

## **2.7.6 Gaseous Fire Extinguishing System**

### **1.0 Description**

The gaseous fire extinguishing system (GFES) is a non-safety-related system that provides total flooding clean agent gaseous extinguishing system protection for the main control room (MCR) sub-floor area enclosure. The GFES consists of self-contained agent storage tanks, a network of distribution piping with discharge nozzles, supervisory system and manual activation devices.

The GFES provides the following non-safety related functions:

- Delivers total flooding gaseous fire suppression within the MCR sub-floor area enclosure.

### **2.0 Arrangement**

2.1 The GFES is located within the Safeguard Building Division 2 and 3.

### **3.0 I&C Design Features, Displays and Controls**

3.1 GFES system status indications are retrievable in the MCR.

3.2 GFES equipment controls are provided in the MCR.

3.3 The GFES has control interlocks with the MCR air conditioning system (CRACS) to maintain suppressant agent concentration within the MCR sub-floor area enclosure.

### **4.0 Equipment and System Performance**

4.1 The GFES is designed to provide the required clean agent concentration within the required discharge timeframe and maintain clean agent concentration for the required soak time to extinguish a fire within the MCR sub-floor area enclosure.

### **5.0 Inspections, Tests, Analyses, and Acceptance Criteria**

5.1 Table 2.7.6-1 specifies the inspections, tests, analyses, and acceptance criteria for the GFES.

<b>Table 2.7.6-1—Gaseous Fire Extinguishing System Inspections, Tests, Analyses, and Acceptance Criteria</b>			
	<b>Commitment Wording</b>	<b>Inspection, Analysis or Test</b>	<b>Acceptance Criteria</b>
2.1	The GFES is located within the Safeguard Building Division 2 and 3.	An inspection will be performed of the location of the equipment.	The GFES is located within the Safeguard Building Division 2 and 3.
3.1	System status indication exists or can be retrieved in the MCR.	Inspections will be performed for the existence or retrieveability of the system status indication in the MCR.	System status indication exists or can be retrieved in the MCR.
3.2	Controls exist in the MCR.	Tests will be performed for the existence of control signals from the MCR.	Controls exist in the MCR.
3.3	The GFES has control interlocks with the MCR air conditioning system (CRACS) to maintain suppressant agent concentration within the MCR sub-floor area enclosure.	Tests will be performed using simulated signals to verify the interlock.	The interlock functions in response to a simulated signal.
4.1	The GFES is designed to provide the required clean agent concentration within the required discharge timeframe and maintain clean agent concentration for the required soak time to extinguish a fire within the MCR sub-floor area enclosure.	Tests, analyses or tests and analyses will be performed to determine the gaseous fire extinguishing system suppression agent concentration level, discharge time and maintenance of soak time concentration under design conditions.	<ul style="list-style-type: none"> <li>a. A report exists and concludes that the gaseous fire extinguishing system will deliver the required concentration of suppression agent in the required discharge timeframe.</li> <li>b. A report exists and concludes that the gaseous fire extinguishing system will maintain the required suppression agent concentration for the required soak time.</li> </ul>