

Method Statement for the Testing and Commissioning of Pre-Action

1.0 SCOPE:

This Method Statement describes/defines the procedures involved in the Testing, Commissioning of Pre Action System to confirm proper operation

2.0 PURPOSE:

This Work Method Statement (WMS) is to ensure installation of FOAM System is correct and as per agreed procedures and that working of the equipment is correct and as per client requirements and to check is work is carried out as per the regulations.

The aim and /or benefits of complying with this WMS include: Program Compliance, Health, Safety and Quality and Environmental company policy compliance.

3.0 REFERENCES:

- 3.1 Mechanical Approved materials & equipment (Data sheet/Submittal)
- 3.2 Approved Project Drawing
- 3.3 Project Specifications, UAE Standards, NFPA 90A,
- 3.4 ADCD Standards

4.0 DEFINITION:

NFPA - National Fire Protection Association

5.0 RESPONSIBILITIES:

5.1 Project Manager will be responsible for the following:

- 5.1.1 Overall responsible for the implementation of this method statement.
- 5.1.2 Responsible for ensuring that the work is performed in accordance with the specification and with the time & constraints.
- 5.1.3 Ensure that all required submittals i.e. test reports, T&C submittals are made available in timely manner.

5.2 QA/QC Department will be responsible for the following:

- 5.2.1 QA/QC Department will perform all preliminary checks prior to the commissioning of the system.
- 5.2.2 Ensure the works comply with the contract requirements to serve the purpose.

5.2.3 Ensure the work is completed as per quality requirements. Contractor shall inspect the same work to initiate ITR for company approval.

5.3 *Commissioning Team:*

5.3.1 All Pre-Commissioning and Commissioning activities are the responsibility of Commissioning Team.

5.3.2 Pre-commissioning and Commissioning shall be carried out by Specialist Contractor under the direct supervision of MEP Electrical Commissioning Engineers.

5.3.3 Contractor commissioning manager shall check the commissioning works prior to submission to the Commissioning Agent for witnessing and approval.

5.3.4 In case of failure in any test, the Specialist Contractor will rectify, and MEP Commissioning team to re-offer the test to Commissioning Agent for re-witnessing and approval.

5.3.5 Final Testing & Commissioning Report shall be submitted to consultant for approval.

5.4 *Safety Officer/ Engineer will be responsible for the following:*

5.4.1 Tool Box talk has to be conducted and all the hazards have to be identified before starting the commissioning.

5.4.2 To make sure that the Personnel Protective Equipment (PPE) are used by the Task Force during executions of work at site.

5.4.3 Risks related to the activity shall be assessed and addressed as required.

5.4.4 To provide training for the work force in order to execute the activity safely.

6.0 METHOD OF WORK:

6.1 Equipment

The following equipment will be used for the scope of work covered under this method statement.

6.1.1 Smoke Testing kit

6.1.2 Hand Tools Hand Tools

6.1.3 Pressurizing Pump

6.1.4 General Tool Box

6.1.5 Spanner Set

6.1.6 PPE's

7.0 PROCEDURE / EXECUTION OF WORK:***7.1 Set the Deluge Valve in service:***

- 7.1.1 Close the upstream side stop valve provided below the deluge valve.
- 7.1.2 Open both the drain valves and close them when the flow of water has ceased.
- 7.1.3 Inspect and release if required, or close the section of the detection system subjected to "Fire condition".

7.2 Deluge Valve testing procedure:

- 7.2.1 Keep the upstream side of the stop valve partially open. Open the upstream side of the drain valve, to maintain a minimum pressure of 3 bars on the upstream side of the deluge valve. To avoid damage, close the system side stop valve. This valve is to be kept in open position after the testing is completed.
- 7.2.2 Open the system side drain valve of the deluge valve.
- 7.2.3 Let any of the release devices to trip. This will result in a sudden drop of water pressure in the deluge valve top chamber, resulting the deluge valve to open. The water flowing through the downstream side drain valve confirms that the deluge valve has actuated. Close the upstream side stop valve immediately and reset the system.

7.3 FUNCTIONALTEST (AUTOMATIC):

The functional test sequence of the pre-action system (Automatic) is follows:

STEP 1: The system is shown ready for operation.

STEP 2: When the fire sets off smoke detector cross zoned, the smoke detector sends a signal to the control panel.

STEP 3: The control panel goes into alarm condition and sends a signal to opens the solenoid valve. Simultaneously FACP receives the fire signal (Trouble signal goes to the FACP at power failure, battery failure, and low system pressure in the pre-action control panel) from pre-action panel.

STEP 3a: Immediately the control signal goes from FACP to lift control panel, electrical services and HVAC to shut down at some time interval pre-set by the users.

STEP 3b: When the fire sets off a sprinkler, pneumatic pressure drops in the dry pilot trim, the Actuator opens, which permits water to flow through the 1/8" holes in the wall of the Actuator Guide. This will drain water from the Diaphragm Chamber.

STEP 4: By open Solenoid valve and dry pilot actuation is will release water from the Diaphragm Chamber faster than it can be replenished through the 1/8" restriction in the Automatic Shut-Off Valve.

STEP 5: The rapid pressure drop in the Diaphragm Chamber forces the Diaphragm open, allowing air to come out of the sprinklers when the sprinkler bulb breaks open due to the temperature caused from fire.

STEP 6: The rapid pressure drop in the Diaphragm Chamber forces the Diaphragm open, allowing water to enter the system.

STEP 7: Water flows through the system to the Water Flow Pressure Alarm Switch, activating the alarm. Water passes through the trim to the Automatic Shut-off valve to close this valve. Once closed, it will prevent the Diaphragm Chamber from becoming inadvertently “Re-Pressurized”. The Automatic Drain Valve is also closed.

STEP 8: Water flows through the rest of the system allowing water to spray from the open sprinklers or Nozzles.

STEP 9: After fire is under control, The Main Control Valve is manually closed to cut off the water supply. The Diaphragm Chamber Supply Valve is also closed.

STEP 10: Then, the Main Drain Valve, Alarm Test Valve, and the System Drain Valve are opened to drain water from the system.

STEP 11: Once the system stops discharging water, close all drains except the Main Drain Valve.

Note: Depress the plunger of the Automatic Drain Valve to verify that it is open and the system is drained.

STEP 12: Reset the Manual and/or Electric actuation systems. Reset the Solenoid Valve. Clean the Y• strainer in the Diaphragm Chamber Supply connection trim.

STEP 13: Open the Diaphragm Chamber Supply Valve so the Diaphragm Chamber can return to full pressure.

STEP 14: The Diaphragm will completely close once the Diaphragm Chamber returns to full pressure.

STEP 15: Close the Alarm Test Valve. Finally, slowly open the Main Supply Valve and close the Main Drain Valve once water begins to discharge from the drain.

STEP 16: The system is then ready to return for beneficial use:

Item	Test Description	Performance Requirement
1	Activate one, Smoke detector in either circuit	-Alarm bell should ring. -Panel display circuit No. -panel shall show fire indication. -Signal to Main Fire Alarm panel and BMS System.

2	Activate another detector while first one in Alarm condition	-Starts countdown of time delay. -Signal to Main Fire Alarm panel and BMS System. -Signal to do action for other related systems -Alarm bell turn off & strobe horn will operate
3	At the end of Set Time Delay (set at 30 seconds)	-Check the solenoid valve by screw driver, should be activated -Flash light and Strobe horn will operate
4	Reset the Panel and operate the water motor alarm gong	It will operate and give audible ring sound.
5	Power the panel with AC, DC & reset.	-Panel shall show AC only indication lamp. -Panel shall show fault status. -Signal to FACP
6	In case of a drop in air pressure	The low pressure switch will send signal to the dry pilot actuator.
7	Signal to solenoid valve to activate Deluge Valve.	Local alarm bell (mechanical) will activate while deluge valve is releasing water.
8	Reset the system to its initial position & actuate the manual release to drain the water from diaphragm chamber & open the system drain valve to release air from the system will permitting water to flow through the system.	- Release signal shown in the panel - Flasher & Sounder activated
9	Disconnect switch activated	Supervisory signal to FECP.
		Supervisory signal from FECP to main Alarm control Panel

7.4 SAFETY:

7.4.1 All appropriate safety personal protective equipment shall be worn by workmen such as Helmet, cover all clothing, safety shoes, goggles and gloves whenever required.

7.4.2 If welding works is required, additional safety equipment shall be worn by all welders such as; welding mask and goggles, apron and welding gloves

7.4.3 Where work is high level, only approved scaffolding and safety belts can be used.

7.4.4 During execution of hot works, a fire blanket & extinguisher shall be positioned at all times.