

## GUIDELINES FOR FINAL ACCEPTANCE INSPECTION AND TESTING OF HALON 1301 TOTAL FLOODING SYSTEMS

### 1. GENERAL

1.01 Whenever a final acceptance inspection and testing of a Halon 1301 Total Flooding System is planned, it is strongly recommended that a dry run be conducted on all system functions prior to scheduling the dump test. The dry run and the dump test should not be scheduled for the same day to allow sufficient time for correction and/or adjustments to system operation.

1.02 The system should be inspected for:

- (a) Overall physical appearance
- (b) Completeness of installation
- (c) Damaged equipment
- (d) All warning and operating signs in place and visible.

### 2. CONTROL PANEL

2.01 The control panel should be checked as follows:

- (a) Visibility and accessibility.
- (b) Exercise *all* functions.
- (c) Check supervision, if applicable, of each circuit (including releasing devices).

### 3. POWER SUPPLY

3.01 The power supply should be checked for routing, trip size of circuit breakers, and disconnects. Where a standby engine is available, power supply should be from primary essential service.

### 4. EMERGENCY POWER

4.01 Check the following:

- (a) Battery condition

- (b) Battery charger operation, and fuse size

- (c) Automatic transfer operation.

### 5. DETECTORS

5.01 Fire detectors should be checked as follows:

- (a) Test all detectors in accordance with manufacturers recommendations.
- (b) Alarming of first detector activates audible and visual alarms within the compartment.
- (c) Alarming of second detector activates the visual alarm outside the compartment and the time delay feature.
- (d) Two detectors must alarm prior to dumping of the extinguishing agent.

### 6. TIME DELAY

6.01 The timer should be checked as follows:

- (a) Exercise—activated after second detector goes into an alarmed condition.
- (b) Time limit—30 seconds maximum.
- (c) Timer will complete its cycle even though wiring between it and the detector circuit is interrupted.
- (d) Timer will recycle after the manual abort has been activated should the detection system remain in the alarmed condition.

### 7. ALARMS

7.01 Test all the alarms for operation (audible and visual).

7.02 Test all alarms on supervised circuits or equipment.

7.03 Where alarms are routed to a remote location, their appearance at that location shall be verified.

**8. CONTAINMENT DEVICES**

**8.01** All fire dampers and doors must be closed for proper containment of the fire extinguishing agent.

- (a) Fire dampers close upon activation of Early Warning Fire Detection (EWFD) System.
- (b) All other penetrations into compartment are sealed.
- (c) All doors must be closed. Hold open devices **should not be used**; however where automatic devices are used, they must release permitting door to close when the detection system is alarmed.

**9. MECHANICAL EQUIPMENT SHUTDOWN**

**9.01** Check mechanical equipment shutdown as follows:

- (a) EWFD System alarmed—supply and exhaust systems for the compartment shutdown prior to dump.
- (b) Manual abort shall not restart the mechanical air handling equipment.
- (c) Where Electronic Data Processing (EDP) equipment shutdown is required when the detection EWFD System is alarmed, it should be manually activated. Power down control devices for EDP equipment shall be separate from the detection or suppression system.

**10. MANUAL RELEASE**

**10.01** The manual releases should be checked as follows:

- (a) Location is visible and accessible
- (b) Identification and operating instruction nameplates are mounted and visible
- (c) Operation.

**11. PIPING**

**11.01** The piping should be checked for the following:

- (a) Security and protection from damage

- (b) Connection to storage containers.

**12. NOZZLES**

**12.01** Check nozzles for the following:

- (a) Orientation and orifice size
- (b) Clean and free of obstructions
- (c) Seals, where required.

**13. HALON 1301 STORAGE**

**13.01** Each container should be checked for the following:

- (a) Physical condition, signs of corrosion, damage, etc.
- (b) Pressure gauges read within the acceptable range.
- (c) Cylinders securely held in position.
- (d) Hydrostatic test record tag attached to each cylinder.
- (e) Cylinder connections tight.
- (f) Security and accessibility.
- (g) Release device operation.
- (h) Label identifying type agent and weight of cylinder and agent.

**14. DISCHARGE (DUMP) TEST**

**14.01** The installation contractor shall perform the dump test, and supply all of the test instruments, test agent, and/or other equipment necessary to determine proper operation and concentration level.

**14.02** A discharge test shall be performed at the final inspection of a new system installation, prior to placing it in service, or where an existing system has been modified which may affect the distribution and concentration level within the compartment.

**14.03** If the system is zoned, each compartment protected by the total flooding system shall

be discharge tested separately, to assure proper distribution and concentration level within each compartment.

**14.04** Each compartment shall be fully instrumented. Concentration level recordings are made at least at three widely separated points within the enclosed area. These recordings shall show time versus concentration. The design concentration level, minimum of 5 percent by volume, must be maintained in the compartment for at least 10 minutes.

**14.05** The contractor shall provide a test report, including a copy of the concentration level recordings, for the Operation and Maintenance Manuals. In addition, the contractor shall provide copies of the concentration level recording to the local authorities and certify to the system's performance, when required.

**14.06** The test agent may be Freon 12, Halon 1301, or other acceptable agents suitable for use in this type test demonstration.

**14.07** Prior to the actual test, the following should be checked:

- (a) The compartment has been cleared of loose articles, paper, or other light materials which may blow about during the discharge test.
- (b) When an underfloor (raised floor) area is tested, it should have been vacuumed or cleared of debris which may be forced into equipment during the turbulent discharge.
- (c) Piping has been cleaned and blown free of any residual fabrication oil, or particulate matter that may plug nozzles, or affect the equipment within the compartment.
- (d) Ceiling tiles have been secured in the vicinity of the discharge nozzles to withstand the high velocity discharge.

(e) The compartment has been thoroughly inspected for openings which will not be closed by automatic closing devices activated by the fire detection system.

(f) All equipment, including the EWFD equipment, has been functionally checked out before the discharge test.

(g) Adequate preparations have been made for post-test ventilation. Will special fans or blowers be required to remove the agent?

(h) Have the test agent containers been weighed and accurately labeled with agent weight and the type of agent used?

**14.08** *Personnel shall not remain in the compartment when the discharge test is performed.*

## **15. OPERATION AND MAINTENANCE MANUALS**

**15.01** The contractor should provide three copies of an Operation and Maintenance manual to the BOC representative.

**15.02** Each manual should contain a complete description of the EWFD System and extinguishing system including piping drawings, schematics showing specific routing of piping (as installed), nozzle locations, storage containers, and selector valve locations.

**15.03** Each manual should contain the electrical drawings, written operation and maintenance procedures, and technical bulletins describing each piece of equipment in the system, concentration level recordings, and type and weight of agent used in the dump test.

**15.04** Manuals should be available at the time of final inspection and acceptance.