Darwin Site Safety Procedure During Electrical Storms

I. Purpose and Background Information:

The purpose of this document is to outline a safety procedure to be followed by all personnel at the ARM Darwin Site (ARCS-3) when a warning for electrical storms is issued.

Darwin is in a tropical region with distinctive dry season. The most dangerous period in terms of lightning storms is between the "buildup" to the wet season (September – November) and the actual wet season (November – April). This period is marked by storms often associated with intense lightning and thunder.

During the dry season (May – September), cloud formation and storms are rare.

II. Lightning Detection Systems at ARCS-3

The ARCS-3 site uses a Boltek Storm Tracker system to warn of lightning/storm activity. The system has three ranges (160 km, 320 km, and 480 km) and displays lightning activity superimposed on maps centred on Darwin (see Attachment 1 for a sample display). The Boltek Storm Tracker had two activity screens as follows:

1) Current lightning activity: New strikes are plotted as soon as they are received, and removed when they exceed a predefined persistence period, which is currently set at 20 minutes.
2) Recent lightning activity: The recent lightning activity screen will generate a movie of the most recent activity from a definable starting point. This enables you to track the path of storms.

The Boltek Storm Tracker activates two types of warning alam:

1) Close-storm alarm: An external alarm will sound once lightning strikes exceed a predefined rate (currently set at 5 strikes within 5 minutes) within a boundary zone (currently set at 50 km of Darwin).
2) Severe-storm alarm: An external alarm will sound once lightning strikes exceed a predefined rate (currently set at 300 strikes within 1 minute) within a boundary zone (currently set at 50 km of Darwin).

III. Cautions and Hazards:

- The storm warning system is not designed for human safety purposes and people need to be aware of the environment around them. If you see, or hear a storm approaching or starting to develop overhead, **move inside**. If you hear the thunder you're in the flash range.
- Do not use telephones and other electrical equipment, including networked computers during an electrical storm. The use of laptop computers not connected to the network and running on batteries should not pose hazard.

IV. Reminders:

- Shelter areas are inside the vans, the Operations building, or the MET Office building. People should not lean or rest against metal objects such as building/van doors fames or walls.
- People struck by lightning will usually require medical help.
- People within the strike area, but not physically struck, may also require medical assistance. They may suffer internal and external burns, plus a variety of medical conditions including cardiac arrest, trauma from being knocked down, etc.
- In case of fire or medical emergency, **dial 000**.

V. Procedure:

A. Moving to Shelter:

1. Once either close-storm severe-storm sounds, move inside the Operations building, the MET Office, or one of the vans.
2. Pearson (or an alternate) will notify the staff members in other buildings and vans and designate a staff member to notify him when everyone has moved inside.
3. Glowacki or Culgan reports to Pearson about weather conditions.
4. Once lightning strikes falls below the predefined rates (5 strikes within 5 minutes for close storm alarm; 300 strikes within 1 minunte for severe storm alarm), Glowacki or Culgan will notify Pearson and the staff by direct contact that it is safe to move outside.

IV. References:

None.

V. Attachments:

1. Sample Boltek Storm Tracker Screen

Attachment 1: Sample Boltek Storm Tracker Screen