



**HELLENIC GAS
TRANSMISSION
SYSTEM OPERATOR**

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**TECHNICAL JOB
SPECIFICATION**

OA-5

REVISION 0

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LIQUEFIED NATURAL GAS PLANTS

**GENERAL REQUIREMENTS FOR FIRE
AND GAS MIMIC PANEL AND FIRE
AND GAS LOGIC SYSTEM**



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CHANGES LOG

REVISIONS LOG

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REFERENCE DOCUMENTS

EU DIRECTIVES

LVD 2006/95/EC

[Harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits]

EMC 2004/108/EC

[Approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EECEMC]

ATEX 94/9/EC

[Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres]

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1.0 GENERAL

- 1.1 This document covers the general requirements of the Fire and Gas Mimic Panel to be located in DESFA LNG Terminal control room and the fire and gas detection and alarm logic system.
- 1.2 This documents would require changes to suit the plant safety philosophy. For example additional mimic panels may require in Administration area or gate house for repeating the Fire and Gas detection alarms.

2.0 DESIGN

2.1 FIRE AND GAS MIMIC PANEL

- 2.1.1 There is one central Fire and Gas mimic panel for the whole terminal located in the central control room.
- 2.1.2 On the front of the mimic panel a mimic diagram representing geographical areas of the plant with lamps shall be provided for the new tank.
- 2.1.3 The mimic diagram shall show different areas of the LNG terminal divided in the zones. For example one LNG tank shall be termed as one zone.
- 2.1.4 For each zone the following lamps shall be provided as a minimum:
1. One common flashing lamp for all the flame detectors within a zone.
 2. One common flashing lamp for all the manual break glass units within a zone.
 3. One common flashing lamp for all the LNG spill detectors within a zone.
 4. One common flashing lamp for all the hydrocarbon gas detectors within a zone.
 5. One common flashing lamp for all the smoke detector within a building.
 6. One fault / malfunction lamp common for all types of devices within a zone.

Additionally lamp test, alarm acknowledge and reset buttons shall be provided.

- 2.1.5 The gas detection receiver modules (19" racks) and UV flame detector zone control units shall be flush panel mounted on the front of the panel, (below the mimic diagram).
- 2.1.6 Three types of audible warnings shall be provided on the panel as follows:

One common fire belt that will be activated if any of the UV flame detectors fire or manual break glass units or smoke detectors activate in any zone.

One common chime that will be activated if any of the LNG spill detectors detect LNG leakage in any zone.

One common hooter / klaxon that will be activated if any of the hydrocarbon gas detectors sense HC gas.

- 2.1.7** The fire and gas detection system logic hardware shall be mounted inside the panel.

2.2 FIRE AND GAS ALARM LOGIC

- 2.2.1** The ultimate logic of the DESFA LNG Terminal Fire and Gas alarm system shall be developed from the plant safety philosophy. This document lays down basic requirements only.

- 2.2.2** The fire and gas logic system shall be designed to continuously supervise all field detectors for open circuit and short circuit of the cabling by means of the provision of end-of-line resistors or manufacturer standard and alarm any fault on the alarm annunciator (and / or DCS).

- 2.2.3** The fire and gas logic system shall be designed to be automatic. Control modules shall be display Normal – Alarm – Fault status of each field device and report alarm, fault status via alarm annunciator.

- 2.2.4** In addition to standard display and alarm functions provided by the fire and gas detection modules, custom built logic to initiate the shut down and fire fighting systems by others. (Hold detailed requirements).

- 2.2.5** The fire and gas logic system shall be designed such that the whole system can be fully tested with out activating and secondary fire fighting systems.

2.2.6 LOGIC FOR MANUAL BREAK GLASS UNITS

Manual break glass units shall be mounted around the protected area. Grouped into zones. An alarm signal from any unit within a zone shall initiate:

1. Visual and audible alarm on the mimic panel in its zone of origin.
2. A common alarm on the DCS.
3. A remote alarm contact.
4. Activate the common fire bell.
5. Hold requirements for activating secondary fire fighting systems, ESD etc.

2.2.7 LOGIC FOR UV FLAME DETECTORS

UV flame detectors shall be grouped into zones. An alarm signal from any detector within a zone shall initiate:

1. Visual and audible alarm on the mimic panel in its zone of origin.
2. A common alarm on the DCS.
3. A remote alarm contact.
4. Activate the common fire bell.
5. Hold requirements for activating fire water pumps and deluge valve etc.

2.2.8 LOGIC FOR LNG SPILL DETECTOR

LNG spill detectors shall be grouped into zones. An alarm signal from any detector within a zone shall initiate:

1. Visual and audible alarm on the mimic panel in its zone of origin.
2. A common alarm on the DCS.
3. A remote alarm contact.
4. Activate the common fire bell.
5. Hold requirements for activating foam systems, ESD etc.

2.2.9 LOGIC FOR HYDROCARBON GAS DETECTORS

HC detectors shall be grouped into zones. An alarm signal from any detector within a zone shall initiate:

1. Visual and audible alarm on the mimic panel.
2. A common alarm on the DCS.
3. A remote alarm contact.
4. Activate a common hooter / klaxon in the control room.
5. Hold additional requirements for activating secondary systems, ESD etc.