

**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 Deleted.

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 provides the required suppression agent design concentration within the required discharge timeframe within the MCR sub-floor area enclosure.

4.2 The design concentration for the GFES within the MCR sub-floor area enclosure shall be maintained for a specified period of time..

**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.	Tests will be performed for the existence or retrievability of the system status indication in the MCR.	System actuation status indication exists or can be retrieved in the MCR.
3.2	Controls exist in the MCR for the actuation of the system.	Tests will be performed for the ability of control signals to actuate the system from the MCR.	Controls exist in the MCR to actuate the system.
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 provides the required suppression agent design 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 discharge time for the GFES required to achieve 95 percent of the minimum design concentration for flame extinguishment based on a 20 percent safety factor does not exceed 10 seconds.
4.2	The design concentration for the GFES within the MCR sub-floor area enclosure shall be maintained for a specified period of time.	Tests, analyses, or combination of tests and analyses will be performed to determine the GFES will maintain the required suppression agent concentration	The design concentration for the GFES shall be maintained for at least 15 minutes