

ESI-001

Lock-out /tag out procedure LV Dutch offshore low voltage installations 15-04-2022

This electrical safety instruction is part of the activities in the technical work instructions.

Purpose

Electrical insulation and standardisation of electrical installation for the purpose of electrical and non-electrical work. Where it is part of carrying out work on the electrical low voltage installations on Dutch offshore HV-Platforms.

Nomination and assignment

The persons who are going to carry out the work have thorough knowledge of the electrical insulation and normalisation of electrical low-voltage installations by means of training and/or experience.

1. $\leq 80A$ permeability of the safety device

You will be instructed by a NPcWALS-OFFSHORE locally or remotely via a framework contract (FC).

2. $> 80A$ permeability of the safety device

You will be instructed by a NPcWALS-OFFSHORE locally or remotely via an approved contract (AC).

This assignment must be carried out by at least one SP_{LS-OFFSHORE}. The exception is the connection of the (mobile) emergency power generator (EPG). This task shall be carried out by at least one SP_{LS-OFFSHORE} together with at least one SP_{LS-OFFSHORE}, or an OP under supervision of a SP_{LS-OFFSHORE}.



Some installations may be equipped with an EPG connection and may therefore be energized when the emergency power supply is switched on. If an installation is equipped with solar panels, additional conditions apply due to the danger of high DC voltages (DC).

Risks and measures

Risk	Measure
On electric arc	Use flame-retardant and antistatic work and industrial clothing
On hearing damage	Above 80 db(A) use hearing protection
To injuries caused by falling objects.	Use a safety helmet
To injuries caused by falling, falling or rolling objects, pinching and/or sharp objects on the ground	Use safety footwear with steel toecap and steel midsole
On eye damage caused by ejected particles, (corrosive) liquids and/or gases	Use eye protection
By insufficient lighting	Apply general workplace lighting and/or work with a headlamp
To cold	Use flame-retardant and antistatic work and industrial clothing with inner lining. Use flame retardant and antistatic helmet cap and neck protection or bandana

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To heat	Wear airy / dry (summer) flame retardant and antistatic work clothing. Take a rest and drinking break regularly (guideline is 0.33cl of water per hour). Make sure there is always cooled water nearby
To sun	Work in the shade and use sunscreen. Use safety goggles with UV protection
On electrocution	Work only voltage-free. Follow the disengagement procedure (5 steps procedure). Apply protection to adjacent active parts. Blocking by the use of padlocks
On working in an unsafe (free from voltage) bay	Mark the secured area with red-and-white chain or ribbon with marked entry and exit
On re-energizing	Short-circuit-proof and reliable earthing and short-circuiting of active parts. First connect the earth point and then the active parts
On voltage arcs	When disconnecting a measuring device or safety device, ensure that the installation is de-energised or the secondary circuit of the current transformer is short-circuited.
Working at height with a fall distance of 2.5 metres or more and in an aerial work platform	Use fall protection
To weather conditions	Stop working in the event of a thunderstorm and leave the room. If distributors are installed outside ¹ , the work must be stopped and the distributors closed in case of (threatening) rain.
Wrongful switching	Always use the as-built drawings, if necessary block out commands from protection relays

Personal protective and safety equipment

Personal protection equipment (PPE)

- Flame retardant and antistatic safety clothing.
- Helmet, unventilated model (working voltage 1000V), Compliant with EN50365. Helmet, colour black for SP and NPcWA, colour white for others.
- Insulated safety footwear class S3 and class 0 (working voltage 1000V).
- Insulated gloves Class 0 (working voltage 1000V), Compliant with: EN 60903 RC.
- Eye protection, in accordance with NEN-EN 166:2001 en.
- Fall protection / harness.

¹ Cabinets for distribution, control and "electrical" drives.

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Safety equipment (SE)

- Demarcate safe working area by means of a red/white chain/ ribbon.
- Insulating mat, maximum operating voltage: 17000V AC. CEI 61111: 2009.
- Transparent insulating cover: VDE 1000V 2000x950x0,5mm.
- Padlocks, padlock adapters, padlock bracket and lock-out labels.

Work equipment (WE)

- Insulated hand tools: working voltage 1000V AC / 1500V DC, conform NORM NEN-EN-IEC60900.
- Double insulated power tools.
- Dual-pole voltage indicator, according to STANDARD NEN-EN-IEC 61243-3.
- NH Fuse puller with cuff, according to DIN EN 61482-1-2: 2014, electric arc class 2.

Procedure

Prior to the work

Before you start working, check the following:

Personal protection equipment (PPE):

- Do the personal protective equipment not contain any form of wear, dents or cracks that adversely affect its operation?
- Does the personal protective equipment have a valid inspection sticker?

Safety equipment (SE):

- Do the safety equipment not contain any form of wear, dents or cracks that would adversely affect the operation?
- Does the safety equipment have a valid inspection sticker?

Work equipment (WE):

- Do the safety equipment not contain any form of wear, dents or cracks that would adversely affect the operation?
- Does the safety equipment have a valid inspection sticker?
- For electrical work equipment, are there any damages, cracks or signs of exposure to excessive temperatures in the cord and plug?

Work permit:

- Is the work plan / work permit still valid?
- Is the above laying permit to work still valid?
- Are all the necessary signatures present?
- Does the work plan / work permit (incl. drawings) correspond with the situation in the workplace?

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- Are there any other work plans that could affect this work?

Workplace:

- Check for unwanted risks by means of an LMRA.
- Check that the job is correct with the situation in the workplace.
- Is there enough space to work safely?
- Is the workplace easily accessible?
- Is the workplace sufficiently illuminated: Light intensity $\geq 500\text{lux}$; Light colour 4000 - 6000K?
- Is the workplace sufficiently shielded and/or cordoned off?
- Are the weather conditions good to start with the work activities?

If the above points are met, you may start the work activity. If this is not the case, the NPcWA must be contacted immediately. If the above points are no longer met during the work activity, the work must be stopped if it is safe to do so and the NPcWA must be contacted directly. If the situation is not safe, a safe situation must first be created before stopping the work and contacting the NPcWA.

Isolating from voltage

Step

De-energise the system, disconnect completely

- Switch off circuit breaker or circuit breaker in the distribution board or pull fuses.
- Switch off disconnector (if applicable)

Step

Against re-connection by unauthorised protection

- Locking:
 - Of the main circuit breaker with a pad-lock.
 - Of the auxiliary breaker with a padlock adapter and a padlock.
 - Fuses: Fit safety dummies with padlock adaptor and padlock.
 - Switch off any auxiliary power supply and provide with padlock adapter and padlock.
- Applying a lock-out label.
- In case of remote operation, a TAG must be placed on the EMS in the name of the NPcWA.
- Switch off the load break switch in the control unit / connection box and fit with a padlock.



Het is toegestaan dat derden voor hun veiligheid een extra hangslot hangen. Dit hangslot moet een afwijkende kleur t.o.v. het TenneT hangslot hebben. Maak gebruik van een hangslotbeugel waarbij het slot van derden onder het TenneT slot moet worden aangebracht.

Step

Determine de-energised by measuring

By means of a double-pole voltage indicator.

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Always check the correct operation of the double-pole voltage indicator before and after measuring.

Step

Earthing and short-circuiting

- If regeneration of voltage is possible, the installation must be earthed and short-circuited.

Step

Covering of touchable live parts

- Cover any parts that can be touched and are still live with an insulating blanket.

Step

Demarcating the workplace

- If necessary, the workplace must be cordoned off using marking chains or tapes. This is to be assessed by the NPcWA.

Normalize and re-energize the installation

1. Persons, materials and tools no longer needed from the workplace.
2. Persons involved in normalisation shall convince themselves that the part of the installation concerned is free of persons, materials and tools.
3. (If fitted) remove the marking chain/ribbon.
4. Remove additional safety measures such as protective equipment.
5. Remove additional safety measures such as earthing and short-circuit accessories.



Persons involved in normalisation shall convince themselves that all previous additional safety measures have been lifted and shall agree with the NPcWA whether the situation as can be unblocked.

6. Have third parties remove their lock(s) under supervision of an SP.
7. Remove all TenneT locking devices.
8. Remove all local warning signs, blocking signs and the blocking TAGS on the EMS.
9. Normalize and re-energize the installation.

Procedure in the event of an incident

- In the event of a near incident, the OIM and the NPcWA must be contacted immediately.
- In the event of an incident involving personal injury, first aid must be provided immediately. Immediately after that, the OIM and the NPcWA must be contacted.
- In the event of an incident without personal injury, first aid must be provided immediately. Immediately after that, the OIM and the NPcWA must be contacted.

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- In all cases an incident must be reported, taking into account the privacy rights of the people involved.

Procedure in the event of a deviation

- As soon as the execution of a work plan is hindered by a malfunction, the a SP in charge of the activities on site, supervisor or SP agrees with the NPcWA who then informs the NPcEI and OIM.
- After assessment of the situation, an LMRA and determination of the measures to stop the work activity (s) in a controlled way, the failure analysis can follow.
- As soon as the cause of the malfunction has been resolved or isolated, coordination with the NPcWA and OIM is necessary before the execution of the work plan can be resumed.
- The NPcWA informs the NPcEI of the disruption, depending on the nature of the disruption and the possible follow-up.

Ending

When you're ready, do the following:

- Register the required maintenance data.
- Report to the NPcWA that the work is ready, the NPcWA informs the NPcEI.
- Leave the workplace clean, tidy and safe.
- Check the safety equipment before storage.