

## 2.7.6 Gaseous Fire Extinguishing System

### Design Description

#### 1.0 System 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 functional arrangement of the GFES is as described in the Design Description of Section 2.7.6.

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

3.1 Deleted.

3.2 Deleted.

3.3 Deleted.

3.4 The location of the GFES equipment is consistent with the post-fire safe shutdown analysis.

#### 4.0 Equipment and System Performance

4.1 The GFES provides the required suppression agent concentration within the required discharge timeframe and maintain the concentration for a period of time within the MCR sub-floor area enclosure for flame extinguishment.

4.2 Deleted.

### 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**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the GFES is as described in the Design Description of Section 2.7.6.	An inspection of the as-built GFES functional arrangement will be performed.	The GFES conforms to the functional arrangement as described in the Design Description of Section 2.7.6.
3.1	Deleted.	Deleted.	Deleted.
3.2	Deleted.	Deleted.	Deleted.
3.3	Deleted.	Deleted.	Deleted.
3.4	The location of the GFES equipment is consistent with the post-fire safe shutdown analysis.	<ul style="list-style-type: none"> <li>a. A post-fire safe shutdown analysis will be performed to determine the location of the GFES equipment.</li> <li>b. An inspection will be performed to verify that the location of the as-built GFES equipment is consistent with the post-fire safe shutdown analysis.</li> </ul>	<ul style="list-style-type: none"> <li>a. A post-fire safe shutdown analysis determines the location of the GFES equipment.</li> <li>b. The GFES equipment is located consistent with the post-fire safe shutdown analysis.</li> </ul>
4.1	The GFES provides the required suppression agent concentration within the required discharge timeframe and maintain the concentration for a period of time within the MCR sub-floor area enclosure for flame extinguishment.	<ul style="list-style-type: none"> <li>a. An analysis will be performed to determine the required suppression agent concentration for the GFES within the MCR sub-floor area enclosure for flame extinguishment.</li> <li>b. Tests, analyses, or combination of tests and analyses will be performed to determine the GFES suppression agent concentration level and discharge times.</li> <li>c. Tests, analyses, or combination of tests and analyses will be performed to determine the time the suppression agent concentration can be maintained.</li> </ul>	<ul style="list-style-type: none"> <li>a. A report determines the required suppression agent concentration for the GFES within the MCR sub-floor area enclosure for flame extinguishment.</li> <li>b. The discharge time for the GFES required to achieve 95 percent of the minimum suppression agent concentration for flame extinguishment based on a 20 percent safety factor is a maximum of 10 seconds.</li> <li>c. The suppression agent concentration for the GFES within the MCR sub-floor area enclosure is maintained for at least 15 minutes.</li> </ul>
4.2	Deleted.	Deleted.	Deleted.

[Next File](#)