Radio Frequency (RF) Awareness

Update to Address potential T&D Exposures
RF Safety Program History

• Southern Company established formal RF Safety year 2000 to comply with 29 CFR 1910.97 (OSHA) and 47 CFR 1.1310 (FCC)

• Originally, affected personnel that interacted closely with rooftop and communication tower mounted devices (Telecom, Appliance Services, Building Services, and EA Field Forces).
New Concerns

• Interest in placing devices on joint-owned structures from personal communication service (PCS) providers
• PCS devices on utility poles and towers is also becoming more common outside of our service territory. Concern in mutual aid efforts
Updated RF Focus

• Developed Specification Plate with design group, to address health concerns
• Updated RF Program and training to include T&D workers
• Added Section to employee Safety & Health Manual
Developing Internal Specifications Plate to address mounting

To include:

– Sign denoting attacher or operator name, address and emerg. #
– If > 5.6 watts (3 kHz to 300 GHz range), must also
  a. Equip with a disconnect switch and/or another approved method for isolating transmitter from all sources, including any uninterruptible power supplies/battery back-up systems. Shall not be possible to be re-energized remotely. The disconnect switch located an adequate distance from the antenna to prevent excessive RF exposure to the person operating the disconnect.
  b. Install an additional sign that states, “When working near this RF transmitting device, the power supply shall be disconnected.
  c. Provide an RF emission study that provides RF levels and methods to bring the site into RF compliance.
1.14 – Radio Frequency (RF) Safety

Only employees who have received training in accordance with the *Southern Company Radio Frequency (RF) Safety Program* may perform work on poles, structures, buildings, or other facilities where RF hazards are known to be present.

Employees shall comply with any alerting signs regarding potential RF hazards. Only authorized and trained personnel may enter areas which have been marked with Yellow “Caution” signs or Orange/Red “Warning” signs, which indicate a potential for RF exposure.

- Employees shall maintain a minimum working distance of at least ten feet from RF energy sources.
- **Exception 1**: RF energy source has been deactivated or power reduced to safe levels.
- **Exception 2**: RF energy levels from the source are known to be safe (i.e., SCADA and pole attached AMI devices).
- **Exception 3**: Moving past the RF energy source for a brief period of time (e.g., in a bucket, in other personnel lifting equipment).
- **Exception 4**: Monitoring equipment designed to measure RF energy is in use.
APC RF Training Program
General Population/Uncontrolled Exposure

Applies to human exposure to RF fields when the **general public** may be exposed or where persons who are exposed as a part of their employment may have **not been made fully aware** of the potential for exposure or **cannot exercise control** over their exposure.
Occupational/Controlled Exposure

Applies to human exposure to RF fields when persons are exposed as a consequence of their employment and in which those persons have been made **fully aware** of the potential for exposure and can exercise control over their exposure.

> Workers and the public have the Right to Know about RF hazards.
Location, location, location

Places RF exposure could be encountered:

- Cellular communication sites
- Broadcast sites (TV, AM, FM)
- Microwave sites
- Substations
- Rooftop applications
- Pole-mounted applications
Cellular communications
Others

Folded dipole

Omni-directional
Rooftop applications
Health Effects
Health Effects

The main effect of EME exposure is heating.
Severe Overexposure Symptoms

- Listless or confused behavior
- Dizziness or Vertigo
- Headaches & possibly blurred vision
- Nausea
External Stimulants

Factors that increase the risk of damage from RF exposure:

- Thermally stressful environments
- Use of alcohol
- Some medications
- Individual’s thermal sensitivity
- Other
Help Yourself

• Move away from the RF Source
• Remove excessive Clothing to allow the body to cool down
• Rest in a cool location
• Monitor symptoms and/or temperature
• Consult medical professionals as needed
• Drink cold water
Health Effects

Similar To An Antenna?

HEAT

LIGHT

BURN
Health Effects

- Reproduction, Growth & Development
- Immune & Blood Related
- Neurological (nervous)
- Cardiovascular
- Neuroendocrine
- Ocular (eyes)
Hazard awareness is the primary control of RF energy exposure.
Controlling Exposure

Ways to control RF energy exposure

• Identify where the hazard areas are located
• Post warning signs at sites with exposure potential
• Provide written guidelines
• Train employees
Signs are the primary means for control of access to areas where RF exposure levels might potentially exceed the MPE.
Alerting Signs

These signs are designed to address three RF exposure environments of increasing exposure risk.
Blue NOTICE Signs

- Alert persons that they are attempting to access an area in which RF exposure levels could potentially exceed the General Population/Uncontrolled MPE.
- < 20% of the Controlled Exposure Limits.
Blue NOTICE Signs

- Equipment rooms
- Ground areas around towers
- Areas significantly removed from transmitting antennas
Yellow CAUTION Signs

- Alert persons that they are attempting to access an area where an RF assessment has determined RF emissions exceed the FCC Uncontrolled/General Population exposure limits but are less than Controlled limits.
- **20% to 99%** of the Controlled Exposure Limits.
Yellow CAUTION Signs

These may include areas such as at the bases of communications towers where if personnel were to climb may find themselves in RF fields that exceed the FCC Uncontrolled limits, but are less than the controlled limits.

Only trained workers my enter an area marked by a Yellow Caution Sign.
Red WARNING Signs

- Alert persons that they are attempting to enter an area in which the RF exposure may exceed the Controlled limits.
- ≥ 100% of the Controlled Exposure Limits.
Red WARNING Signs

Control measures
• Restricting access
• Warning signs and barriers
• Limiting time of exposure (TWA)
• Use of protective shielding, clothing or warning devices (PPM)
• Reduction of power when people are present
Red WARNING Signs

It is Southern Company’s policy that **NO** work is to be performed in an area that is marked by a RED Warning sign unless the power has been reduced to a safe level.
Safe Work Practices
Questions?