineffective shall be cleaned by conventional mechanical cleaning methods.

3.5 Coil cleaning. When cleaning heat or cooling coils, the contractor shall avoid use a method that will force contaminant further into the coil. Use of a vacuum collection method is considered appropriate. After completion of cleaning cooling coils, wash the coils, condensate tubes and drip pans with sanitizing agent.

3.6 Inspections. The Contractor shall:

3.6.1 Advance inspection notice. Provide the Coast Guard Inspector with 24 hours advance written notice of each pending inspection.

3.6.2 Cleanliness. In the presence of Coast Guard Inspector, the Contractor shall visually inspect the vent ductwork interior surfaces for cleanliness after completion of vent duct cleaning. For areas where difficult to access, boroscope inspection is considered an acceptable method.

3.6.3 Other inspections.

3.6.3.1 Visually inspect the vent ductwork thoroughly for corrosion, rust, holes, split seams, defective joiner flanges, and defective closure fittings.

3.6.3.2 Inspect all heat and cooling coils, piping, valves, and associated equipment located within the vents for leaks, corrosion, rust, or defective components.

3.7 Inspection report. The Contractor shall submit to the COR a written report of the results, with recommended repairs as required, within 24 hours of inspecting all vent duct-work (internal and external), surfaces and closure fittings, coils, pipes, valves or components located within the ductwork.

3.8 Vent ductwork and access cover reinstallations. After inspection and required repairs, the Contractor shall reinstall

all ductwork and vent access covers to their original configurations.

3.8.1 Gasket renewal. Renew all disturbed gaskets with in-kind material. If gasket is missing from the original ventilation flange installation, provide a new 1/8" thick soft rubber gasket.

3.8.2 Vent safety inspection. Ensure all tools, rags, and other foreign materials are removed from the vents before installing access covers.

3.9 Intake and exhaust screen reinstallations. The Contractor shall clean and reinstall the intake and exhaust screens to their original configurations. Furnish and install new gaskets with in-kind material.

3.10 Vent system inspection. After completing all required work and inspections, the Contractor shall ensure the vent system is completely assembled with all covers, screens, fasteners, and gaskets installed.

3.11 Operational testing. The Contractor shall coordinate with the Ship's force to energize each vent system fan motor independently to demonstrate the proper operation of each disturbed vent system. Ensure all personnel stand clear of vent outlets during this test. Visually inspect all duct joints for air leaks.

3.12 Post-cleaning flow rate measurement. After completion of ventilation cleaning, the Contractor shall take flow rate readings at the same locations with the ventilation system running. Compare the flow rate readings with the pre-cleaning readings, and submit the findings to COR within 24 hours after taking the measurements. The report shall identify all discrepancies found with recommended corrective action.

3.13 Outlet screen re-inspections. The Contractor shall visually re-inspect all vent outlet screens and remove any accumulated loose material.

3.14 Protective covering removal. After removing all protective coverings, the Contractor shall clean all areas disturbed by vent cleaning and inspection.

#### 4. QUALITY ASSURANCE

4.1 Failure responsibility. If any cleaning or inspection fails to meet the requirements, the Contractor shall:

4.1.1 Take corrective procedures and provide the materials to correct each deficiency.

4.1.2 Certify that all deficiencies have been corrected and withhold acceptance of any portion of work until the Coast Guard Inspector, during re-inspection, accepts the corrective action.

4.2 Required inspections. The Contractor shall be aware that the inspections required herein are the minimum required, and are not intended to supplant any controls, examinations, inspections, or tests normally employed by the Contractor, to ensure the quality of services provided.

## 5. NOTES

5.1 Ventilation. The term "ventilation" for purposes herein is the process of removing stale air and providing fresh air; the process is sometimes combined with heating, cooling, and air purification.

5.2 Coast Guard Inspector responsibilities. The Coast Guard Inspector will:

5.2.1 Document all work performed for inclusion into the cutter's Hull History and Machinery History.

5.2.2 Pay particular attention to any quality assurance provision required or discussed.

5.2.3 Note and prepare to take proper action to safeguard Coast Guard personnel against any health hazards that may occur.

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