

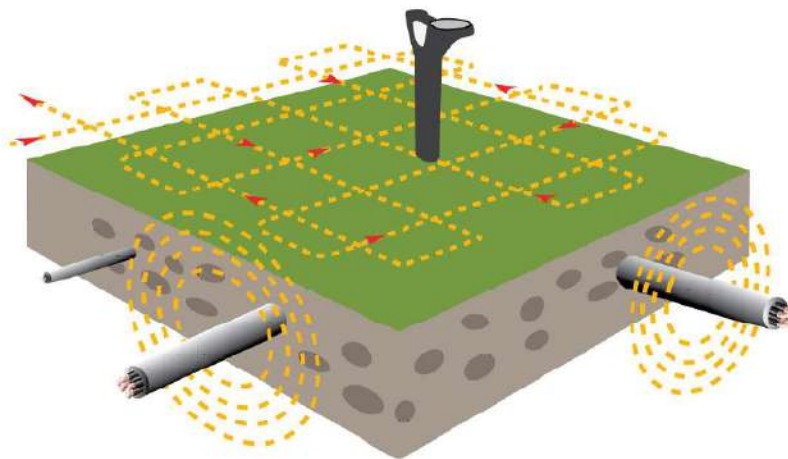
### 1. Introductory information

**Works in the vicinity of power lines** - are classified as particularly dangerous works and may only be carried out after **the safe performance of works (IBWR)** has been developed and approved by the Health and Safety Department and **obtained a permit** to perform such works.

1. Employees assigned to work in the vicinity of power lines must have **valid medical certificates** stating that there are no health contraindications to perform work in this area and **have the necessary (operational) qualifications**, if required by the scope of duties.
2. **Supervision over the course of work is obligatory**. The person appointed to supervise the operation of electrical power equipment must also have appropriate (supervision) qualifications.

### 2. Principles of work organization

1. Depending on the **type and location** of power lines, the following lines are distinguished:
  - a. overhead
  - b. cable
2. Before starting work, **the lines running must be identified**. Identification is based on the use of specialized measuring equipment, this equipment may be operated only by employees trained in its operation and should meet the manufacturer's requirements in terms of technical condition



3. The method of identification of the installation route is selected by the user of the device strictly according to the manufacturer's recommendations. **Not rely only on existing project documentation** - the use of specialized equipment is mandatory.
4. After identifying the lines, the owner of the line must be specified. Work performed on the line should only take place **when the voltage is disconnected** - it is the responsibility of the supervisor of the works to ensure this. However, if the works are to be performed in the vicinity of an active line (live), **the basic conditions for safe work performance should be agreed with the line user** and this fact should be fulfilled in the IBWR.

#### Remember!

When working near electric lines, a set of standard PPE is required:

- a) a protective helmet,
- b) work clothes and Safety shoes,
- c) a warning vest,
- d) other protection measures depending on the type of work.



The identification of the route of underground cable lines involves the use of professional equipment for precise localization (so-called marker locators).

In order to avoid damage to existing installations (electrical, water, sewage), the use of such devices is necessary to define the route of the line.

It is good practice to use a locator in the course of any related work with the necessity to breach the ground, it is justified by minimizing the risk of accidental damage to the running installations.

5. After locating the route of power lines, it is obligatory to designate danger zones:

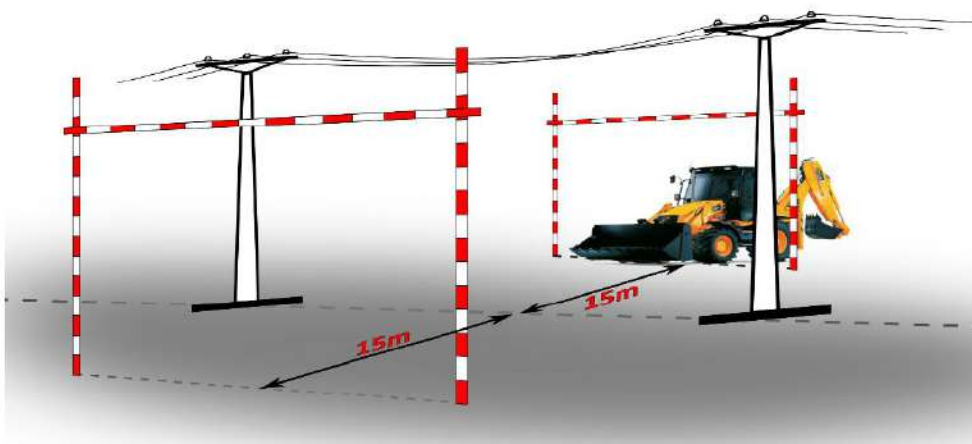
- for a cable line, the hazardous zone is at least 6m on both sides of the cable, the line marking should be placed at least 20m on straight sections and at any point where the line is changed.
- for an overhead line, the danger zone depends on its type and voltage and must not be less than:
  - for low voltage lines not exceeding 1 kV - 3 m;
  - for high voltage lines from 1 kV to 15 kV - 5 m;
  - for high voltage lines from 15 kV to 30 kV - 10 m;
  - for high voltage lines from 30 kV to 110 kV - 15 m;
  - for high voltage lines above 110 kV - 30 m.

These distances are calculated from the extreme horizontal lines on both sides.

6. Danger zones should be appropriately marked, and in the event of work being carried out at dusk, illuminate it in such a way that it is possible to read the boards.



7. In front of the intersections of communication routes with overhead lines, gates should be set limiting the permissible dimensions of passing machines and other vehicles.



**Remember!**



Cable line marking, signs should be placed so that they are visible from any working distance.

Before starting work within the disconnected power line, it is necessary to agree with the person disabling the method of its protection against accidental switching on. These activities are performed in accordance with LOTO's in-house procedures only and only in consultation and under the supervision of the line user.

If the line user has agreed to disable it periodically, a permanent supervisor on the part of the contractor must be appointed to contact this person. This employee should maintain daily contact with the line shutdown in order to record the hours of the line outage, the name and surname of the person reporting the outage and the planned time of the outage.

During the performance of the work near active overhead power lines, the vehicles involved should be equipped with voltage indicators.





8. It is **not allowed** to locate workplaces, product and material storage sites or construction machinery and equipment directly under overhead power lines or at a distance less than the value of hazardous zones, measured from the extreme wires.
9. When determining the location of storage yards, the prohibition of storing materials directly under power lines or at a distance not less than:
  - 3 m - from low voltage lines,
  - 5 m - from high voltage lines up to 15 kV,
  - 10 m - from high voltage lines up to 30 kV,
  - 15 m - from high-voltage lines above 30 kV
10. Mobile cranes, excavators and other mobile devices that may get close at a dangerous distance to overhead or cable power lines, should be equipped with voltage signaling devices.
11. In the case of short-term activities (e.g. loading, unloading), an employee (observer) should be appointed to cooperate with the operator and the driver in order to warn against approaching the power line.
12. **Observer** for security and signaling training, equipped with a lit warning vest with the word OBSERVER, red safety helmet, pointing device (flashlight with overlay drive) and audible devices (whistle, megaphone). This auditor should not be mandatory additional duties than those mentioned.
13. All work classified as particularly dangerous should be carried out by at least two people, providing technical means for its safe performance and insurance and possible first aid if needed.
14. If work is carried out at height, welding and other types of work specified in company standards in the vicinity of power lines, the person performing the work is also obliged to comply with these standards..
15. **IT IS FORBIDDEN:**
  - work without a permit and IBWR or contrary to the content of this documentation
  - exceeding the permissible distances from hazardous zones
  - removing or modifying signage of danger zones
  - work alone or unattended near a line or cable
  - involvement in the work of third parties, not directed to their performance
  - performing work with construction equipment without appropriate permissions
  - move around with construction equipment along designated communication routes under the lines without the assistance of an observer
  - leaving holes or trenches made without appropriate safeguards
  - leaving unsecured cables on the ground and exposing them damage caused by passing vehicles or other mobile devices.

### Remember!

The location of storage yards on the construction site should be organized in such a way as to avoid the need to store materials, leave machines, devices, vehicles near power lines.

If the power line is turned off, before turning it on again, check that all employees have left their workplaces and that the means of transport and construction equipment are outside any danger zones.

During construction works with the use of cranes or loading and unloading devices, the distances from the danger zone to the farthest point of the device along with the load are kept.

Carrying out works after dark without appropriate marking and insufficient lighting of the work area is unacceptable.

Carrying out work in the vicinity of power lines in case of unfavorable weather conditions (strong wind, rainfall, lightning) is unacceptable.

### 3. Procedure in case of line damage

#### 1. Damage to underground networks and power devices

- Damage to the power cable is an immediate threat for the health and life of the perpetrator of this situation and all persons staying near the scene of this incident.
- If, despite taking appropriate precautions, the underground power cable has been damaged - the supervisor, the Plant Fire Department and LG Health and Safety Department should be immediately notified of this fact.

##### Situations that have led to:

- a permanent break or tearing of the cable line,
- cable insulation damage,
- dents of the cable sheath,
- damage to cable covers (e.g. anti-corrosion coating),
- damage to casing pipes,
- damage to earthing devices,
- damage to the bentonite layer of the 110 kV cable.

**A DAMAGED CABLE SHOULD BE TREATED EQUAL TO A LIVE CABLE!**

- **Proceedings at the scene of the event include:**

1. removing all employees from the scene of the incident,
2. immobilization of all machines and vehicles at the scene of the accident,
3. fencing the danger zone and ordering all present persons to keep a safe distance of **at least 10m** from the damage site and informing third parties about the existing danger,
4. immediate notification of the supervisor, the Plant Fire Department, LG's Health and Safety Department and other people involved in work in the area.

#### 2. Damage to overhead power lines:

- Breaking wires or breaking an overhead line pole is a direct threat to the health and life of the perpetrator of this incident and all people in the vicinity of the scene of incident.
- If, despite taking the necessary precautions, contact has occurred with an overhead line wire, until the wires break or the pole breaks - this fact should be immediately notified to the supervisor, the Plant Fire Department and the Health and Safety Department LG.
- Such notification mainly concerns:
  - permanent wire breakage,
  - damage to power poles - fractures, tilts, bruises,
  - damage to earthing devices (hoop irons, copper cables, earthing rods)

**FALLEN UP POLES AND BROKEN CABLES MAY STILL BE LIVE!**

#### Remember!

Underground power cables are most often damaged due to the lack of knowledge about their exact route. Appropriate planning of works in the vicinity of such cables is the identification of their course is a necessary condition.



Damage to the underground power cable depending on the voltage running in it, it will result in sparking of the short-circuiting wires, accompanied by lighting effects, smoking of the burning insulation and flames. Sparking wire may explode.

Damage to overhead power lines involving construction machinery is most often caused by the lack of knowledge about the maximum permissible operating distance from the line. This is indirectly due to inadequate organization of work - no height limiters for machines and no voltage signaling devices in working machines.



### ■ Procedure at the scene of the accident:

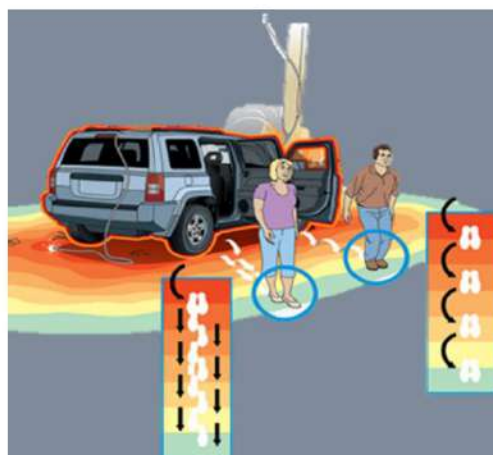
1. broken or lowered hoses **must not be touched** under any circumstances
2. under no circumstances should you touch or come close to trees, supporting structures, fences etc. on which the cable lies or touches,
3. **keep a safe distance of at least 10m** from the point where the cable is damaged and from the places where it comes into contact with the objects mentioned above,
4. **keep away from** the vehicle or machine (car, excavator, tipper) with the involvement of which the line was damaged, it should be effectively prevented from approaching the vehicle by other people,
5. approaching people should be warned and all employees removed from the place of the incident
6. if there are technical possibilities - access to the accident site should be secured by fencing, marking, closing the construction site, etc.
7. you should **immediately** notify your supervisor, the Plant Fire Department and the health and safety department of LG.

### ■ If you are the driver (operator) of the vehicle:

1. **do not** leave the control cabin,
2. **try to break** the direct contact of the vehicle with the wires by swinging the boom or driving away
3. If it is impossible to get the vehicle out of the danger zone and it is impossible to stay inside the vehicle (e.g. because the vehicle is on fire), **then do not get out, but with your feet together, jump as far as possible** and then walk away keeping your feet together (shuffling feet or bunny jump allow).

### Remember!

- Touching the ground and the vehicle at the same time threatens to death!
- Tires can catch fire when in contact with power lines then explode!
- The resulting explosion can injure people nearby!
- Under no circumstances should you come back to a previously abandoned vehicle!



**A COMPETENT PERSON SHOULD CHECK ALL THE VEHICLE'S TIRES, BEARINGS AND BRAKES BEFORE RENEWING!**

### Remember!

Entering the zone where the broken line is in contact with the ground or supporting material, e.g. a metal fence, vehicle, tree, pole, etc., creates a lethal risk of electric shock.



Self-removal of items in contact with a damaged electric line is prohibited. This activity is performed by authorized services only after confirmed disconnection of the overhead line voltage.

If you noticed a damaged line, pole, installation or grounding element - report this fact immediately to the Plant Fire Department, your supervisor, the Health and Safety Department of LG and remain at a safe distance from the place of damage. Do not enter into the danger zone and do not allow other people to enter the danger zone.

Emergency Respond Center  
+48 532 728 587 / 588  
Safety Production Team  
+48 532 799 164  
Safety Team – Subcontractor's Part  
+48 532 533 725

If there is no need to leave the vehicle immediately - stay in it and call for help. If the vehicle caught fire as a result of contact with the line - leave it in a well-planned manner.