



DPC: 23 / 30446886 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

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Interested committees:

Title: BS IEC 61892-7 Mobile and fixed offshore units - Electrical installations

Part 7: Hazardous areas

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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Responsible Committee Secretary: **Mr Michael Peace (IET) (BSI)**
Direct tel: **01438 765566**
E-mail: **michaelpeace@theiet.org**

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



18/1838/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 61892-7 ED5

DATE OF CIRCULATION:

2023-06-02

CLOSING DATE FOR COMMENTS:

2023-09-22

SUPERSEDES DOCUMENTS:

18/1751/RR

IEC TC 18 : ELECTRICAL INSTALLATIONS OF SHIPS AND OF MOBILE AND FIXED OFFSHORE UNITS

SECRETARIAT:

Norway

SECRETARY:

Mr Arild Røed

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 1,TC 2,TC 8,SC 8A,SC 8B,SC 17A,SC 17C,SC 18A,TC 20,TC 21,SC 21A,TC 22,SC 22E,SC 22F,SC 22G,SC 23H,TC 31,SC 31J,TC 34,TC 64,TC 65,SC 65A,SC 65B,SC 65C,SC 65E,TC 73,TC 77,TC 80,TC 88,TC 94,TC 99,TC 121,SC 121A,SC 121B

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☒ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☒ SAFETY

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Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Mobile and fixed offshore units - Electrical installations - Part 7: Hazardous areas

NOTE FROM TC/SC OFFICERS:

MT 18 has revised the seven parts of the IEC 61892 series. There are several technical changes made in all seven parts. However, we would like to highlight that IEC 61892-7 has been restructured with separate clauses that deals with IEC 61892-10-1 and IEC

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MOBILE AND FIXED OFFSHORE UNITS –
ELECTRICAL INSTALLATIONS –

Part 7: Hazardous areas

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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- IEC 61892-7 has been prepared by IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units. It is an International Standard.

This fifth edition cancels and replaces the fourth edition published in 2019-04. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

This list will be developed when preparing the CDV. See instead the red line version provided as a supplementary working document.

- a) ...;
- b)

221 The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

222
223 Full information on the voting for its approval can be found in the report on voting indicated in
224 the above table.

225 The language used for the development of this International Standard is **English**.

226 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
227 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
228 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
229 described in greater detail at www.iec.ch/publications.

230 The committee has decided that the contents of this document will remain unchanged until the
231 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
232 specific document. At this date, the document will be

- 233 • reconfirmed,
234 • withdrawn,
235 • replaced by a revised edition, or
236 • amended.

237

238

INTRODUCTION

239 IEC 61892 forms a series of International Standards for safety in the design, selection,
240 installation, maintenance and use of electrical equipment for the generation, transmission,
241 storage, distribution and utilization of electrical energy for all purposes in offshore units which
242 are used for the purpose of exploration or exploitation of petroleum resources.

243 This part of IEC 61892 incorporates and coordinates, as far as possible, existing rules and
244 forms a code of interpretation, where applicable, of the requirements of the International
245 Maritime Organization (IMO), and constitutes a guide for future regulations which may be
246 prepared and a statement of practice for offshore unit owners, designers, installers and
247 appropriate organizations.

248 This document is based on the requirements of International Standards developed by
249 IEC TC 31 regarding area classification and requirements as to installations in hazardous areas
250 and gives additional requirements for installations on mobile and fixed offshore units.

251 This document is also based on solutions and methods which are in current use, but it is not
252 intended to impede development of new or improved techniques.

253 The IEC 61892 series aims to constitute a set of International Standards for the offshore
254 petroleum industry, but it is not intended to prevent their use beyond petroleum installations.

255 This part of the IEC 61892 is supplementary to other relevant IEC standards, for example IEC
256 60364 series as regards electrical installation requirements or IEC 60204 series for electrical
257 safety of machinery. This part also refers to IEC 60079-0 and its associated standards for the
258 construction, testing and marking requirements of suitable electrical Ex Equipment.

259

260

MOBILE AND FIXED OFFSHORE UNITS – ELECTRICAL INSTALLATIONS –

Part 7: Hazardous areas

1 Scope

This document provides requirements for hazardous area classification and selection of electrical equipment and installation in hazardous areas in mobile and fixed offshore units, including pipeline, pumping or "pigging" stations, compressor stations and single buoy moorings, used in the offshore petroleum industry for drilling, production, accommodation, processing, storage and offloading purposes.

It applies to all installations, whether permanent, temporary, transportable or personal, to AC installations and DC installations without any voltage level limitation. Referenced equipment standards may give voltage level limitations.

This document specifies requirements such as those concerning

- hazardous area classification,
- electrical systems,
- design, selection and installation of electrical equipment,
- cables and wiring systems,
- ventilation,
- ventilation requirement for battery compartments, and
- inspection, maintenance, repair and overhaul.

This document gives information on topics such as

- gas detection systems, and
- electrical installations in extremely low ambient temperatures.

This document does not apply to

- fixed equipment for medical purposes,
- electrical installations of tankers, and
- control of non-electrical ignition sources.
- electrical installations in explosive dust areas

NOTE 1 For medical rooms, IEC 60364-7-710 provides specific requirements.

NOTE 2 Requirements for tankers are given in IEC 60092-502.

NOTE 3 Guidance on protection of non-electrical equipment can be found in ISO 80079-36, ISO 80079-37 and IMO 2009 MODU Code, 6.7

NOTE 4 Classification of explosive dust atmospheres are given in IEC 60079-10-2.

NOTE 5 The general principles for hazardous area classification are given in IEC 60079-10-1. IEC 61892-7 gives an interpretation of the principles when used for area classification of mobile and fixed offshore units.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-10-1:2015, *Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres*

IEC 60079-13, *Explosive atmospheres – Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"*

IEC 60079-14:2013, *Explosive atmospheres – Part 14: Electrical installations design, selection and erection*

IEC 60079-17, *Explosive atmospheres – Part 17: Electrical installations inspection and maintenance*

IEC 60079-19, *Explosive atmospheres – Part 19: Equipment repair, overhaul and reclamation*

IEC 61892-1:2019, *Mobile and fixed offshore units – Electrical installations – Part 1: General requirements and conditions*

IEC 61892-2:2019, *Mobile and fixed offshore units – Electrical installations – Part 2: System design*

IEC 62485-2:2010, *Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries*

IMO, 2009 MODU Code, *Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009, 2010 edition*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61892-1, IEC 60079-14, IEC 60079-17, IEC 60079-19, IEC 60079-10-1, IMO MODU Code and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

normal operation

operation of equipment conforming electrically and mechanically with its design specification and used within the limits specified by the manufacturer

Note 1 to entry: Minor releases of flammable substances may be part of normal operation. For example, releases from seals which rely on wetting by the fluid which is being pumped are considered to be minor releases.

Note 2 to entry: Failures (such as the breakdown of pump seals, flange gaskets or spillages caused by accidents) which involve urgent repair or shutdown are not considered to be part of normal operation nor are they considered to be catastrophic.

Note 3 to entry: Normal operation includes start-up and shutdown conditions.

[SOURCE: IEC 426-04-10, modified – The notes to entry have been replaced]



Documents

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3.2**inspection**

action comprising careful scrutiny of an item carried out either without dismantling, or with the addition of partial dismantling as required, supplemented by means such as measurement, in order to arrive at a reliable conclusion as to the condition of an item

[SOURCE: IEC 426-14-02]

3.3**maintenance**

combination of routine actions taken to preserve the fully serviceable condition of the installed apparatus

[SOURCE: IEC 426-14-01]

3.4**terms related to area classification****3.4.1****explosive gas atmosphere**

mixture with air, under atmospheric conditions, of flammable substances in the form of gas, vapour or mist, which, after ignition, permits self-sustaining propagation

Note 1 to entry: Although a mixture which has a concentration above the upper flammable limit (UFL) is not an explosive gas atmosphere, it can readily become so and, generally for area classification purposes, it is advisable to consider it as an explosive atmosphere.

[SOURCE: IEC 60079-10-1:2015, 3.2, modified – The word "mist" has been added to the definition, and Note 1 to entry has been added.]

3.4.2**hazardous area**

area in which an explosive atmosphere is present, or can be expected to be present, in quantities such that special precautions for the construction, installation and use of equipment are required

[SOURCE: IEC 426-03-01 modified, Notes are deleted]

3.4.3**non-hazardous area**

an area in which an explosive atmosphere is not expected to be present in quantities such that special precautions for the construction, installation and use of equipment are required

[SOURCE: IEC 426-03-02]

3.5**terms related to zones****3.5.1****zone**

hazardous area classification based upon the frequency of the occurrence and duration of an explosive atmosphere

[SOURCE: IEC 426-03-30]

3.5.2**zone 0**

area in which an explosive gas atmosphere is present continuously, or for long periods, or frequently

385 Note 1 to entry: Both "long" and "frequently" are terms which are intended to describe a very high likelihood of a
386 potentially explosive atmosphere in the area. In that respect, those items do not necessarily need to be quantified.

387 Note 2 to entry: The 2009 MODU Code definition is "Zone 0: in which ignitable concentrations of flammable gases
388 or vapours are continuously present or present for long periods".

389 [SOURCE: IEV 426-03-03, modified – Note 1 and Note 2 to entry has been added.]

390 **3.5.3**

391 **zone 1**

392 area in which an explosive gas atmosphere is likely to occur occasionally in normal operation

393 Note 1 to entry: The 2009 MODU Code definition is "Zone 1: in which ignitable concentrations of flammable gases
394 or vapours are likely to occur in normal operation".

395 [SOURCE: IEV 426-03-04, modified – Note to entry has been added.]

396 **3.5.4**

397 **zone 2**

398 area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it
399 does occur, it will exist for a short period only

400 Note 1 to entry: Indications of the frequency of the occurrence and duration may be taken from codes relating to
401 specific industries or applications.

402 Note 2 to entry: The 2009 MODU Code definition is "Zone 2: in which ignitable concentrations of flammable gases
403 or vapours are not likely to occur, or in which such a mixture, if it does occur, will only exist for a short time".

404 [SOURCE: IEV 426-03-05, modified – Note 2 to entry has been added.]

405 **3.5.5**

406 **extent of zone**

407 distance in any direction from the source of release to the point where the gas/air mixture has
408 been diluted by air to a value below the lower explosive limit

409 [SOURCE: IEV 426-03-21]

410 **3.6**

411 **terms related to release**

412 **3.6.1**

413 **source of release**

414 point or location from which a flammable gas, vapour, mist or liquid may be released into the
415 atmosphere in such a way that an explosive gas atmosphere could be formed

416 [SOURCE: IEV 426-03-06, modified – Note 1 to entry deleted]

417 **3.6.2**

418 **continuous grade of release**

419 release which is continuous or is expected to occur frequently or for long periods

420 Note 1 to entry: Both "frequently" and "long" are the terms which are intended to describe a very high likelihood of
421 a potential release. In that respect, those terms do not necessarily need to be quantified.

422 [SOURCE: IEV 426-03-10, Modified – Note to entry added]

423 **3.6.3**

424 **primary grade of release**

425 release which can be expected to occur periodically or occasionally during normal operation

426 [SOURCE: IEV 426-03-11]

3.6.4**secondary grade of release**

release which is not expected to occur in normal operation and, if it does occur, is likely to do so only infrequently and for short periods

[SOURCE: IEV 426-03-12]

3.6.5**release rate**

quantity of flammable gas, vapour, or mist emitted per unit time from the source of release

[SOURCE: IEV 426-03-13]

3.7**terms related to properties of materials****3.7.1****lower flammable limit****LFL**

concentration of flammable gas or vapour in air, below which an explosive gas atmosphere does not form

Note 1 to entry: For the purposes of Ex Equipment, this was previously referred to as the lower explosive limit (LEL).

Note 2 to entry: The concentration can be expressed as either a volume fraction or a mass per unit volume.

[SOURCE: IEV 426-02-09]

3.7.2**relative density <of a gas or a vapour>**

ratio of the density of a gas or a vapour to the density of air at the same pressure and at the same temperature

Note 1 to entry: The relative density of air is equal to 1.

[SOURCE: IEV 426-02-32]

3.7.3**flammable substance**

gas, vapour, mist, liquid or mixture thereof that is capable of being ignited

[SOURCE: IEV 426-09-10, modified – Mist added]

3.7.4**flammable liquid**

liquid capable of producing a flammable vapour under any foreseeable operating conditions

Note 1 to entry: An example of foreseeable operating condition is one in which the flammable liquid is handled at temperatures close to or above its flashpoint.

[SOURCE: IEV 426-02-33, modified – Added Note 1 to entry]

3.7.5**flammable gas**

gas that, when mixed with air in certain proportions, will form an explosive gas atmosphere.

Note 1 to entry: Explosive atmospheres are classified on the basis of the presence of flammable gases and flammable vapours, and frequently a mixture of the two, which is referred to as "flammable gas and vapour".

[SOURCE: IEV 426-02-34]

3.8**flammable vapour**

vapour that, when mixed with air in certain proportions, will form an explosive gas atmosphere

Note 1 to entry Explosive atmospheres are classified on the basis of the presence of flammable gases and flammable vapours, and frequently a mixture of the two, which is referred to as "flammable gas and vapour".

[SOURCE: IEV 426-02-35]

3.9**flammable mist**

droplets of liquid, dispersed in air so as to form an explosive atmosphere

Note 1 to entry Mists are also known as aerosols.

[SOURCE: IEC 60079-10-1:2015, 3.6.5]

3.9.1**flashpoint**

lowest liquid temperature at which, under specific test conditions, a liquid gives off vapours in quantity such as to be capable of forming an ignitable vapour-air mixture

[SOURCE: IEV 426-02-14]

3.9.2**boiling point**

temperature of a liquid boiling at an ambient pressure of 101,3 kPa (1 013 mbar)

Note 1 to entry: The initial boiling point that should be used for liquid mixtures is to indicate the lowest value of the boiling point for the range of liquids present, as determined in a standard laboratory distillation without fractionation.

[SOURCE: IEV 426-02-36]

3.9.3**vapour pressure**

pressure exerted when a solid or liquid is in equilibrium with its own vapour

Note 1 to entry: This is also the partial pressure of the substance in the atmosphere above the liquid. It is a function of the substance and of the temperature.

[SOURCE: IEV 426-02-37, modified – The first sentence in the Note to entry has been added]

3.9.4**auto-ignition temperature****AIT**

lowest temperature (of a surface) at which, under specified test conditions, an ignition of a flammable gas or vapour in mixture with air or air/inert gas occurs

Note 1 to entry: This note applies to the French language only.

Note 2 to entry: The conditions are specified in ISO/IEC 80079-20-1, Explosive atmospheres – Part 20-1: Material characteristics for gas and vapour classification – Test methods and data.

[SOURCE: IEV 426-02-01, modified – Adjusted according to ISO/IEC 80079-20-1:2017, 3.3]

3.10
terms related to equipment

3.10.1

intrinsically safe circuit

circuit, in which any spark or any thermal effect produced under specific conditions, which include normal operation and specified fault conditions, is not capable of causing ignition of a given explosive atmosphere

Note 1 to entry: The conditions are specified in IEC 60079-11, Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i".

[SOURCE: IEC 426-11-01]

3.10.2

intrinsically safe electrical system

assembly of interconnected items of electrical equipment, described in a descriptive system document, in which the circuits or parts of circuits intended to be used in an explosive atmosphere are intrinsically safe

[SOURCE: IEC 60079-14:2013, 3.5.7]

3.10.3

equipment protection level

EPL

level of protection assigned to equipment based on its likelihood of becoming a source of ignition and distinguishing the differences between explosive gas atmospheres, explosive dust atmospheres, and the explosive atmospheres in mines susceptible to firedamp

[SOURCE: IEC 426-01-15]

3.11

terms related to area and ventilation

3.11.1

enclosed space

room or space within which, in the absence of artificial ventilation, the ventilation will be limited and any flammable atmosphere will not be dispersed naturally

3.11.2

semi-enclosed location

location where natural conditions of ventilation are notably different from those on open decks due to the presence of structures such as roofs, windbreaks and bulkheads and which are so arranged that the dispersion of gas may not occur

Note to entry: The term is used by 2009 MODU Code for mobile drilling units.

3.11.3

sheltered area

obstructed area

area within or adjoining an open area, which may include a partially open building or structure, where, owing to obstruction, natural ventilation may be less than in a true open area, and this may enlarge the extent of the hazardous zone

3.11.4

room

enclosure (or enclosures) provided with doors, cable ducting, conduits, etc. containing electrical apparatus and of sufficient size to permit the entry of a person who may be expected to work or remain inside the enclosure for a prolonged period

3.11.5**enclosure**

walls, doors, covers, Cable Glands, rods, spindles, shafts, etc. which contribute to the Type of Protection or the degree of protection IP of the equipment

[SOURCE: 426-04-01]

3.11.6**air lock**

compartment connecting two different environments, usually at different pressures, that enables personnel to transfer from one environment to the other

3.11.7**ventilation**

movement of air and its replacement with fresh air due to the effects of wind, temperature gradients, or artificial means (for example, fans or extractors)

Note 1 to entry: IEC 60079-10-1, Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres, gives types and degrees of ventilation

[SOURCE: 426-03-14]

3.11.8**gas-tight door**

solid, close fitting door designed to resist the passage of gas under normal atmospheric conditions

3.11.9**purging**

in a pressurized enclosure, the operation of passing a quantity of protective gas through the enclosure and ducts, so that the concentration of the explosive gas atmosphere is brought to a safe level

[SOURCE: IEV 426-09-03]

3.12**well test facility**

systems and equipment used for testing of a well to obtain data for flow rate and pressure

3.13**distribution board**

assembly containing different types of switchgear and controlgear associated with one or more outgoing electric circuits fed from one or more incoming electric circuits, together with terminals for the neutral and protective conductors, if required

[SOURCE: IEV 826-16-08, modified – The words "if required" have been added.]

main earth (reference earth)**ground**

part of the Earth considered as conductive, the electric potential of which is conventionally taken as zero, being outside the zone of influence of any earthing arrangement

Note 1 to entry: The concept "Earth" means the planet and all its physical matter.

Note 2 to entry: The general mass of the metal structure or hull of the mobile or fixed unit.

[SOURCE: IEV 195-01-01, modified: Synonymous term "main earth" added, Note 2 added]

3.13.1**earth, verb****ground, verb US**

to make an electric connection between a conductive part and a local earth

Note 1 to entry: The connection to local earth can be

- intentional, or
- unintentional or accidental

and can be permanent or temporary.

[SOURCE: IEC 195-01-08]

4 Hazardous area classification**4.1 General**

Hazardous area classification is a method of analysing and classifying the environment where explosive gas atmospheres can occur, so as to facilitate the proper selection, installation and operation of equipment to be used safely in that environment.

All mobile and fixed offshore units shall be assessed with regard to any potential explosive gas atmosphere in accordance with the provisions set out below. The results shall be documented in area classification drawings to allow the proper selection of all electrical components to be installed.

The general principles for area classification are given in IEC 60079-10-1. IEC 61892-7 gives an interpretation of the principles when used for area classification of mobile and fixed offshore units.

Hazardous area classification shall be carried out at an early stage of planning, before any construction work starts and confirmed before start-up of the unit. Reviews should be carried out during the life of the unit.

Subsequent to the completion of the hazardous area classification, an ignition hazard assessment should be carried out to assess whether the probability and consequences of an explosive atmosphere requires the use of equipment of a higher equipment protection level (EPL) or may justify the use of equipment with a lower equipment protection level than normally required. The EPL requirements may be recorded, as appropriate, on the area classification documents and drawings to allow proper selection of equipment.

The hazardous area classification should be carried out by those who have knowledge of the properties of flammable substances, the process and the equipment, in consultation with safety, electrical, mechanical and other engineering personnel, as appropriate.

When classifying hazardous areas, consideration should also be given to a careful evaluation of prior experience with the same or similar units. It is not enough to identify only a potential source of flammable substance and proceed immediately to defining the extent of zone 1 or zone 2 classified areas. Where experience or documented evidence indicates that a particular plant design and operations are sound this may be used to support the classification chosen. Furthermore, it is conceivable that an area could be reclassified based on industry experience or new evidence. Analysis and classification of the environment where explosive gas may occur should be carried out in accordance with the IMO MODU Code (for mobile drilling units) or IEC 60079-10-1 (for fixed and mobile offshore units, except mobile drilling units).

Further guidance for hazardous area classification given in any national codes of practice or similar publications may be adopted provided it does not reduce the level of safety below that specified in the IMO MODU Code or in IEC 60079-10-1.

NOTE 1 For documentation of requirements for area classification, see Clause 13.

NOTE 2 Examples of source of release are given in Annex A.

NOTE 3 A schematic approach to the classification of hazardous areas is given in Annex B.

NOTE 4 Examples of data sheets for use during the area classification study are given in Annex C.

NOTE 5 For FPSO (floating production storage and offloading) and other ship-shaped production units, see 4.16 regarding vessel and production modules interaction.

NOTE 6 For an explanation of the EPL concept, see IEC 60079-14:2013, 5.3 and 5.4. Further information can be found in IEC 60079-0:2007, Annex D.

NOTE 7 The examples given 4.14 and 4.15 are based on unobstructed ventilation. Limited ventilation can cause a more stringent area classification than that listed below. Units for cold regions may have a design causing limited ventilation. This could be caused by extra wind breaks or extra roofing due to snow.

4.2 Safety principles

Units in which flammable substances are handled or stored should be designed, constructed, operated and maintained so that any release of flammable substances, and consequently the extent of hazardous areas, are kept to a minimum, with regard to frequency, duration and quantity of a release.

It is important to examine those parts of process equipment and systems from which the release of flammable substances may arise and to consider modifying the design to minimize the likelihood and frequency of such release and the quantity and rate of release of substance.

NOTE 1 Process equipment in the context of this document includes any item that may contain a flammable gas or liquid.

These fundamental considerations should be examined at an early stage of the design development of any process plant and should also receive prime attention when carrying out the area classification study.

In the case of activities other than those of normal operation, e.g. commissioning or non-routine maintenance, the hazardous area classification may not be valid. It is expected that the activities other than those of normal operation would be dealt with by a safe system of work (permit-to-work system). The hazardous area classification should take into account any routine maintenance.

In a situation in which there may be an explosive gas atmosphere, action should be taken to eliminate:

- a) the likelihood of an explosive gas atmosphere occurring around the source of ignition; or
- b) the source of ignition.

Where this is not possible, protective measures, process equipment, systems and procedures should be selected and prepared so that the likelihood of the coincidence of a) and b) is so small as to be accepted as low as reasonably practicable. Such measures may be used individually, if they are recognized as being highly reliable or in combination to achieve the required level of safety.

NOTE 2 As Low As Reasonably Practicable (ALARP) is a recognised term in many jurisdictions and includes implementing controls as possible according to the current state of the art and in accordance with relevant codes and standards.

The requirement in a) above could be met by providing extra ventilation/exhaust means for dilution of the explosive atmospheres that may occur.