



INCIDENT DURING A DRILL EMPLOYING THE EMERGENCY DESCENT SYSTEM



QSE alert

Associated non-conformity code: NC2016003489

This document contains public information and it is intended to share the lessons learnt from incidents and risk situations that could be of interest to others in the same sector as Acciona Energía.

This document may undergo updates due to the collection and analysis of better information, because of technical advances and the proposed measures etc. For this reason, it is very important to check with Acciona Energía for the latest versions of the issued alerts.

SCOPE

- Worldwide Local. Country:
- | | | |
|---|--|---|
| <input type="checkbox"/> All Businesses | <input type="checkbox"/> Construction | <input type="checkbox"/> Production |
| <input type="checkbox"/> All Technologies | <input checked="" type="checkbox"/> Wind Power | <input type="checkbox"/> Hydraulic <input type="checkbox"/> Thermo-electric |
| | <input type="checkbox"/> Photovoltaic | <input type="checkbox"/> High voltage |
- Others. Specify

FACTS

Wind Farm maintained by Acciona Energía, June 2016

Scenario: maintenance technicians were inside the nacelle carrying out a basic operational emergency drill of the type routinely organised by the QSE Department in which a turbine fire is simulated, which requires the technicians to assemble the emergency descent equipment ready for evacuation. This type of drill is intended to determine:

- Whether the technicians know the operational protocol in case of emergency.
- That the technicians know how to assemble and deploy the emergency descent equipment (which will allow the practical assessment of periodic training efficiency in Occupational Risk Prevention matters).
- That the material contained in the bag is adequate and that none of the required components are missing.

In no case, was the jump from the nacelle carried out as this is prohibited.

Description: the drill proceeded correctly and the engineers showed that they knew the procedures, how to correctly assemble the descent equipment and that all the required components were available. However with the descent line still deployed and while the drill supervisors comment with the technicians about the drill strong points and draw conclusions about what could be improved, the descent equipment line becomes entangled with the freely rotating rotor and becomes tangled with the hub as shown below in the graphic details.

The nacelle was disorientated by 180°, so everything pointed towards the free descent equipment line hanging outside being horizontally displaced by the wind (approximately 12 m/s) until it entered the rotor sweep zone and became entangled on one of the blades. Fortunately, the technicians quickly realised what was happening and stopped the rotor and were able to subsequently free the line from the hub without any difficulty.

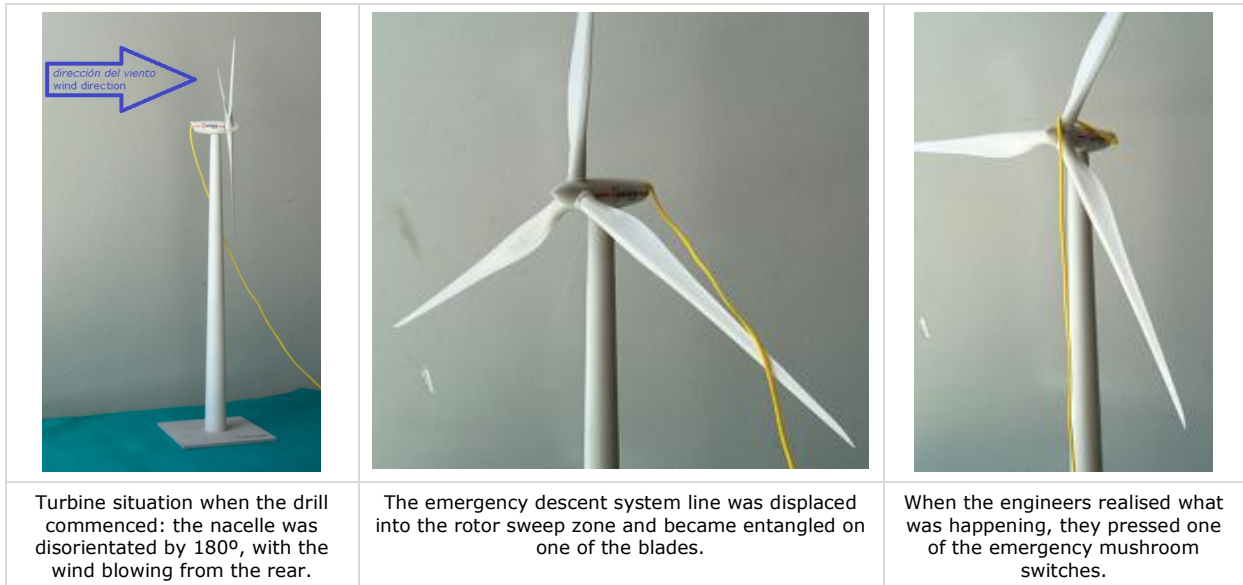


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LESSONS LEARNT

Independently of this incident, the preferred criteria for deploying the emergency descent line continues to be the same: empty the contents of the bag inside the nacelle, locate the end opposite to the one for connection to the engineer and deploy the line, passing it by hand in order to check for knots. The bag must not be thrown without first checking the line, except in a critical situation and immediate evacuation is essential.

This incident has shown that since the descent system line is not counter-weighted, it can be displaced horizontally by the wind during deployment and may become entangled with nearby moving and fixed elements. Which is why the following precautions must be taken into account:

- Before deploying the emergency descent system, **the rotor hydraulic brake must be applied so that it cannot freely rotate** (for example, by pressing an emergency off mushroom switch).
- The descent system line length must be adjusted to the tower height; it must not be shorter, but not much longer either (the longer its length, the greater the risk of becoming entangled with any obstacles on the ground or in the air).
- All sites must be inspected to identify those with such obstacles (in addition to the rotor), which could cause an incident: electricity lines and the guy-lines on weather towers etc. Action must be taken in detected cases in order to eliminate the risks, or to define special precautions to take into consideration to prevent incidents.