شركة العين للتوزيع
Al Ain Distribution Company

# Operating Instruction
# Safety Zone and Demarcation

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## 1. PURPOSE

This Operational Instruction (OI) is mandatory and should be read in conjunction with the AADC System Safety Rules. This OI documents the procedure to be adopted when establishing safety from the system when work is undertaken adjacent to energized equipment on the power, potable water and treated sewage effluent networks.

The procedure defines the boundary of a Safety Zone adjacent to energized equipment at ground level, and an Exclusion Zone for mobile plant operating adjacent to, or below, overhead line conductors and support structures.

## 2. DEFINITIONS

For this document the following definitions apply:

| | |
|---|---|
| Exclusion Zone | A distance measured from overhead line conductors and unearthed steelwork in all directions. |
| High Voltage (HV) | High voltage alternating current (AC) is above 1,000 volts or direct current (DC) over 1,500 volts. |
| Low Voltage (LV) | Low Voltage alternating current (AC) is 50 volts and above up to and including 1,000 volts. Direct current (DC) low voltage is 120 volts and above up to and including 1,500 volts. |
| Safe Standoff Distance | The Safe Standoff Distance is calculated from the appropriate voltage Exclusion Zone distance and the maximum distance that the vehicle boom or Jib can extend. |
| Safety Signs | Approved Danger and Caution notices prominently displayed to warn of either energized equipment or equipment that must not be operated. |
| Safety Zone | An area under the control of AADC that has been made, as low as reasonably practicable, safe for operational tasks or work to be undertaken. |

## 3. PROCEDURE

### 3.1 General Requirement

3.1.1 When work is to be carried out adjacent to energized systems then an Authorized Person shall assess the means of achieving safety from the system.

3.1.2 When safety from the system requires a safety zone to be established then this shall be effectively demarcated using an approved barricade.

### 3.2 Safety Zone

3.2.1 A safety zone shall be adequately identified with barricades and safety signs.

3.2.2 Before any operation or work being undertaken in a safety zone, the Authorized Person shall clearly give instructions, regarding the task, to the working party and explain the limits of the safety zone including any adjacent hazards.

3.2.3 When appropriate, a safety zone shall be clearly demarcated by the Authorized Person using approved equipment.

3.2.4 A Competent Person may assist in the demarcation of a safety zone under the direct instruction and supervision of the Authorized Person.

3.2.5 A safety zone shall have danger notices prominently displayed to identify adjacent energized equipment not to be worked on.

3.2.6 A danger notice shall not be fitted to a structure, support or equipment that remains energized. The danger notice shall be attached to a demarcation boundary or a free-standing demarcation support.

### 3.3 Demarcation

3.3.1 The demarcation of a safety zone shall be made using approved equipment specified in the System Safety Rules; danger notices, uPVC barricade chain, barricade tape and barricade supports (800mm cone).

3.3.2 When equipment, to be worked on, is part of a larger asset then demarcation may be achieved using red and white barricade tape attached to the energized assets. When this asset can be accessed from the rear or from the side, then the barricade tape shall be attached to all elevations of the asset leaving only the equipment to be worked on free from the demarcation.

3.3.3 Safety notice(s) shall be attached to, or fixed adjacent to, adjoining equipment and structures in sufficient numbers to be clearly visible from the work area and all approach routes.

3.3.4 When the equipment, to be worked on, is separate to other energized assets then safety from the system shall be achieved with a physical barricade between the asset to be worked on and the energized asset(s).

### 3.4 Barricade

3.4.1 A barricade is a temporary physical barrier to provide a boundary to a safe zone. The barricade shall be assembled using approved barricade chain and barricade supports (800mm cones).

3.4.2 Walls or fences may form part of the boundary to a safety zone.

3.4.3 Assets that remain energized, shall not be used to attach barricading equipment.

3.4.4 The appropriate safe distance to exposed electrical conductors shall be considered when erecting a barricade. The barricade shall be constructed at a suitable distance from all exposed equipment to ensure that, during the work activity, a person, tool or equipment will not encroach into the safe distance.

3.4.5 An Authorized Person shall be responsible for the positioning and erection of barricading. A Competent Person may assist with this provided they are under the personal supervision of the Authorized Person.

3.4.6 Danger notices shall be prominently displayed to mark the limit of the safe zone. The notices shall face into the safe zone and shall be sufficient to clearly identify the boundary.

3.4.7 Before a safety document is issued the demarcated safety zone shall only be entered by persons under the direct supervision of the Authorized Person responsible for the safe zone.

3.4.8 Before a safety document is issued the Authorized Person responsible for the safe zone shall verify that the barricading has been effectively erected and is fit for purpose.

3.4.9 When a demarcated safety zone has been established, in and area which includes energized equipment, then the safety zone shall have defined access and egress routes.

## 3.5 Access and egress to a safety zone

3.5.1 Access route to a safety zone shall be clearly defined with barricading, and danger notices that are prominently placed facing into the access route.

3.5.2 When the recipient of the safety document is not on site then the access/egress point shall be closed to prohibit access.

3.5.3 It is strictly forbidden to enter or exit a safe zone by crossing either over or under any barricade or barrier. The designated access point must always be used.

3.5.4 Consideration should be given to an alternative emergency escape route when the designated access route is adjacent to energized equipment.

3.5.5 On completion of work it is the responsibility of the Authorized Person or Competent Person holding a Safety Permit to ensure that all access gates, doors and windows are closed and securely locked.

## 3.6 Operation of mobile plant adjacent to overhead lines

3.6.1 The operation of mobile plant either by an AADC contractor or private contractor shall be undertaken at a safe distance from overhead line conductors. An exclusion zone shall be established and the mobile plant operated at a standoff distance so that when the vehicle, boom or jib is fully extended, it cannot enter the exclusion zone.

3.6.2 The exclusion zone is an assumed zone that is at a distance from all conductors and unearthed steelwork. The exclusion zone is documented for the AADC Distribution Network voltage levels, in Table 1 and illustrated in Figure 1 below:

**Table 1. Exclusion Zone around energized overhead line conductors and unearthed steelwork.**

| Overhead Line Voltage | 0.415 kV | 11kV | 33kV |
|---|---|---|---|
| Exclusion Zone | 1.25 meters | 3.0 meters | 3.0 meters |

3.6.3 The overhead line exclusion zone is illustrated in Appendix 5.1 Overhead line exclusion zones.

3.6.4 Vehicles and mobile plant shall be kept at a standoff distance to the exclusion zone. The standoff distance is calculated from the appropriate voltage exclusion zone distance and the maximum distance that a vehicle boom, jib or excavator bucket can extend.

3.6.5 The vehicle and mobile plant safe standoff distance is illustrated in Appendix 5.2 Safe standoff distance.

3.6.6 The minimum distance that an excavator or crane can operate shall be 600 mm from a pole, structural foundation or support stay.

3.6.7 It is only permissible for a vehicle with a fixed load to pass under an overhead line if it is verified on site, by an Authorized Person, that the overhead line exclusion zone will not be infringed.

3.6.8 It is only permissible for cranes and excavators to pass under an overhead line when the jib or boom is locked so that it is prevented from accidentally being raised into the exclusion zone.

3.6.9 An Authorized Person shall supervise on site the movement, under an overhead line, of any crane, vehicle or mobile access equipment higher than 2.3 metres above ground level. The measurement of 2.3 meters shall include any load or fully extended radio or other aerial.

3.6.10 An Authorized Person providing supervision of a vehicle passing under an overhead line shall have the means to communicate immediately with the driver or operator to avoid Danger.

## 4. REFERENCES

4.1 Article 98 of Federal Law No. 8 for 1980 on Regulation of Labour Relations

4.2 Abu Dhabi Occupational Health and Safety Management System Framework (OSHAD- SF) – Management Systems Elements – Element 05 – Training, Awareness and Competency, Version 3.1 March 2017

4.3 UK Health & Safety Executive, Guidance GS6, 4th Edition 2013, Avoiding danger from overhead power lines.

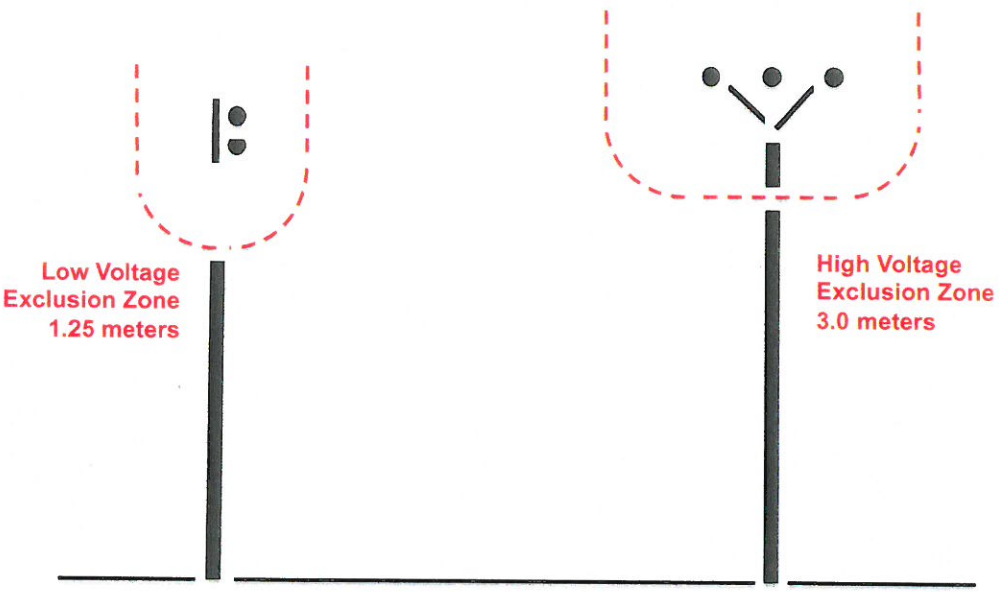
4.4 UK Energy Networks Association, Publication Look out Look up, 2007.

## 5. APPENDICIES

Appendix 5.1 Overhead line exclusion zones

Appendix 5.2 Safe standoff distance

## Appendix 5.1 Overhead line exclusion zones



## Appendix 5.2 Safe standoff distance