



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS INS 191

**Fire Extinguishing System
standard function
- Fire Ext. -**

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1. Scope

The purpose of this document is to define the Standard Function for Fire Extinguishing Systems (Fire ext.), consisting of inert gas or CO₂ flooding systems.

In order to assist in understanding, this document should be read in conjunction with **GS INS 150**, Design Methods for System Configuration Standard Functions.

This standard is generally associated with other Standard Functions such as 2ooN voting logic, safety bar logic etc.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

5. Detailed description of functions

5.1 Mode and commands management

5.1.1 Test command

Each inert gas extinguishing system logic is provided with a test facility in maintenance access level. This test command activates the extinguishing command no matter the selected mode (either auto or manual).

Dedicated screen areas located on the geographical representation of the fire detection zone mimics will give access to the test command.

A double confirmation (processed at HMI level) is required to verify the operator is fully aware a test is going to be performed. The complete sequence shall be initiated :

- Flashing light and klaxon activation
- Solenoid activation, (but no general alarm)

5.1.2 Local manual activation command

Each room is equipped with local manual activation commands. These will activate the extinguishing command no matter the selected mode (either auto or manual).

5.1.3 Release reset command

This reset command, in operator access level, is used to reset the extinguishing command (after the extinguishing activation command has returned to a healthy state). Operating the reset command means the room is back to a safe state.

5.1.4 Extinguishing mode

Auto/manual selector is provided at the main entry to the room. This allows the selection of automatic inert gas release as per the F&G system logic.

5.2 Internal data calculation rules

5.2.1 Extinguishing command

This internal data can take the two following statuses : *INITIATED* - *NORMAL*

For each inert gas system, the extinguishing command is *INITIATED* when one of the three following conditions is activated :

- Test command
- Local manual command
- Extinguishing activation = *ACTIVE* and extinguishing mode = *AUTO*,

Upon release reset command being operated, the extinguishing command returns to *NORMAL*, if the above three initiating conditions have already returned to *NORMAL*.

5.2.2 Operator alarming

For each inert gas system, two specific animations are provided to the operators:

- Local animation (inside & outside protected area):
 - Klaxon (inside), when the extinguishing command is *INITIATED*
or the inert gas released is *ACTIVE*
 - Flashing lights (inside & outside), when the extinguishing command is *INITIATED*
or the INERT GAS released is *ACTIVE*
 - Extinguishing mode (outside), depending on the local selector position
 - Inert gas released (outside)
- Control room animation (HMI consoles) :
 - Extinguishing command
 - Extinguishing mode, depending on the local selector position
 - Inert gas released
 - One loop fault, upon line monitored fault or failure of one of the I/O loops handled by the inert gas standard
 - Test activation command

Upon release reset command, the inert gas released alarm returns to *NORMAL* if the inert gas release status is *NORMAL*.

5.2.3 Solenoid valve initiation

When the extinguishing command is *INITIATED*, the release solenoid valve (line monitored output) is activated after a specific time delay (usually 30 sec) to allow site operators to escape from the protected area.

6. Tuning parameters and variables

Parameter	Access level
Solenoid valve time delay set point	Maintenance

7. Representation and animation description (HMI)

7.1 Events and values to be recorded

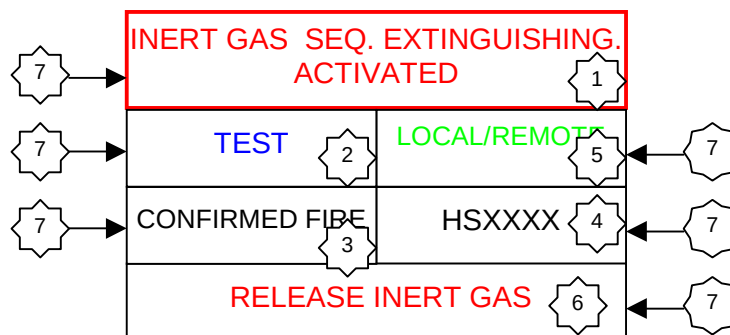
- Test command
- Test validation
- Local manual activation command
- Local position
- Inert gas released
- Extinguishing mode
- Extinguishing command
- Loop fault

7.2 Alarm management

Data	Alarm
Test command	Level 3
Local manual command	Level 3
Extinguishing command	Level 3
Inert gas released	Level 3
Loop fault alarm	Level 3

7.3 Specific animation description

7.3.1 Animation



7.3.2 Data animation tables (for information)

N°	Display description	Display	Colour
1	Extinguishing command = INITIATED Extinguishing command = NORMAL Used as target area to reset release command	INERT GAS SEQ. EXTING. INERT GAS SEQ. EXTING.	Red Blue
2	Test command = RELEASE (set and reset command) Else Used as target area for test command	TEST TEST	Yellow (flashing) Blue
3	Confirmed fire = ACTIVE (as per 2ooN voting logic for animation) Confirmed fire = NORMAL	CONFIRMED FIRE CONFIRMED FIRE	Red Blue
4	Local manual command = RELEASE Local manual command = NORMAL	HSXXXX HSXXXX	Red Blue
5	Extinguishing mode = MANU Extinguishing mode = AUTO	LOCAL REMOTE	Red Green



N°	Display description	Display	Colour
6	INERT GAS released = ACTIVE	RELEASE INERT GAS	Red
	INERT GAS released = NORMAL	RELEASE INERT GAS	Blue
7	Loop Fault = ACTIVE		Red
	Loop Fault = NORMAL		Hidden