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GP 44-30

Design and Location of Occupied Permanent Buildings in Onshore Facilities

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This issue of Engineering Technical Practice (ETP) GP 44-30 is a revision of scope to exclude stand alone bulk plants and terminals. Revisions are marked by a bar in the margin.

This Group Practice (GP) addresses building design and location requirements to mitigate blast overpressure, thermal radiation, and toxic/flammable gas infiltration risks from sources external to the building. There are limitations to risk reduction that can be provided by building design and location. Residual risk is managed by engineering controls, administrative controls, and emergency response procedures.

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Table of Contents

	Page
Foreword	1
1. Scope	5
2. Normative references.....	5
3. Terms and definitions.....	5
4. Symbols and abbreviations.....	7
5. Building location and protective design features	7
5.1. General.....	7
5.2. Concept selection	8
6. Determination of potential harmful physical effects at proposed locations.....	8
6.1. Accident scenarios.....	8
6.2. Blast overpressure.....	8
6.3. Thermal radiation.....	8
6.4. Flammable gas	9
6.5. Toxic gas	9
7. Blast overpressure	9
8. Thermal radiation.....	10
8.1. Protection of building occupants	10
8.2. Shelter in place designation	10
8.3. Location	11
9. Flammable gas infiltration	11
9.1. Protection of building occupants	11
9.2. Shelter in place designation	11
9.3. Pressurisation and gas detection	11
10. Toxic gas infiltration	12
10.1. Protection of building occupants	12
10.2. Shelter in place designation	12
10.3. Pressurisation and gas detection	12
11. Control procedures and accountabilities	12
11.1. Control procedures	12
11.2. Accountabilities.....	12
12. Emergency procedures.....	13
Annex A (Normative) Additional requirements for buildings subject to explosion overpressure greater than 70 mbar (1 psi).....	14
A.1. Design objectives.....	14
A.2. Design process	14
A.2.1. Methodology	14
A.2.2. Building specification	14



A.2.3. Detailing requirements for structures.....	15
Bibliography	17

List of Tables

Table 1 - Blast overpressure design requirements	9
Table 2 - Thermal radiation design requirements	10
Table 3 - Flammable gas design requirements	11
Table 4 - Toxic gas design requirements	12



1. Scope

- a. This GP provides requirements for design and location of onshore occupied permanent buildings (referred to as “buildings”) in refineries, petrochemical and chemical operations, and natural gas liquids extraction plants, and bulk plants handling materials with a flash point below 38°C (100°F) subject to blast, fire, and gas hazards. In the U.S., this includes processes covered by the OSHA Process Safety Management Standard, 29 CFR 1910.119.
- b. This GP provides requirements for design features required to protect occupants from potentially harmful physical effects of blast overpressure, thermal radiation, flammable gas infiltration, and toxic gas infiltration that may arise from accidental events external to a building.
- c. This GP provides minimum requirements for inclusion in site emergency procedures and control procedures.

2. Normative references

The following referenced documents may, to the extent specified in subsequent clauses and normative annexes, be required for full compliance with this GP:

- For dated references, only the edition cited applies.
- For undated references, the latest edition of the referenced document (including any amendments) applies.

BP

GP 04-20	Civil Engineering.
GP 14-02	Heating Ventilation and Air Conditioning - Onshore.
GP 48-50	Major Accident Risk (MAR) Process.

American Concrete Institute (ACI)

ACI 318	Building Code Requirements for Reinforced Structural Concrete and Commentary.
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British Standards Institute (BSI)

BS 8110	Structural use of concrete.
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Process Industry Practices (PIP)

PIP STC 01018	Blast Resisting Building Design Criteria.
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3. Terms and definitions

For the purposes of this GP, the following terms and definitions apply:

Bulk Plant

That portion of a property where flammable or combustible liquids are received by tank vessel, pipeline, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipeline, tank car, tank vehicle, or container. These plants store more than 4 500 kg (10 000 lb) in one location.



Entity (BP entity or Operating entity)

An organisational unit within BP which may be a Performance Unit, Business Unit, Strategic Performance Unit, Segments or some logical sub group of one of these, defined by the Segment, Function or Region.

ERPG

Emergency response planning guideline (ERPG) values are intended to provide estimates of concentration ranges where adverse effects might reasonably occur (as described in definitions for ERPG 1, ERPG 2, and ERPG 3) as consequence of exposure to a specific substance. Emergency response planning committee of the American Industrial Hygiene Association sets ERPG values.

ERPG 1

ERPG 1 is maximum airborne concentration below which, it is believed, nearly all individuals could be exposed for up to 1 hr without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odour.

ERPG 2

ERPG 2 is maximum airborne concentration below which, it is believed, nearly all individuals could be exposed for up to 1 hr without experiencing or developing irreversible or other serious health effects or symptoms that could impair individual ability to take protective action.

ERPG 3

ERPG 3 is maximum airborne concentration below which, it is believed, nearly all individuals could be exposed for up to 1 hr without experiencing or developing life threatening health effects.

Hazard

Condition or practice with the potential to cause harm to people, the environment, property, or BP's reputation.

Occupancy

Measure of amount of time personnel spend in a location. This is normally expressed as number of personnel hours per unit of calendar time (e.g., personnel hr/d).

Occupied

Building is considered occupied if its primary purpose is to provide workspace or accommodation for personnel, irrespective of occupancy. Typical examples include office buildings, control rooms, laboratories, and gate houses.

If the primary purpose of a building is to house equipment (turbine enclosure, compressor shelters, motor control centre [MCC] rooms, analyser shelters, instrument outstation, process equipment enclosures in regions of severe weather, etc.), it is not considered occupied unless occupancy under normal operational conditions averages 2 man-hr or more per 24 hr period.

Permanent building

Building intended to remain in a single location for its design life.

Portable building

Building designed to be easily moved from location to location (e.g., trailers, portacabins, tents) that may be brought onto site or constructed for defined period of use prior to removal (e.g., for discrete events, such as turnarounds and projects).

