

# TELECOMMUNICATIONS FOR OFFSHORE PLATFORMS

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## DESIGN AND ENGINEERING PRACTICE

USED BY  
COMPANIES OF THE ROYAL DUTCH/SHELL GROUP



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## 1. INTRODUCTION

### 1.1 SCOPE

This is a new DEP giving the minimum requirements for equipment and systems used for offshore telecommunications and provides guidance for the selection and specification of equipment and systems meeting these requirements. It supplements DEP 32.71.00.10-Gen. and DEP 32.71.00.11-Gen.

Minimum requirements for telecommunications for offshore platforms with living quarters are normally specified by local regulatory authorities.

Telecommunication systems for a specific offshore platform can rarely be considered in isolation because they normally form part of a total telecommunications network. Significant considerations are telecommunications between other offshore platforms in the same or nearby fields and with the onshore infrastructure. Since the requirements vary from country to country this manual can give general guidance only.

### 1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by SIPM, the distribution of this DEP is confined to companies forming part of the Royal Dutch/Shell Group or managed by a Group company, and to Contractors nominated by them (i.e. the distribution code is "C", as described in DEP 00.00.05.05-Gen.).

This DEP is intended for use in oil and gas production facilities.

If national and/or local regulations exist in which some of the requirements may be more stringent than in this DEP the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable as regards safety, environmental, economic and legal aspects. In all cases the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned with the object of obtaining agreement to follow this DEP as closely as possible.

### 1.3 DEFINITIONS

#### 1.3.1 General definitions

The **Contractor** is the party which carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party which manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **Shall** indicates a requirement.

The word **Should** indicates a recommendation.

### 1.3.2 Specific definitions

An **A60 enclosure** is an enclosure constructed from A60 firewalls.

An **A60 firewall** is a barrier defined in SOLAS which will withstand a non-hydrocarbon fire for 60 minutes.

A **complex** is two or more platforms connected by a permanent bridge or walkway.

A **hazardous area, 426-03-01, IEC 50** is an area in which an explosive gas atmosphere is or may be expected to be present in quantities such as to require special precautions for the construction, installation and use of electrical apparatus.

A **manned platform** is continuously occupied by persons accommodated and living thereon.

**Mandatory telecommunications equipment** is that required by national and local regulations.

A **muster station** is the normal place where personnel await evacuation from the platform.

A **non-hazardous area, 426-03-02, IEC 50** is an area in which an explosive gas atmosphere is not expected to be present in quantities such as to require special precautions for the construction, installation and use of electrical apparatus.

A **platform** is an offshore structure standing on the sea-bottom or permanently anchored to it.

The **safety case** is a demonstration that the hazards of an installation have been identified and assessed and are under control and that the exposure of personnel to these hazards has been minimised. For offshore platforms an important feature is a demonstration that the arrangements are made for refuge and evacuation of personnel in the event of an emergency.

The **sea area** is the area of the sea in which the platform is located. Sea areas A1, A2, A3, and A4 are defined in the GMDSS amendments to the SOLAS convention.

The **temporary refuge** provides a place where personnel can muster without undue risk while having access to the communications, monitoring and control equipment necessary to ensure their personal safety and from which, if necessary, safe and full evacuation can be effected.

**Type approval** is the permission to connect a specific type of telecommunication equipment to the public network. The permission is usually only granted after tests to ensure e.g. safety, acceptable spurious radiation, interworking with other equipment, etc. The certificate granted after such tests is the type approval certificate.

An **unmanned platform** has no living accommodation or quarters provided.

### 1.4 ABBREVIATIONS

|          |   |                                          |
|----------|---|------------------------------------------|
| AC       | - | Alternating current                      |
| CCR      | - | Central control room                     |
| DC       | - | Direct current                           |
| DSC      | - | Digital selective calling                |
| GMDSS    | - | Global marine distress and safety system |
| HF       | - | High frequency                           |
| Hz       | - | Hertz                                    |
| INMARSAT | - | International marine satellite           |
| LOS      | - | Line of sight                            |
| LQ       | - | Living quarters                          |
| MF       | - | Medium frequency                         |
| MODU     | - | Mobile offshore drilling unit            |
| NDB      | - | Non directional beacon                   |
| OTH      | - | Over the horizon                         |

|               |   |                                                 |
|---------------|---|-------------------------------------------------|
| <b>PABX</b>   | - | Private automatic branch exchange               |
| <b>SCADA</b>  | - | Supervisory control and data acquisition        |
| <b>SOLAS</b>  | - | Safety of life at sea                           |
| <b>TEMPSC</b> | - | Totally enclosed motor propelled survival craft |
| <b>TDMA</b>   | - | Time division multiple access                   |
| <b>TR</b>     | - | Temporary refuge                                |
| <b>UHF</b>    | - | Ultra high frequency                            |
| <b>UPS</b>    | - | Uninterruptible power supply                    |
| <b>VHF</b>    | - | Very high frequency                             |

#### 1.5 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section number is shown in brackets. Other documents referenced by this DEP are listed in (10).

## **2. GENERAL**

### **2.1 PURPOSE OF TELECOMMUNICATIONS**

Telecommunication facilities may be grouped and prioritised as follows:

- safety telecommunications for compliance with the Principal's safety philosophy and mandatory national and local regulations;
- operational telecommunications to enhance the efficiency of offshore operations;
- non-essential telecommunications to enhance personnel welfare and recreation, and provide administrative data systems.

#### **2.1.1 Mandatory telecommunications**

Telecommunications systems specifically designated as mandatory for safety reasons include the public address and general alarm system, equipment to operate on the international maritime distress frequencies, aeronautical band radios.

The specifications of mandatory equipment are often covered by official regulations.

#### **2.1.2 Operational telecommunications**

Certain telecommunications systems are provided specifically to support production operations. These include facilities such as the ability to monitor operations from shore and to give assurance of the integrity of pipelines. Operational telecommunications should be typified by high availability and reliability with monitoring of the system to give an early indication of failure. However, temporary loss of operational telecommunications should not, on its own, be a reason to shut down oil and gas facilities.

#### **2.1.3 Non-essential telecommunications**

The welfare aspects of telecommunications apply to installations with LQs and include the provision of audio and video entertainment systems, and facilities to allow personnel on board to telephone home. Administrative data systems are also deemed non-essential.

### **2.2 TELECOMMUNICATION AUTHORITY**

Contact with the Telecommunication Authority shall be made by the Principal for each project in which telecommunication is included. See DEP 32.71.00.10-Gen., section 2.2.

### **2.3 TELECOMMUNICATIONS STANDARDS**

International standards should be used wherever possible to satisfy regulatory authorities, to allow interconnection with other systems, and to help Manufacturers meet the requirements. See DEP 32.71.00.11-Gen.

### **2.4 CAPACITY REQUIREMENTS AND TECHNOLOGIES USED**

The telecommunications capacity required between an offshore platform and shore should be considered carefully since this has a major impact on the cost and may limit the choice of technologies which can be used. All new multichannel systems should be digital and advantage can then be taken of reduced rate voice technology for some or all of the services which are needed. Consideration should be given to techniques for dynamically assigning timeslots (or bandwidth) between voice and data to further utilise the available capacity more efficiently. Typically, a large platform or complex will require about 256 Kbit/sec bearer capacity to cover all services if the system is well engineered. Where cost is high and directly related to capacity, e.g. a satellite link, this would be the installed capacity. Where cost is less dependent on bit rate, e.g. a terrestrial system, more capacity can be installed, typically 2 Mbit/sec. It is important to plan sufficient capacity for future developments in the area.

NOTE: See Appendix 1 for the telecommunications technologies which can be used from platform to shore or to other platforms.

## 2.5 USE IN HAZARDOUS AREAS

Electrical equipment located in a hazardous area shall be certified for use in that area.