



RP 59-5

TELECOMMUNICATIONS

SELECTION OF EMERGENCY TELECOMMUNICATIONS SYSTEMS FOR MANNED OFFSHORE FIXED INSTALLATIONS

November 1994

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SCOPE AND PURPOSE This Recommended Practice provides guidance on the selection of Emergency Telecommunications Systems for manned offshore fixed installations. Its purpose is to provide design engineers and management with:- (a) Guidance on the need for emergency telecommunication systems for manned offshore fixed installations. (b) A basis for selecting emergency telecommunications systems for manned offshore fixed installations. (c) Guidance on health and safety aspects associated with the selection and operation of emergency telecommunications systems for manned offshore fixed installations.											
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FOREWORD

Introduction to BP Group Recommended Practices and Specifications for Engineering.

The Introductory Volume contains a series of documents that provide an introduction to the BP Group Recommended Practices and Specifications for Engineering (RPSEs). In particular, the 'General Foreword' sets out the philosophy of the RPSEs. Other documents in the Introductory Volume provide general guidance on using the RPSEs and background information to Engineering Standards in BP. There are also recommendations for specific definitions and requirements.

Value of this Recommended Practice

There is currently there no document which covers this requirement. Future applications will benefit from the ability to specify and procure such best-practice systems in a quicker and more cost effective manner. It is anticipated that this Recommended Practice will stimulate standard products to emerge and these will produce cost benefits compared with current bespoke systems.

Application

Text in *italics* is Commentary. Commentary provides background information which supports the requirements of the Practice. It also gives guidance on the implementation of 'Specification' and 'Approval' actions.

This document may refer to certain local, national or international regulations but the responsibility to ensure compliance with legislation and any other statutory requirements lies with the user. The user should adapt or supplement this document to ensure compliance for the specific application.

For further information contact Standards Group, BP International or the Custodian. See Quarterly Status List for contacts.

Feedback and Further Information

Users are invited to feed back any comments and to detail experiences in the application of BP RPSE's, to assist in the process of their continuous improvement.

For feedback and further information, please contact Standards Group, BP International or the Custodian. See Quarterly Status List for contacts.



1. INTRODUCTION

1.1 Scope

This Recommended Practice provides a guide for the need and selection of emergency telecommunication systems used for manned offshore fixed installations covering communications with the shore, methods of communication with shipping and aircraft and local communications on the installation. The Recommended Practice takes into account health and safety legislation, good design practice and technical and economic considerations.

The following aspects are not covered by this Recommended Practice:-

- (a) Telecommunication Systems for Mobile Offshore Drilling Units
- (b) Telecommunication Systems for unmanned or not normally manned offshore installations
- (c) Telecommunication Systems for temporary offshore units for construction, hook-up or workovers
- (d) Telecommunication Systems for onshore installations

The purpose of this Recommended Practice is to provide design engineers and managers with a basis for the selection of Emergency Telecommunication Systems for manned offshore fixed installations. This Recommended Practice is restricted in applicability to manned offshore fixed installations because the requirements for other types of offshore installation; offshore unit or onshore installation can vary in size, capacity and regulatory requirements.

2. EXPOSITION

2.1 Telecommunications

In terms which are generally accepted Telecommunications is defined as the transportation of voice, image, text or data between physically separated points. To achieve this function, electronic devices predominate, with either cable or radio connection being employed to implement the physical interconnections. However, other mediums such as optical technology is being used in an increasing number of applications, particularly in the field of optical fibre cables, infrared and laser.

2.2 Telecommunications Systems

Within the definition of this Recommended Practice a Telecommunication System is defined as a collection of individual items of equipment interconnected by means of transmission media to form a communication network. Such a network is used to provide the transmission path for any combination of voice, image, text or data communications.



A number of communication applications are used on existing offshore oil and gas fixed manned installations. These are generally divided into the following categories:-

1. *Network Communications and Communication links (BP Group [RP 59-2](#))*
2. *Shipping and Aeronautical Communications (BP Group [RP 59-3](#))*
3. *On-Platform Communications (BP Group [RP 59-4](#))*
4. *Emergency Communications (BP Group [RP 59-5](#))*
5. *Telecommunication Power Supplies (BP Group [RP 59-6](#))*

This RP covers the requirements for emergency communication systems. The other categories are dealt with in other parts of the RP 59 series and will be referred to as and when required.

3. DEFINITION OF REQUIREMENTS

3.1 Purpose of Emergency Telecommunication Systems

Telecommunications systems form a major part of the requirements for 'emergency systems' on an offshore installation. These are systems that are used for fire or incident control and are required to safely muster and evacuate personnel from the installation during an emergency.

However, telecommunications systems are by their nature, sources of electrical ignition and they must be designed and installed to safely operate in a potentially explosive atmosphere.

An unintentional release of gas is more likely during an emergency and all equipment that is required to operate during a installation evacuation must be suitable for use in potentially explosive atmospheres even though it may normally be used in 'safe' areas.

The final stage of 'shutdown' of an offshore installation is initiated when the decision is made to evacuate. All gas and oil processes stop and the main and emergency primary sources of generated electrical power are shutdown; only secondary sources of electrical battery power can be used. It is therefore important to carefully select which telecommunication systems should remain operational during an emergency and to not only ensure that they do not create unnecessary sources of gas ignition but that they can operate efficiently from secondary sources of electrical battery power.

3.2 General Requirements

The telecommunications systems required during an emergency are described in the UKOOA document 'Guidelines for safety related telecommunications systems on normally-manned fixed offshore installations'. The systems normally selected to meet the UKOOA requirements are summarised and categorised in accordance with the Telecommunication Recommended Practices as follows:-



(a) Network communications (See BP Group [RP 59-2](#))

- Communication link 'hotline' telephone to BP's incident control.
- Communications links to other installations
- Telephone system.

The telephone system would normally be required during any emergency incident on the installation; however, it would not normally be required during evacuation after the final stage of shutdown on the installation.

(b) Shipping and aeronautical communications
(see BP Group [RP 59-3](#))

- Vhf(fm) marine radio communications to vessels
- Vhf(am) aeronautical radio communications to helicopters
- Vhf(fm) marine and EPIRB lifeboat communications

(c) On-platform communications (see BP Group [RP 59-4](#))

- Public address/general alarm system
- Emergency telephone system
- UHF handportable radio system

This system would usually be required during any emergency incident on the installation; however, it would not normally be used during evacuation after the final stage of shutdown. Handportable communications would usually be restricted to vhf marine handportable radios during evacuation in order to avoid confusion. The uhf channels used are unique to any installation and cannot be used by safety vessels or helicopters and the use of uhf handportable radios could cause confusion during evacuation.

The minimum requirements for emergency systems are defined in Statutory Instrument 1542, 1019, 486, and the Health and Safety Commission [Draft Offshore Installation Regulations](#); however, there are a number of other telecommunication items installed on an offshore installation which are used for normal operation which may also continue to be used during an emergency. This Recommended Practice clarifies some of the recommendations made in the UKOOA document in terms of the Telecommunication Recommended Practices and describes the telecommunications systems that are allocated for use in an emergency and which systems are shutdown



4. SELECTION OF EMERGENCY TELECOMMUNICATION SYSTEMS

4.1 General Principles

In an emergency situation, sufficient communications systems should remain in operation on the installation to enable personnel on the installation to be kept informed about the nature of the emergency and where necessary for them to take action and control the evacuation. Communications should also be maintained to nominated external agencies both in the immediate area of the installation and onshore who are required to give assistance during the emergency operation. However, consideration must be given to ensuring that the continued operation of these communications services does not result in the creation of additional hazards. The way in which this is achieved for each system is detailed below, but there are some general principles which apply to all systems:-

- (a) Communications equipment operating in potentially explosive atmospheres must be designed, installed and certified to operate in Zone 1 hazardous areas. This means that:-
 - (i) All equipment external to the main equipment rooms that is required to operate during an emergency evacuation should preferably be certified.

Where the externally installed equipment is not certified it must be protected so that in the event of an explosive level of gas entering the equipment enclosure the equipment must be automatically or manually isolated from all sources of electrical power.

This could apply for example, to externally mounted radio satellite equipment.

- (ii) All equipment that is installed in equipment rooms which is not certified to operate in a potentially explosive atmosphere but is required to operate during an emergency evacuation must be protected so that in the event of an explosive level of gas entering the room the equipment must be automatically isolated from all sources of electrical power.
 - (iii) Equipment required to operate during a local incident must be certified for use in the location where it is installed.

(Equipment should be certified according to [BS 5501](#) and [BS 5354](#))



- (b) All portable equipment that is required to operate in an emergency evacuation or in an area that has the risk of being in a potentially explosive atmosphere must be certified intrinsically safe (i.s.)

Where such equipment is not commercially available according to [BS 5501](#) and [BS 5354](#) adequate warning labels must be attached to the device. See BP Group [RP 59-3](#) and BP Group [RP 59-4](#). This applies mainly to handportable radios used during an emergency or incident.

- (c) Where continued operation of communications systems in emergency situations is necessary, they must be fed from an Uninterruptable power supply (ups) system.

See BP Group [RP 59-6](#) for details of telecommunication power supply systems.

- (d) More than one method should be provided for achieving the emergency communications requirements noted in this Recommended Practice so that at least one method can reasonably be expected to be available after a major incident. Alternate methods can be achieved by either duplication of equipment, or duplication of systems, or using dissimilar systems.

- (e) Radio antennas should be located in areas which are not normally potentially explosive. Calculations and surveys must be carried out to ensure that field strengths in nearby hazardous areas are below the level necessary to create rf. induced ignition. Radio transmitter output powers must be reduced to safe levels during an emergency evacuation.

As described in [BS 6656](#)

- (f) All cables external to equipment rooms must be mechanically protected, and manufactured to flame-retardant or fire-resistant specifications as appropriate to the particular application.

See BP Group [RP 59-11](#) for details of requirements for flame retardant and fire resistant cabling.

4.2 Network Communications

4.2.1 Dedicated Links to Shore

In an emergency it is desirable that at least two independent methods of communicating to shore are available.



Statutory Instruments require that effective communications should be maintained between the offshore installation and onshore radio stations and emergency control centres. In addition if there is a gas or oil pipeline to shore, Statutory Instruments require that there should be a means of shutting down the pipeline at either end and that communications should be provided to carry the signals or instructions to enable this shutdown to be carried out.

Although an offshore installation is normally equipped with a mf/hf transceiver and this could be used to contact the onshore stations during emergencies its use may be restricted by radio atmospheric conditions. In addition if gas is detected on the installation the mf/hf transceiver will be shut-down, and therefore not available for use. Two independent multi-channel links are usually provided and these links should act as the main choice to provide any dedicated and duplicated voice hot line telephone links from the installation to the company's emergency control centre for use in an emergency and to control the shutdown of pipelines.

In any emergency where there has been an escape of gas, the operation of the high power transmitter equipment could be considered a potential hazard. This system would only be required during any emergency incident on the installation if the main communication links to the shore are not functioning. The high power transmitter would be required to be shutdown at the final stage of shutdown on the installation since the externally mounted antenna tuning unit is unlikely to be certified for operation in potentially explosive atmospheres and there will also be a need to prevent the risk of radio frequency induced ignition. For these reasons the mf/hf equipment is unlikely to be used for emergency communications. The radio satellite links and any fixed multichannel radio links are normally used. Alternatively, where this is within range, vhf marine radio could be used.

See [SI 1019](#) and BP Group [RP 59-2](#) for details.

With the availability of satellite systems that are suitable for use with earth stations with relatively small diameter antennas, installations now normally have direct links to shore via two separate radio satellites and mainland earth stations.

Any externally mounted equipment should be protected by gas monitoring equipment which remains operational after the installation is shutdown.

4.2.2

Communication to Other installations

Statutory Instruments require effective communications to be maintained with other offshore installations. This requirement could be met by the use of vhf marine communications; however, this is not always the case and a more reliable form of communication is required. In addition if there is a gas or oil pipeline between two installations Statutory Instruments require that there should be a means of shutting down the pipeline at either end and that communications should be provided to carry signals or instructions to enable this shutdown to be carried out. This requirement is normally met by the use of a dedicated hot line telephone voice circuit carried on a fixed multichannel radio link between the two installations.



See [SI 1513](#) and [SI 1019](#) and BP Group [RP 59-2](#) for details of the requirements

These inter-platform links can also provide a useful alternative means of communication to shore during an emergency evacuation.

4.2.3 Telephone System

There are no Statutory Instruments which specifically require the provision of a telephone system on manned offshore fixed installations. The system would, however, normally be used during a minor offshore incident to communicate from the area to the control room or other incident control centre. The telephone system would not normally be necessary during an emergency evacuation, other more robust, 'all informed' methods of communications would be used.

A switched telephone system is provided to give person-to-person voice communications between nominated locations on the installation. Facilities are provided so that telephone extensions can access company locations onshore and external locations via the public switched telephone network. The telephone system would normally have an interface to the uhf handportable radio system to allow intercommunications with personnel using uhf handportable radios. See BP Group [RP 59-2](#) for details of the telephone system. The emergency telephone system would be used during an evacuation and the telephone system that is connected to the company's communications Network would usually be shutdown.

4.3 Shipping and Aeronautical Communications

4.3.1 Communication to Ships

Statutory Instruments require effective communications to be maintained between the installation and any vessels in its vicinity. In addition an alternative means of communication between the installation and its standby vessel must be provided.

See [SI 1542](#) and [SI 1229](#) for details of the requirements

Platform-to-ship communications is treated in the same way as ship-to-ship communications, so this requirement is primarily met by the use of fixed or mobile marine-band vhf radio base station equipment operating on normal designated inter-ship channels. The installation is also equipped with an mf/hf radio transceiver which can be used to contact ships at greater distances from the installation if necessary.

Alternative means of communication to the standby vessel can be provided by the use of handportable vhf marine radios.⁰

See BP Group [RP 59-3](#) for details of marine communications.

4.3.2 Communications to Helicopters

Statutory Instruments require effective communications to be maintained between the installation and helicopters.



See [SI 1019](#) for details of the requirements.

Aeronautical band fixed or mobile vhf transceivers are installed to establish communications with helicopter pilots.

See BP Group [RP 59-3](#) for details of aeronautical communications.

4.3.3 Lifeboat Communications

Statutory Instruments require enclosed survival craft to be fitted with equipment capable of transmitting and receiving on 2182 kHz or marine-band vhf channel 16. On early installations, the only approved equipment available at the time of commissioning operated on 2182 kHz. However, marine band vhf equipment approved for installation in survival craft has since become available and lifeboats should now be fitted with these.

See [SI 486](#) and BP Group [RP 59-3](#) for details of the requirements.

VHF marine band radio is more suitable for the type of rescue operations involving ships, helicopters and other installations who will all be equipped with this type of communication.

4.4 On-Platform Communications

Various systems are used for communications within the installation under both normal operating and emergency conditions. These may be considered complementary to each other, so that a number of options for internal communications should be available at all times.

4.4.1 Public Address/General Alarm Systems

Statutory Instruments require that every normally manned offshore fixed installation should be fitted with a PA system and a GA system. Audible alarms should be broadcast over the complete installation with visual alarm warnings broadcast to areas of high noise. These systems are required to generate alarms and transmit verbal instructions to personnel in an emergency. A combined PA/GA system is permitted provided it is as effective as two separate systems and it cannot be rendered inoperable by a fault, fire or explosion in any single location. Each system is required to be fed from two independent sources of power, at least one of which should be available in any emergency. Access to the PA/GA system should be provided in the main control room and at other nominated control positions.

See Statutory Instruments ([SI](#)) [486](#) and BP Group [RP 59-4](#) for details of the requirements of the PA/GA system.

4.4.2 Emergency Telephone System



The emergency telephone system is provided to meet the requirement of the Statutory Instruments which requires each person in charge of a muster station to have the facility to report to the central control point and or secondary control point during an emergency evacuation or an emergency incident.

See [SI 1542](#) and section 90.5.3 of the 'Guidance on Design, Construction and Certification' for details of the requirements.

The emergency telephone system provides point-to-point voice communications between two or more fixed locations. The system is used where there is a requirement for instant voice access, without the delay that is involved in setting up a connection via a switched telephone network, or where there is a requirement for long-term communications which would otherwise tie up telephone circuits and equipment. Microphone/loudspeaker units are normally used. See BP Group [RP 59-4](#) for details of the emergency communications system.

4.4.3 Hand-Portable Radio Communications

There are no Statutory Instruments requiring the provision of on platform uhf hand-portable radio systems on normally manned offshore fixed installations. The uhf hand-portable radio system would however, be used by fire and rescue teams during a local fire incident offshore. The uhf hand-portable radio system would not normally be used during an emergency evacuation.

Vhf marine band hand-portable radios, however, are used extensively during an emergency evacuation (see section 4.3.1).

UHF handportable radio transceivers are provided for person-to-person voice communications in situations where normal telephones or fixed intercom systems are not provided. The system is designed to use direct portable-to-portable communications, or operation through a base station repeater. During an emergency evacuation, the use of marine band vhf handportable radios are preferred. The uhf handportable radio system would usually be required during any emergency incident on the installation; however, it would not normally be used during evacuation after the installation is shutdown. Handportable communications would usually be restricted to vhf marine handportable radios in order to avoid confusion. The uhf channels used are unique to any installation and cannot be used by safety vessels or helicopters and the use of uhf handportable radios could cause confusion during evacuation. The vhf marine band is widely used by the support services and is therefore more appropriate for use by persons controlling the situation and used for simultaneously informing all parties of the actions to be taken.

See BP Group [RP 59-4](#) for details of the uhf system normally used on an offshore fixed installation.



5. ACCOMMODATION AND CONSTRUCTION OF EMERGENCY TELECOMMUNICATIONS SYSTEMS

The following explanation clarifies some of the recommendations detailed in the UKOOA document 'safety related telecommunications systems on normally-manned fixed offshore installations'

The design of the emergency telecommunications systems on an offshore manned fixed installation should take into consideration the need to maintain services in an emergency situation. Equipment in one room or antennas in one location may be disabled while equipment or antennas in an alternative location should continue to function.

5.1 Equipment Location

Various Statutory Instruments relate to the locations of telecommunications equipment on offshore installations. Separate rooms should be provided in a non-hazardous area of the installation for the radio operator, preferably overlooking the helideck and an incident such as a fire or explosion at any one location should not render the emergency systems inoperable. The installation alarm system has to be capable of being operated from the main control room and a minimum of one other control position.

The SI requirements have generally been interpreted as implying the use of duplicated systems, with equipment for each of the two systems installed in separate locations. See [SI 1019](#) and [SI 486](#) for details of the requirements.

The main items of emergency telecommunications equipment installed on a manned offshore fixed installation are duplicated in order to protect against equipment failures; however, in order to protect their integrity against external influences and avoid the risk of complete communications failure to both parts of the system simultaneously, the equipment should be installed in two geographically separated protected locations. The locations should be assessed for simultaneous failures caused by localised power failures or shutdowns, explosions, gas ingress, smoke ingress, fires, supporting system failures (e.g. air conditioning, fire and gas detection, and ESD failures) and mechanical damage caused by impacts, collisions or vibration. The equipment should be installed in dedicated fire, gas and explosion proof telecommunications equipment rooms.

Equipment which requires to be 'operated', monitored, or adjusted during operation by an operator would also be duplicated and installed in two separate locations so that it can be operated from two independent operations rooms which are safeguarded from simultaneous failures caused by any external influencing factors.

E.g. the event of the main control room being disabled in an emergency, facilities should also be available from the radio operators room or from the helioffice. The radio operators room or the helioffice could therefore be nominated as an alternative control point in the event of the main control point being disabled. In



this case the control room and the helioffice need to be well separated so the possibility of simultaneous damage to both is minimised.

5.2 Antenna Locations

Any antennas used for any of the emergency telecommunication systems should be mounted in suitable locations to minimise the risk of simultaneous failures caused by external influences.

The Antennas used for external radio links are located so that they can be pointed in the required direction e.g. towards an adjacent installation or geostationary satellite. However, the choice of suitable areas where antennas can be installed is limited and they compete for space with other essential requirements. Antennas associated with services such as marine, aeronautical and handportable radio systems are normally installed at a high level on the installation that have good all round clearance in order to provide coverage. Duplicate antennas can be installed to reduce maintenance down time periods, however the second location is not normally ideal from the coverage point of view and a compromise is necessary. Where possible radio equipment should be located reasonably close to the selected antenna positions to keep transmission losses in the connecting cables to an acceptable level.

5.3 Mechanical Design Considerations

Generally the main equipment that is accommodated within the internal equipment rooms should be manufactured to a commercial industry standard. Certain marine radio equipment may be manufactured to operate in a marine environment otherwise no special precautions are normally taken to 'ruggedise' or protect the equipment. The design of the telecommunication equipment rooms should be adequate to safeguard the internal equipment against fire, gas and blasts from explosions.

All externally mounted equipment should be certified to operate in the location where they are to be installed.

6. TELECOMMUNICATIONS POWER SUPPLIES

Statutory Instruments require that the radio installations and the PA/GA system be fed from an emergency power supply capable of supplying electricity for a period of at least 24 hours. This requirement is normally met by the installation of an emergency generator which starts automatically whenever the main generators are shutdown. The installation should also have a minimum of two independent battery ups systems installed which are suitable to supply each of the independent duplicated emergency communications systems. Each ups should be designed with sufficient capacity to feed their respective emergency communications equipment load for a minimum period to safeguard against the possibility of the emergency generator not starting when the main generator fails and to cover the time necessary to rectify the situation or evacuate the installation.



See [SI 289](#) for details of the requirement and BP Group [RP 59-6-](#) for details of sizing the ups systems.

In the Guidance Notes to [SI 289](#) the minimum standby period proposed by the D.En to cover orderly evacuation following complete loss of mains power is one hour, but longer periods are recommended for installations which have large numbers of personnel on board, or are in isolated locations and/or a long distance from rescue services.

After the final stage of shutdown when both main and emergency power may be lost, personnel may be either safely held on board or evacuated from the installation. There could therefore be a lengthy period between the occurrence of an emergency situation and installation evacuation, with personnel gathered in safe muster areas and any telecommunication power supplies provided should be sufficient to handle this.

The primary means of evacuation from an offshore installation is by helicopter, and there are considerable variations in evacuation times for different installations and between day and night. A probabilistic study for a North Sea installation was carried out for the Dept. of Energy in 1986. (Comparative Safety Evaluation of Arrangements for Accommodating Personnel Offshore, Report Ref. [DTN-88-175](#), Technica 1988). This gave evacuation times of 125 minutes for 175 personnel by day and 200 minutes by night.

Lifeboat evacuation rates have been considered by Technica ([MILO \(1986\)](#). A computer Simulation of Offshore Evacuation by Helicopter; Report to the D.En September 1986) and they showed that an evacuation time of 60 minutes should in most instances be achieved.

Discussions with various offshore installation managers (OIM's) and safety personnel within BP concluded that the longest time that personnel should remain on board an offshore installation after loss of all main electrical power would be one hour. Other factors such as emergency lighting, air conditioning, fire protection equipment etc. would prevent this period from being any longer.

It is therefore, concluded that the time duration of standby battery supplies for offshore telecommunication emergency systems should be sized to accommodate a minimum of one hour for all emergency telecommunication systems followed by a minimum of four hours for those systems that are needed for evacuation.

The Emergency Generator could be shut down at the final stage of shutdown or when gas is detected or it is shutdown manually. Under these conditions the battery ups systems would normally have sufficient capacity to feed the communications systems that remain in operation for a minimum of four hours. This is provided other equipment is isolated.

Almost all communications equipment is fed from battery ups systems and not just the minimum required by the Statutory Instruments. This arrangement has the following advantages:-

- (i) operation is continued during any changeover to the emergency generator and in the event of total installation mains power failure.
- (ii) protection is given against installation mains voltage variations, transients and mainsborne interference which could damage or degrade the performance of equipment, and
- (iii) power is provided for those systems that it is necessary to maintain in operation after the final stage of shutdown or in an emergency situation where the emergency generator has been shutdown, e.g. in the event of gas being detected into the generator's air intake.



7. SHUTDOWN SYSTEMS

The Statutory Instruments specify which telecommunications services should remain operational until the installation is abandoned; however, it is also necessary to consider the safety implications in doing this. In the interests of personnel safety it is desirable to maintain as much of the communications equipment in operation as possible but it should be ensured that its continued operation does not give rise to gas ignition or operational hazards.

Full details on shutdown systems for telecommunication apparatus is given in BP Group [RP 59-1](#) and this should be consulted for full details on the requirements for shutdown involving the use of emergency telecommunication systems on manned offshore fixed installations.

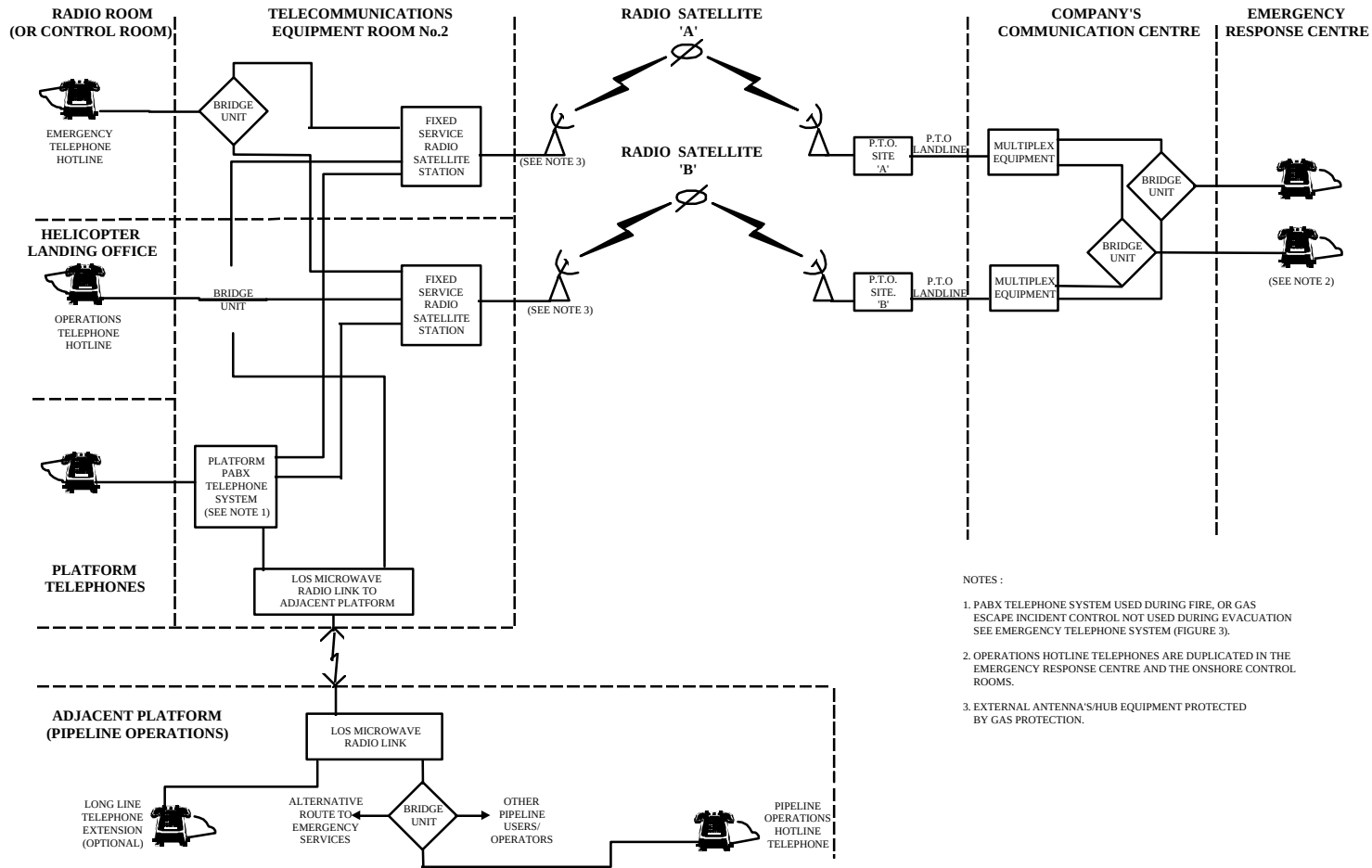
At the final stage of emergency shutdown, when the decision is made to evacuate and all oil and gas processes stop and all main electrical power is shut down; the radio installation, alarm and public address systems should remain operational. There is also a requirement for persons in charge of muster stations to be able to communicate with the control room. This means that after the final stage of shutdown, there should remain in operation the PA/GA system, and some means of communicating to shore, ships, helicopters and other installations. The way in which this is achieved has been described in the previous sections.





Typical Emergency Telecommunications System
Block Diagram - Network Communication

FIGURE 1



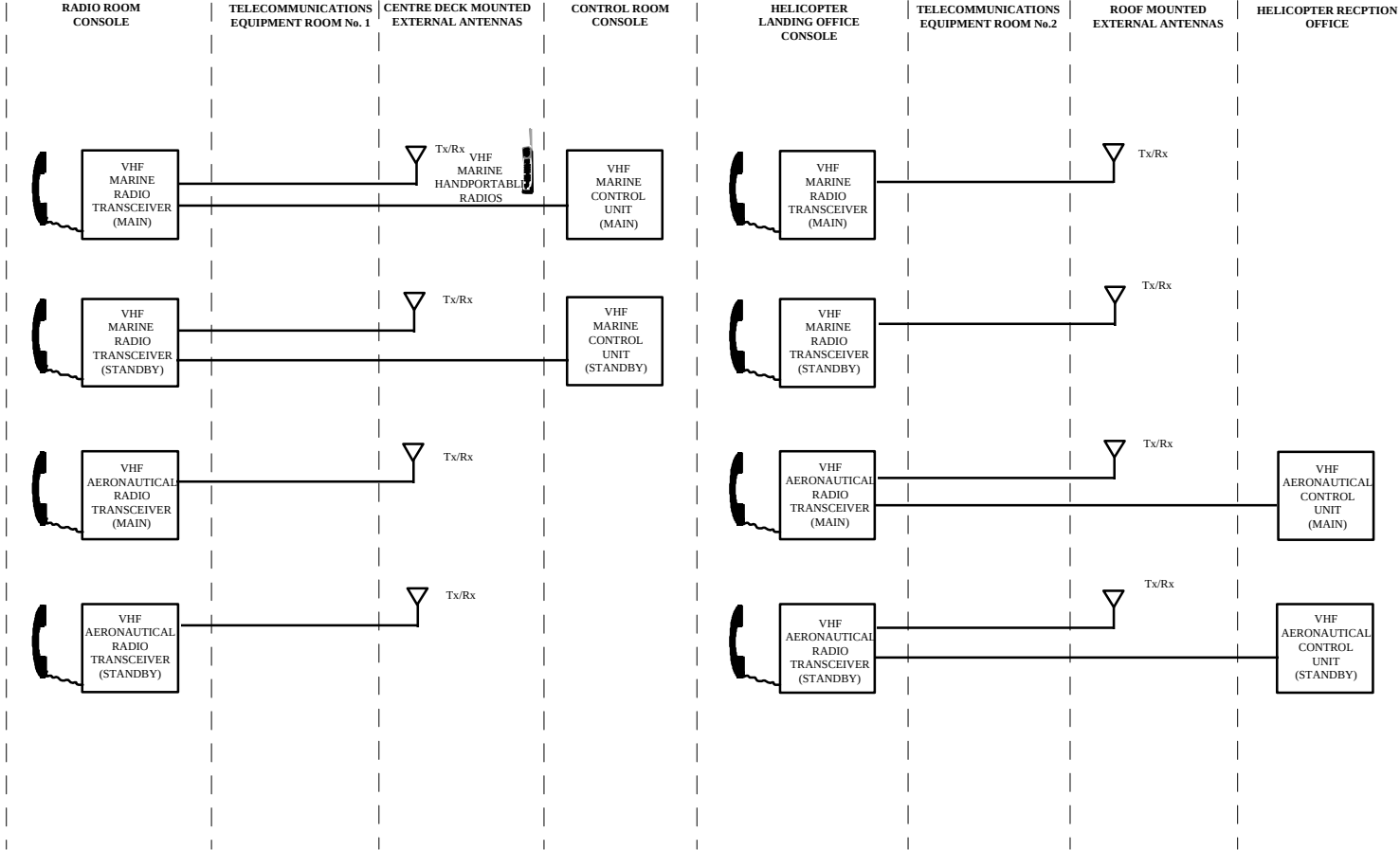
NOTES :

1. PABX TELEPHONE SYSTEM USED DURING FIRE, OR GAS ESCAPE INCIDENT CONTROL NOT USED DURING EVACUATION SEE EMERGENCY TELEPHONE SYSTEM (FIGURE 3).
2. OPERATIONS HOTLINE TELEPHONES ARE DUPLICATED IN THE EMERGENCY RESPONSE CENTRE AND THE ONSHORE CONTROL ROOMS.
3. EXTERNAL ANTENNA'S/HUB EQUIPMENT PROTECTED BY GAS PROTECTION.



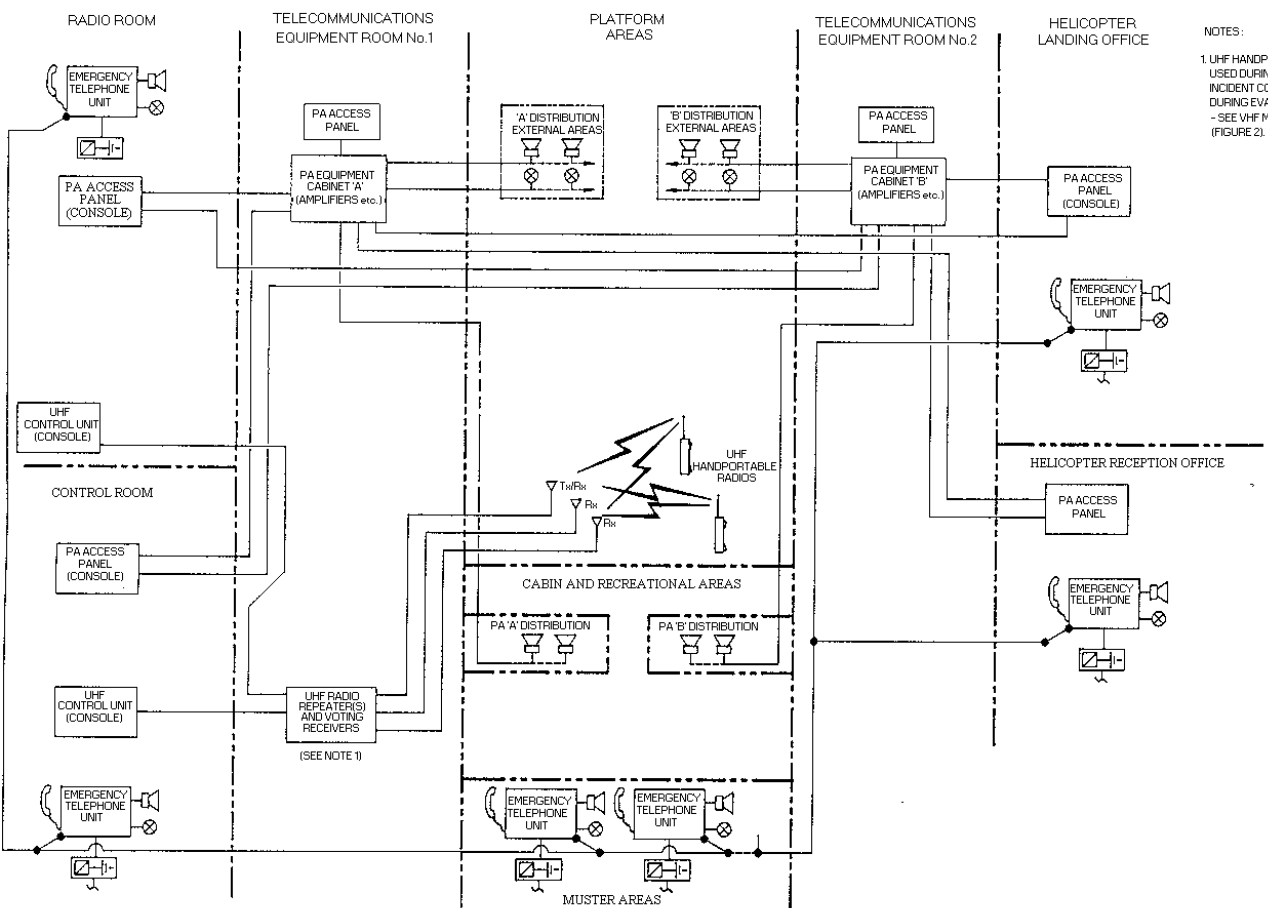
Typical Emergency Telecommunications System
Block Diagram - Shipping and Aeronautical Communications

FIGURE 2



Typical Emergency Telecommunications System Block Diagram - On-Platform Communications

FIGURE 3



DEFINITIONS AND ABBREVIATIONS**Definitions**

Standardised definitions may be found in the BP Group RPSEs Introductory Volume.

Abbreviations

ESD	Emergency Shutdown
GA	General Alarm
IEE	Institution of Electrical Engineers
kHz	1 kHz = 1000 Hz
MF	Medium Frequency (300 kHz to 3 MHz)
PA	Public Address system
HF	High Frequency
SI	Statutory Instrument
UHF	Ultra High Frequency (300 MHz to 3000 MHz)
UKOOA	United Kingdom Offshore Operators Association
UPS	Uninterruptable Power Supply
VHF	Very High Frequency (30 MHz to 300 MHz)



LIST OF REFERENCED DOCUMENTS

A reference invokes the latest published issue or amendment unless stated otherwise.

Referenced standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of the purchaser's professional engineer that they meet or exceed the requirements of the referenced standards.

The following are U.K. Regulations, Standards, Guides and Codes of Practice containing sections relevant to Emergency Communication Systems and should be referred to for the interpretation and application of this Recommended Practice:

British Standards

BS 5345: *Code of Practice for the selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or explosive processing and manufacture) Part 1 Basic requirements for all parts of the code Part 2 Classification of hazardous areas*

(This is primarily concerned with the classification of hazardous areas and the selection of appropriately certified equipment for those areas)

BS 5501: *Electrical apparatus for potentially explosive atmospheres Part 1 General requirements Part 5 Flameproof enclosures Part 7 Intrinsic Safety 'i'*

This describes the requirements for equipment for use in hazardous areas

BS 6656: *Guide to Prevention of inadvertent ignition of flammable atmospheres by radio-frequency radiation Revised 1991.*

IEE Recommendations for the Electrical and Electronic Equipment of Mobile and Fixed Offshore Installations

A general design guide for electrical and electronic equipment on offshore applications

Mineral Workings (Offshore Installations) Act 1971 Guidance Notes

(i) *Offshore Installations:- Guidance on life saving appliances - Department of Energy.*

Includes guidance on matters relating to radio equipment for tempsc's and public address systems included in SI 486

(ii) *Offshore Installations: Guidance on Design and Construction - Department of Energy.*

Includes guidance on matters relating to certification, emergency shutdown systems and emergency power supplies included in SI 289



UK Statutory Instruments

[SI 289](#) Offshore Installations, Construction and Survey

(Prescribes the use of standards for the design and construction of offshore installations and includes requirements relating to equipment to be placed in hazardous areas)

[SI 486](#)

Offshore Installations, Life saving Appliances

[SI 1229](#)

Offshore Installations, Diving Operations

[SI 1019](#)

Offshore Installations, Operational Safety, Health and Welfare

[SI 1513](#)

Submarine Pipe-lines, Safety Regulations

[SI 1542](#)

Offshore Installations, Emergency Procedures

[SI 2885](#)

Offshore Installations (Safety Case) Regulations

United Kingdom Offshore Operators Association

[Guidelines for safety related telecommunications systems on normally-manned fixed offshore installations](#)

Health and Safety Commission

[Draft Offshore Installations \(Prevention of Fire and explosions, and Emergency Response\) Regulations and Approved Code of Practice.](#)

BP Group Documents

BP Group RP 59-1	Telecommunication - Emergency Shutdown Systems
BP Group RP 59-2	Selection of Network Communications for Manned Offshore Fixed Installations
BP Group RP 59-3	Selection of Shipping and Aeronautical Communication for Manned Offshore Fixed Installations
BP Group RP 59-4	Selection of On-platform Communication for manned Offshore Fixed Installations
BP Group RP 59-6	<i>Selection of Telecommunication Power Supplies for Manned Offshore Fixed Installations</i>
BP Group RP 59-7	<i>Electromagnetic Compatibility for Manned Offshore Fixed Installations</i>
BP Group RP 59-8	<i>Selection and use of Temporary Telecommunication for Offshore Installation Projects</i>
BP Group RP 59-11	<i>Design and Installation Practice for Telecommunication Systems on Manned Offshore Fixed Installations</i>

