



**HSE DIRECTIVE 8  
ELECTRICAL INSTALLATIONS**

# 1. GENERAL

## Purpose

The purpose of this directive is to ensure that

- electrical installations are operated and maintained in accordance with current regulations and internal requirements
- electrical installations are installed in a safe way and in accordance with current regulations and internal requirements

## Scope

This directive applies to

- all BP-operated installations and contracted installations/vessels on the Norwegian continental shelf including onshore plants covered by the Norwegian Petroleum safety regulations (PSA)
- all installations/projects for which BP Norge is the developer

## References

- The Activities Regulations :  
Section 82 Work on and operation of electrical installations
- The Facilities Regulations :  
Section 46 Electrical installations  
Section 37 Emergency power and emergency lighting  
Section 78 EMC  
Section 79 Ex-equipment  
Section 80 ATEX  
The Norwegian Petroleum Safety Authority's (PSA) regulations
- Regulations relating to safety in work on electrical installations (FSE)  
The Directorate for Fire and Electrical Safety's regulations
- Regulations relating to qualifications for professional electrical personnel  
The Directorate for Fire and Electrical Safety's regulations
- 059 Recommended guidelines for the competence and training of electrical personnel  
The Norwegian Oil Industry Association's guidelines
- Norsok standard Z-015N Temporary equipment
- 1.70.007 Control of contractor equipment
- Requirement stipulator matrix – BP Norge
- HSE Directive no. 1 - Work permits
- HSE Directive no. 5 - Energy isolation

## Roles

- **Responsible person electrical systems** has been appointed by BP to ensure that electrical installations at all times comply with current regulations, including design/building of new installations and contracting of installations and vessels
- **The deputy responsible person electrical installations** is a BP employee appointed by the *responsible person electrical installation* to carry out the *responsible person's* tasks when he or she is absent

- **An authorised person electrical** is a BP employee appointed by the responsible person electrical installation to ensure that electrical installations and equipment are carried out in accordance with current regulations within one field
- **A deputy authorised person electrical** is a BP employee appointed by the *responsible person electrical installation* to carry out the authorised person's tasks when he or she is absent
- **Area authority for electrical installations** is a person appointed by the responsible person electrical installation to carry out daily operations and maintenance of electrical installations on a specific facility or in a delimited area . This person reports to the authorised person electrical
- **Instructed, non-authorised personnel** are personnel that have undergone the necessary instruction to carry out certain tasks
- **A responsible supervisor** is a supervisor of work that is specified in the work permit
- **A competent person** is a professionally qualified person approved by the *responsible person electrical installation* to work independently on electrical installations
- **An operations engineer, electrical** is an engineer on land who provides professional support to the operation of electrical installations on the facility
- **Lead electro engineer project** is an engineer normally dedicated to a major project obligated to follow electrical requirements from initial stage to the operational stage. Special topics affecting basic electrical safety matters shall be clarified with Responsible person electrical systems
- **An installer** is a professionally qualified person approved by the *responsible person electrical installation* to carry out installation of new electrical systems and/or carry out modifications to existing electrical systems

## Definitions

- **Warning sign** is a warning sign with black text on a yellow background that warns of the danger of getting too close to or touching live parts of the apparatus that can be dangerous
- **Work permit (WP)** is a written permit to carry out a defined task in a given place on an installation under given preconditions in a safe manner
- **Responsible for operations** imply overall professional supervision of electrical installations, and ensuring that electrical installations are planned, executed and operated in accordance with the regulations
- **High voltage installations** are electrical installations with a nominal voltage above 1000V alternate current or 1500V direct current
- **Earthed** means that the electrical installation is short-circuited and connected to the installation's main earth so that electrical energy is discharged quickly and safely in the event of short-circuiting

- **Condemned equipment** is equipment that has been removed from operations permanently. The equipment has been electrically secured (disconnected and earthed) and all labels have been removed.  
Condemned equipment is not being maintained as it is no longer considered electrical equipment.  
Condemned equipment is marked "Kondemnert" ("Condemned")
- **Low voltage installations** are electrical installations with a nominal voltage up to and including 1000V alternate current or 1500V direct current
- **Preserved equipment** is equipment that is out of operation temporarily, but which is expected to be used at a later date. Preserved equipment is connected to the electrical distribution system. This equipment shall be maintained to fulfil safety requirements according to the regulations. Preserved equipment is marked "Preservert"
- **Safety card** is a personal card issued by the *responsible person electrical installation*, showing authorisation, access permit and limitations for the individual. The *responsible person electrical installations* keeps an updated list of all safety cards
- **Live equipment** means that the equipment is electrically charged

## 2. RESPONSIBILITIES

### Person responsible for electrical system

is responsible for

- technical integrity, operation, installation and maintenance of electrical installations belonging to BP Norge
- ensuring that the rig owner complies with regulatory requirements regarding electrical installations when rigs are contracted
- ensuring that all personnel involved in operation and maintenance of and modifications to electrical installations are qualified according to regulations and internal requirements
- ensuring internal control of operation, maintenance, documentation, personnel qualifications and electrical systems
- being updated/involved in design, engineering and installation of new electrical installations/systems
- being updated regarding the use of electrical installations/systems on contracted vessels

### Authorised person electrical

is responsible for

- ensuring that daily operation and maintenance of and modifications to electrical installations in the field are carried out safely and in accordance with the current regulations and internal requirements
- reporting status and incidents in electrical installations on the field to the *responsible person electrical installation*

- clarifying non-conformance vis-à-vis the set requirements with the responsible person or the *operations engineer, electrical*

### **Area authority for electrical installations**

is responsible for

- ensuring that daily operation and maintenance of and modifications to electrical installations on a specific facility and/or in a delimited area are carried out safely and in accordance with current regulations and internal requirements
- reporting status and incidents in electrical installations in the area to the *authorised technician*

### **Operations engineer, electrical**

is responsible for

- providing professional operations support to the facilities, such as
- control of documentation and electrical equipment to be sent to the facilities
- follow-up of daily operation of electrical installations and equipment
- preparation and follow-up of measures that ensure the integrity of the installations in the short and the long term
- performing the installer function for the *responsible person electrical installation* in the case of minor modifications of electrical installations
- reporting undesired conditions and incidents and clarify non-conformances from internal requirements and regulations concerning electrical installations to the *responsible person electrical installation*
- verifying and reporting activities concerning electrical installations to the *responsible person electrical installation*

### **Lead electro engineer project**

is responsible for

- to provide electrical support to project phases like:
  - o Design, choice of equipment and electrical installations conform to stipulated requirements set fourth in the req. matrix
  - o electrical personnel involved in projects have the necessary competencies
  - o Facilitate pre- and completion documentation from designer and installation personnel
  - o Maintain dialogue and clarify special topics affecting electrical and fire safety in liaison with Person responsible for electrical system
- Quality control that rented equipment to the project conform to prevailing requirements
- Clarify and document areas of responsibilities related to electrical systems during test and operational stages in the project
- Report serious incidents, incidents related to electrical current during project stages to Person responsible for electrical system

- Inform Person responsible for electrical system about actions, including all meetings with the PSA / clarifications / verifications in advance to such activities

### **Offshore installation manager (OIM)**

is responsible for

- directives regarding electrical installations being known and followed within his area of responsibility

## **3. AUTHORITY AND COMPETENCE**

### **Requirements for reviewing this document**

All personnel involved in the operation of and/or work on electrical power production, distribution and battery system

*and*

all personnel contracted for repairs and maintenance of electrical installations

- must sign a statement to the effect that the provisions in this directive have been received, read and understood before they can start the work

### **Authority**

- A *responsible person electrical installations* must be appointed in accordance with the regulations. The responsible person electrical installations has overall responsibility and authority for operation, installation and maintenance of electrical installations on all facilities and contracted facilities/ vessels on the Norwegian continental shelf operated by BP Norge
- The *responsible person electrical system* may delegate authority in accordance with the regulations, by using safety cards. The person responsible keeps a list of delegated authority
- Personnel with delegated authority must carry their safety card when performing the work
- Employees of contractor companies carrying out work on electrical installations are under professional supervision and report to the authorised person electrical. The exception is personnel working under an *approved installer* in connection with modifications

### **Automation technician**

- An automation technician is authorised to carry out, on his own, maintenance and simpler repairs in the low voltage installations/circuits installations that form part of automated and similar installations.

The authorisation does not apply to work on the electrical distribution system. The distribution system includes also battery systems as far as circuit safety. If in doubt on borderline cases, consult the authorised person electrical

## General competence requirements

- All personnel that are to carry out tasks related to operation, maintenance, repairs and modifications of electrical installations and equipment must be familiar with the installation where the work will be done and be competent according to
  - o Regulations relating to professional qualifications for electrical technicians
  - o OLF - 059 Recommended guidelines for the competence and training of electrical personnel
- BP personnel involved in operation of electrical installations must be qualified in accordance with Competence description for offshore personnel
- Contracted personnel must have undergone training in accordance with Training plan for contractor employees

## Non-competent personnel

- Persons without the necessary competence must under no circumstances
  - o carry out repairs of electrical equipment
  - o correct faults on electrical equipment
  - o perform any connections in the electrical distribution system, reset electrical relays or operate switches which is part of the electrical distribution system, except when special acceptance is given

## First aid

- All operation and maintenance personnel who may be exposed to receiving an electrical injury must have undergone the necessary training to give first aid in such situations
- First aid training for electrical installation accidents must be refreshed every year in accordance with Regulations relating to safety in work on electrical installations (FSE)

# 4. OPERATION AND MODIFICATIONS

## General requirements

- All operation of and work on electrical installations must be carried out in accordance with Regulations relating to safety in work on electrical installations (FSE)

## Approval of work

- All work on electrical installations requires an *approved work permit level 2* except for
  - o work on live equipment (AUS work) where an *approved work permit level 1* is required
  - o reconnection after a blackout, where an approved operations procedure is required
  - o connection of high and low voltage power and isolating switches in relation to an accident where no work permit is required
  - o operation of remote-controlled stations for control of high and low voltage motors, where no work permit is required
  - o work not requiring a work permit according to the HSE directive for work permits

## Opening of enclosures in a classified area

- Opening of enclosures to live equipment in classified areas require
    - an approved *work permit level 1*
- except for*
- opening of enclosures that cannot cause the ignition of any gas mixture present. Ref. IEC 60079-17

## Work on explosion-proof equipment

- Maintenance of explosion-proof and intrinsically safe equipment must only be carried out by a qualified person with the necessary knowledge and information about the equipment and its protection

## Reporting of faults and incidents

- All electrical faults and incidents must be reported to *the authorised person electrical* on the facility
- *The authorised person electrical* must immediately inform *the responsible person electrical installations* or his deputy of serious accidents and undesirable incidents in the electrical installation, including incidents where a person receives an electric shock

## Modification / new installation

- For building new installations, and for modifications to existing electrical installations or equipment when there is an obligation to report, the *installer* must give notice of this in advance on the form *Notification of electrical installation* before the work and purchases begin
- The installation's authorised Person Electro shall be involved in the approval process and issue written acceptance prior to use of new / modified electrical installations
- Approval for commencement of operations for new electrical installations in major projects shall be issued by Person responsible for electrical system. Basis for subject approval is a compliance document issued and signed by competent engineering / installation personnel. The installation shall conform to BP's requirements related to electrical design and installations

## Accident precautions

- In all areas with electrical equipment, instructions approved by the Directorate for Fire and Electrical Safety must be posted on the walls, giving instructions for what to do regarding accidents caused by electricity

## Switchboard rooms and switch systems

- All electrical switchboard rooms defined as high voltage rooms must be locked whenever no work is taking place.
- Exemptions from the rule regarding locking of low voltage rooms can be made on old installations where there is a combined switchboard and a LER room if there is an instructed (not authorised) person onboard the platform/ installation concerned.

- Switchboard rooms containing only LV installations or HV installations which are secured separately (fenced in and equipped with a separate locked gate) are defined as low voltage switchboard rooms. If the room only contains a transformer with an IP degree of IP44 or more, the room can also be defined as a LV room.
- Rooms with electrical installations powered by 3 phase 400V systems with series-connected protection up to and including 63A or single-phase 230 supply are not regarded as electrical switchboard rooms and do not need to be locked.
- Keys to the switchboard room are only handed out to persons who have an access permit according to their *safety card*
- Only personnel with an access permit to high voltage rooms have access to high voltage rooms on their own
- Only personnel with an access permit to low voltage rooms have access to low voltage rooms on their own
- Switchboard rooms, transformer rooms etc. must not be used as secondary storerooms. The floor and the space above/behind the switchboard must be clean and free of requisites and other obstructions
- All entrances to switches, fuses and other equipment not in use must be blocked or closed off. All covers, cover bolts and nuts must be put in their correct position and tightly secured

### Control of earthing

- The installation's main earthing system must be controlled according to set routines. Connections and transition resistance must be controlled as far as practically possible.

## 5. SECURING HIGH VOLTAGE SYSTEMS

### General operation

- All operation of high voltage installations must be carried out in accordance with the Regulations relating to safety in work on electrical installations (FSE)
- Only the *authorised person electrical* has the authority to carry out connections in a high voltage installation on the relevant facility
- Connection of high voltage power and isolating switches requires detailed instructions and a permit from the *authorised person electrical* except in an emergency (arc fire / injuries )
- Normal operation (start/stop) of remote-controlled electrical high voltage users (pumps, compressors, etc.) may be carried out by Instructed, non-authorised personnel. Check before start that the necessary generator capacity is available

### Precautions, work on high voltage systems

- All work on high voltage installations must be carried out in accordance with the Regulations relating to safety in work on electrical installations (FSE)
- For work on a high voltage system, *the authorised person* must appoint a person to be in charge of connection and a person to be in charge of safety. The appointment may take place by word or mouth. The authorised person may appoint

himself as *the person in charge of connection or the person in charge of safety*

- Personnel appointed to be in charge of connection or safety must be approved by the Operations manager for high voltage installations (*the responsible person electrical installation*)
- For work on high voltage installations, the person in charge of connection must follow the Instructions for person in charge of connection
- For work on high voltage installations, the Person in charge of safety must following Instructions for person in charge of safety
- If the work requires more than one high voltage switch to be isolated, a connection order must be used
- When a telephone or radio is used for operation of or work on a high voltage installation, all messages must be confirmed by repeating the message. The messages should be logged if this is possible

### **Planning the work**

- All work on high voltage systems must be planned in accordance with the Regulations relating to safety in work on electrical installations (FSE)
- In addition, consequence-reducing measures such as those below must be considered:
  - o inspection of and availability of first aid equipment
  - o having an isolated rescue hook ready at the work place
  - o identifying all switches that must be taken out in the event of an accident
  - o inspection of and availability of a hand-held fire extinguisher
- Everyone involved in the work must be informed of the implemented measures before the work begins

### **Work on cables and conductors**

- *The person in charge of safety* shall ensure that the cable is not live, and that it has been insulated, short-circuited, earthed and identified before the work is started that will lead to cutting into the high voltage cable
- If there is any uncertainty in identifying the correct cable, with either high or low voltage, the cable must be shot and pigged with an approved apparatus

## 6. SECURING LOW VOLTAGE SYSTEMS

### General operation

- All operation of low voltage installations must be carried out in accordance with the Regulations relating to safety in work on electrical installations (FSE)
- *The authorised person electrical* has the responsibility and authority for connections in a low voltage installation
- Connection of low voltage power and isolating switches requires detailed instructions and a permit from the authorised person electrical expect in an emergency
- Normal operation (start/stop) of remote-controlled users (pumps, compressors, etc.) may be carried out by non-authorised personnel.

### Isolation

- Before any work is done on a low voltage installation, it must be isolated electrically in accordance with Electrical Isolation in HSE directive no. 5 Energy Isolation

### Work on live low voltage equipment

- All work on live equipment requires an approved *work permit level 1*
- If it proves necessary to carry out work on live low voltage installations or equipment, the work must be performed by a *qualified person*

The person doing the work must protect himself against direct contact with earth through the use of:

- o protective equipment in accordance with Section 14 of the Regulations relating to safety in work on electrical installations (FSE)

- o AUS tools

- For work on
  - o live installations above 250V

or

- o live installations below 250V and series-connected protection above 63A

there must be at least two persons with qualifications within electrical safety (FSE) and the necessary familiarity with the installation

In case the circuit is secured with series-connected protection of no more than 30mA **current trip for earth faults**.

- o safety goggles may be used instead of a face shield
- o the assistant does not need electrical qualifications, but shall be instructed and have first aid competency

### Planning the work

- All work of low voltage installations must be planned in accordance with the Regulations relating to safety in work on electrical installations (FSE)
- In addition, consequence-reducing measures such as those below must be considered

- o inspection and availability of first aid equipment
- o having an isolated rescue hook ready at the work place
- o identifying all switches that must be taken out in the event on accident
- o inspection and availability of a hand-held fire extinguisher
- Everyone involved in the work must be informed of the implemented measures before the work begins

### **Resetting the overload protection**

- Resetting the overload protection for outgoing circuits, with voltage up to and including 690V must be done by a competent person. If the circuit(s) is/are part of an automation system, the resetting can be done by an automation technician
- Resetting the overload protection should only be done once. If the overload protection falls out repeatedly, the competent person electrical shall search for /repair the fault before resetting is repeated
- All resetting of the overload protection must be reported to the *authorised person*, who must log the incident

## **7. ENERGISING ELECTRICAL CIRCUITS**

General rules for energising a system

- Electrical circuits or equipment must not be made live before the person who is appointed to carry out the connection is convinced it can be done safely.

The person who requests the connection shall ensure that the following precautions have been taken before the system is de-isolated and made live:

1. All work on the circuit has been completed, and the isolation confirmation certificate (ICC) has been signed by a qualified person
2. A notification of electrical installation or a voltage connection certificate has been issued for the circuit in question
3. Other non-electrical equipment such as pumps, compressors, fans etc, connected with the electrical circuit that may be affected by the connection to live voltage, have been confirmed by relevant discipline to be ready for start-up.
4. Temporary barriers, warning signs, etc. are put up around or on the equipment to be connected
5. Safety gear and tools are easily accessible
6. Special consideration has been paid to the area classification (danger of explosion )
7. Fire protection and detection is ready for use
8. Qualified personnel are available to carry out connections, check potential resets and remove safety earthing  
*For high voltage, the person in charge of connection and the person in charge of safety must both be present*

## Making the system live after modifications

- Before the current is reconnected following modifications to electrical circuits or equipment, a representative of the electrical installer and the electrical Authorised person or his delegation, must sign for completion/acceptance on notification of electrical installation . Before signing the authorised person shall ensure that the following documentation is available:
  1. Complete Mechanical completion (MC) and commissioning documentation where relevant points have been signed out by a competent professional
  2. All presented remarks (punch lists), non-conformance lists, dispensation lists, acceptances, etc.
  3. Drawings that clearly show the scope and interface for the new installation
  4. The notification of electrical installation has been signed by the performing *installer's* responsible person on the facility
- No circuits must be made live if there are regulation non-conformances that have not been accepted by the PSA . Other non-conformances should be processed by the responsible person electrical installations
- Once the system is live, the authorised person must submit a dated and signed copy of the Voltage Connection Certificate and/or a notification of electrical installation to the *responsible person electrical installations*

## Temporary connection of voltage

- If there is a need to make parts of the electrical installation live temporarily, for a test etc., notification of electrical installation may be used
- When voltage is connected temporarily, the circuits must be marked with warning signs reading LIVE in a strategic, easily visible place

## Connecting a heat cable to live voltage

- Prior to megging and making a cable live, *the competent person electrical* together with the *isolator* shall physically check that all parts of the heat cable are sufficiently covered and protected. End point shall be clearly marked and visible.

## Documentation

- When voltage is connected following modifications, a protocol shall be kept that shows status for circuits that have been connected
- *The responsible person electrical installations* shall keep a protocol for all issued advance/completion notifications regarding electrical installations, as well as Voltage Connection Certificates for each installation in his file .
- *Offshore team leader modifications (OTLM)/ Offshore team leader maintenance (OTLV)* shall ensure that the necessary systems and protocols have been established before the work starts offshore.

- A system must be established that ensures the necessary as-built documentation of modifications within acceptable deadlines.
- Measures must be taken to make sure the required operations documentation is available until the as-built documentation is in place
- Electrical isolator shall issue a compliance decoration after completion of the change.

## 8. TEMPORARY ELECTRICAL INSTALLATIONS AND EQUIPMENT

### General

- In principle, temporary electrical installations should be avoided. However, in the event it should prove necessary to make use of a temporary installation, this must be carried out according to the regulations
- Every temporary electrical installation shall be subject to an approval process by authorised person prior to operations. Temporary installations shall be removed after maximum 3 months. Upon an application, the Responsible person electrical systems may extend it to 6 months
- Every temporary equipment shall have their own resource number and TAG-ID in Work Mate in accordance to BP's procedure for temporary equipment 1.70.007. Acknowledgement of compliance, approval of potential non-conformances and circuit drawings identifying electrical equipment and consumers shall always be linked in Work Mate PRIOR to shipment of subject equipment to BP's installations

### Use of temporary equipment

- Temporary equipment must be verified by the supplier in accordance with the requirements in Norsok standard Z-015N Temporary equipment and BPs requirements for electricity/connection and location
- Before temporary equipment is connected to live voltage, ensure that the requirements in Control of contractor equipment have been met

### Cables

- Do not, under any circumstances, pull a cable through a doorway.
- If you need a socket, and there is none in the room where the work is to be done, call *the competent person*.

### Temporary equipment belonging to BP

- All temporary equipment must be marked with a tag number linked to Work Mate
- Ensure that the necessary documentation, such as drawings and certificates, is available for the equipment and available via Work Mate

- Before use, the user must ensure that
  - o the electrical part of the equipment is in good order
  - o the electrical part of the equipment is adapted for the installations it will be connected to
  - o the operations engineer electrical is informed of the use
- Modifications on the electrical installation of such equipment that are carried out onshore, must be approved/verified by the operations engineer electrical
- Modifications of the electrical part of such equipment that are carried out offshore, must be approved/verified by the *authorised person* or the *operations engineer electrical*
- Modifications that must be reported, must be notified to and approved by the responsible person electrical installations using the form Notification of electrical installation

### **Temporary equipment belonging to a contractor**

- Contractors with their own container with
    - o their own electrical equipment fitted
- or
- o who are connected to electrical field equipment must follow the instructions in this directive
  - Repairs, maintenance or modifications to the contractor's own equipment must be approved by the operations engineer electrical
  - Repairs, maintenance or modifications to the contractor's own equipment that are carried out offshore must also be approved/verified by the authorised person electrical, In addition, such work must be registered in Workmate
  - Repairs, maintenance or modifications to the contractor's own equipment that are carried out onshore must be verified by the installer, who must report changes to the *responsible person electrical installations*

## **9. PORTABLE ELECTRICAL EQUIPMENT AND TOOLS**

### **Approval**

- All portable electrical tools, equipment and extension cords must be approved by a *competent person electrical* before use
- The owner of the equipment must ensure and document that all portable electrical equipment is inspected and maintained regularly and in accordance with the regulations

### **Marking**

- All portable electrical equipment must be labelled with a use-by date. Equipment which is not labelled or past its use-by date, must not be used

### Pre-use inspection

- Before use, the user must check that the equipment is in good order, that there is a use-by date and that it has not been exceeded. Do not use equipment with obvious faults or where defects are suspected
- Damage due to kinking or crushing, damage to the outer cable sheath and knotting must be treated as damage requiring repairs
- Equipment with faults or defects must be reported to the *competent person electrical*

### Use of cable

- The maximum permitted length for 1-phase extension cords is 25m
- The maximum permitted length for 3-phase extension cords is 40m
- Extension cords must not be pulled through doorways
- Splicing extension cords, including with a plug and socket, are not permitted
- When it is used, the cable must be hung on plastic hooks or similar to protect it from mechanical damage and water penetration
- When you leave the work place, plugs must be pulled out and a cover put on the socket

### Battery-run tools

- Battery-run torches for general use must be certified for use in Zone 1
- Equipment for use in zone 0 shall be approved for zone 0 .
- Battery-run tools that need a great deal of power should not normally be used. If there is a need to use such equipment, this must be agreed with the *authorised person electrical*, when equipment is on the installation or with the *operations engineer electrical* if the equipment is not yet sent offshore .
- Other equipment equipped with batteries (i.e. batteries more advanced than typical batteries in watches) must be cleared before brought into a classified area. Any charging of such batteries must be done via permanent installation and be done in an unclassified area

### Use of portable lamps in tanks

- Before any light source is used in a tank, the tank must be declared free of flammable gases
- When using portable lamps in a tank, only lamps approved for use in Zone 1 must be used
- Limitations on the maximum voltage permitted must be considered during the safety evaluation. Normally, lamps with a higher voltage than 50V should not be used

## **Washing with water**

- Equipment that is protected against water penetration should normally be washed by hand
- Washing on or near electrical equipment requires the equipment to be protected against water penetration in accordance with IP 54
- Hosing on or near electrical equipment requires the equipment to be protected against water penetration in accordance with IP 56. (IP 57 is not sufficient.)
- Hosing of high voltage equipment is not permitted



# **HSE DIRECTIVE 8 ELECTRICAL INSTALLATIONS ATTACHMENTS**

Attachment 1:  
Notification of electrical installations

Attachment 2:  
Connection order

Attachment 3:  
Connection to power certificate

Attachment 4:  
Connection to power register

Attachment 5:  
Isolation register

Attachment 6:  
Instructions for connection supervisor

Attachment 7:  
Instructions for safety supervisor

# ATTACHMENT 1: NOTIFICATION OF ELECTRICAL INSTALLATIONS

Attachment 1

HSE Directive 8 – Electrical installations



## Notification of electrical installations

W.O. mod/AFA nr.
Project ID

### GENERAL DATA

Circuit form:		
Layout drawing:		
Area classification drawing:		
Other drawings:		
Project engineer:	Authorised installer:	BP Responsible Person:
Date:	Date:	
Notification of commencement:	Notification of completion:	Signature:
Start date:	Completion date:	Sign:

### DELIVERY/MATERIAL INSPECTION

Documentation approved	El. installer Date:	BP El. inspector Date:	Comments:	
	Signature:	Signature:		
Inspection	Place	Report no.		Date/Sign.
Delivery 1				Pre-insp. 1
Delivery 2				Pre-insp. 2
Delivery 3				Pre-insp. 3
Delivery 4			Pre-insp. 4	
Repair deadline:	Date:	Respective discipline:		
Non-conf. accepted:	Date:	Responsible person		

### INSTALLATION/MC/COMMISSION

Resistance to earth:	Ohm	Isolation resistance:	Mohm	Electricity to earth:	mA	Comments:
Accepted data	Name	Date	Signature			
El. installer						
BP el. techn.						

### COMPLETION/APPROVAL

Notification of completion	Name	Date	Signature	Comments:
Electrical installer (deputy)				
BP electrical deputy				
Inspector				

### FINAL APPROVAL/DOCUMENT HANDOVER

Onshore, original document updated	Name	Date	Signature	Comments
Electrical installer				
BP Responsible Person:				
Authority:				

## PROCEDURE FOR NOTIFICATION OF ELECTRICAL INSTALLATION

Notification must be submitted to Responsible Person electrical system prior to commencement of:

- all changes/modifications to emergency and UPS power systems.
- new installations (modules, major changes and demolition).
- any changes to high voltage equipment (always).
- motor starters (MCC), panels and distribution boards – new and replacements.
- extension of panels and distribution boards.

- f) changes made to the main generator system.
- g) electrical motors, transformers – new and replacements.

The form is issued in a set of 4 copies. 1 original, 1 copy to installer, 1 copy to Responsible Person, 1 copy to job file.

Notification of commencement (upper part) must be completed and submitted to Responsible Person for signature prior to commencement of work.

Notification of completion (lower part) must be completed and submitted to Responsible Person on completion of the whole installation.

For minor installations where drawings are not available the notification of commencement shall contain a sketch and a single line diagram of the intended work. The installer is responsible for checking the material, equipment and installation are checked by a skilled person and delivered according to regulations before system is live.

All inspection reports a non-conformance reports together with as built documentation shall be available shall be available to responsible contractor, electrician and responsible BP electrician before system is live. BP responsible electrician (deputy) will take necessary spot checks of the installation and documentation before permission is given to make system live.

## **DEFINISJONER/DEFINITIONS**

### **Ansvarshavende:**

BP responsible person for electrical installations.  
Ansvarshavende for elektriske anlegg.

### **Elektrisk kontraktør:**

Contractor company's responsible for the electrical installation.  
Ansvarlig installatør.

### **BP elektrisk stedfortreder:**

Appointed responsible senior electrician on actual el. distribution system (platform). Ansvarlig BP - /Autorisert person elektro, utpekt som stedfortreder til ansvarshavende for aktuell anleggsdel (plattform).



# ATTACHMENT 3: CONNECTION TO POWER CERTIFICATE

CONNECTION TO POWER CERTIFICATE		
No:		
Construction site/Field:		
Module:		
WON/AFA no:		
Date for connection to power:		
Date:		Sign:

## **Section 1. Mechanical Completion**

To: Representative of person in charge (Authorised Person)

From: Offshore Construction Engineer. Project Mgr. EI.

Construction and pre-commissioning of the electrical circuits that are detailed below have been completed and the circuit is ready for connection to a power source.

COURSE REFERENCE :	EQUIPMENT:	TAG NO:
LOCATION:	CABLE NO:	AUTHORISED PERSON:
PUNCH LISTS:		
REF. DRAWINGS: (APPENDICES)		

## **Section 2. Approval**

Til: Offshore Construction Engineer. Project Mgr. EI.

Fra.: Representative of person in charge (Authorised Person)

The circuit described above and the associated equipment have been connected to a power source and are ready for commissioning.

Date: \_\_\_\_\_  
Authorised person. \_\_\_\_\_

### **Distribution:**

Original      Representative of person in charge (Authorised Person)

Copy (1)      Central Control Room.

Copy (2)      Offshore Construction Engineer. Project Mgr. EI.

# ATTACHMENT 4: CONNECTION TO POWER REGISTER

CONNECTION TO POWER REGISTER		
Construction Site /Felt:		
Module:		
WO/AFA no:		Sheet no.: of

Certificate details			Approval details	
Cert. no.	Date	Description / Tag. Nr.	Date	Signature

# ATTACHMENT 5: ISOLATION REGISTER

ISOLATION REGISTER		
Construction Site /Field:		
Module:		
WO/AFA no:		Sheet no.: of

Certificate details			Approval details	
Cert. no.	Date	Description / Tag. No.	Date	Signature

## ATTACHMENT 6: INSTRUCTIONS FOR CONNECTION SUPERVISOR

### Applies to:

All work on high-voltage systems with the exception of the operation of switches to start/stop high-voltage motors

The connection supervisor shall:

- Ensure that there is more than one written connection order signed by an authorised person when more than one switch is to be operated.
- Ensure that the personnel performing the connections are competent. The connection supervisor is not required to perform the connection operations himself.
- Ensure that the connections are performed properly and in accordance with the current provisions of the HSE directive and regulations.
- Ensure that voltage control and establishment of terminal grounding at the disconnection sites is performed. There must be at least 2 persons to perform the voltage control and establishment of terminal grounding.
- Give notification in person to the *Safety Supervisor* that the specified disconnection, voltage control and grounding have been performed.  
If this is reported over a radio/telephone, then the recipient must confirm the message by repetition.
- Connect the high-voltage systems upon receipt of notification from the *Safety Supervisor* that the installation is ready for connection

## ATTACHMENT 7: INSTRUCTIONS FOR SAFETY SUPERVISOR

### Applies to:

All work on or in the proximity of high-voltage systems with the exception of the operation of switches to start/stop high-voltage motors

The Safety Supervisor shall:

- Inform the work team of their duties and the actual work to be performed
- Receive notification in person directly from the *Connection Supervisor* that the necessary disconnection, labelling, safeguards against connection have been performed. If this is reported over a radio/telephone, then the recipient must confirm the message by repetition.
- Ensure that voltage control and establishment of shorting/grounding at the disconnection sites are performed. There must be at least 2 persons to perform the voltage control and shorting/grounding.
- Establish the necessary safety distance at the work site and inform the work team of the nearest work position that is allowed.
- Ensure that the work site is cordoned off and shielded as necessary
- Monitor the work and ensure that he does not get involved in the work so that it affects his duties as Safety Supervisor. If he must leave the work site, he must appoint and instruct a competent person to monitor the work.
- When the work is finished, he must inform all those involved in the work that the safety measures will be discontinued
- Ensure that the safety measures are discontinued
- Give notification in person to the *Connection Supervisor* when the work site is ready for connection