

**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 that stops the MCR air conditioning system (CRACS) for the under floor area to achieve and maintain suppressant agent concentration within the MCR sub-floor area enclosure.

3.4 The as-built gaseous fire extinguishing system is consistent with the post-fire safe shutdown analysis.

**4.0 Equipment and System Performance**

4.1 The GFES is designed to provide the required suppression agent concentration within the required discharge timeframe within the MCR sub-floor area enclosure.

4.2 The GFES is designed to maintain suppression 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**

Table 2.7.6-1 lists the GFES ITAAC.

**Table 2.7.6-1—Gaseous Fire Extinguishing System ITAAC**

<b>Commitment Wording</b>		<b>Inspections, Tests, Analyses</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 that stops the CRACS for the under floor area to achieve and maintain suppressant agent concentration within the MCR sub-floor area enclosure.	Tests will be performed using test signals to verify the interlock.	The following interlock responds as specified below when activated by a test signal: GFES maintain suppressant agent concentration within the MCR sub-floor area enclosure.
3.4	The as-built gaseous fire extinguishing system is consistent with the post-fire safe shutdown analysis.	An inspection will be performed.	An inspection that documents the as-built gaseous fire extinguishing system is consistent with the post-fire safe shutdown analysis.
4.1	The GFES is designed to provide the required suppression agent concentration within the required discharge timeframe within the MCR sub-floor area enclosure.	Tests, analyses, or combination of tests and analyses will be performed to determine the GFES suppression agent concentration level and discharge times.	The GFES will deliver the concentration of suppression agent required to extinguish a fire for the specific suppression agent selected within 10 minutes.
4.2	The GFES is designed to maintain suppression agent concentration for the required soak time to extinguish a fire within the MCR sub-floor area enclosure	Tests, analyses, or combination of tests and analyses will be performed to determine the GFES will maintain the required suppression agent concentration	The GFES will maintain the required suppression agent concentration for the required soak time of 15 minutes.