



Mission Success Starts With Safety

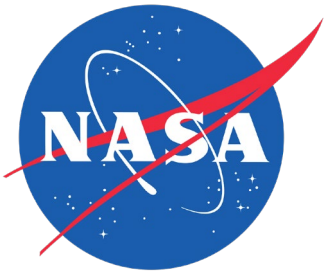


SSC Monthly Construction Contractor Meeting

Safety Presentation

Electrical Safety

December 5, 2024



Electrical Safety



NASA Safety Center (NSC)

Reliance on technology has made electric power an essential part of everyone's lives, and society as it stands could not function efficiently without it. But something easily forgotten amid the hustle of daily activities is the fact that the current that powers homes and workplaces also poses threats to safety.

Consider these sobering facts: **electrical hazards cause more than 300 deaths and more than 4,000 injuries in the workplace each year**, and electrical accidents rank sixth among all causes of work-related deaths in the United States.

Safe Plan of Action

As leaders in the industry and in the nation, NASA can enact change that might alter these statistics. At SSC, Stennis Common Work Instruction ([SCWI-8715-0006](#)) *Electrical Safety Program* establishes minimum standards to prevent personnel from hazardous electrical exposures. Even though electricity plays such a critical role in our lives, it's easy to forget that it can be dangerous if we don't use it safely. Awareness of electrical hazards is critical to prevent accidents, especially because a shock from ordinary office equipment or a household appliance can result in serious injury or death.

Mission Success Starts With Safety

P L A N

DON'T BE A STRANGER TO ELECTRICAL DANGER!

Plan, Protect and Test Before You Touch!

P R O T E C T

T E S T

DON'T BE A STRANGER TO ELECTRICAL DANGER!

PLAN

Pre-planning is key. A qualified person should complete a pre-planning checklist before any electrical work begins to take proper precautions, identify all energy sources and verify energy source controls are in place.

Pre-planning should include:

- ▶ A review of the job and individual tasks.
- ▶ A hazard assessment of all tasks being performed.
- ▶ A complete shock and arc flash risk assessment per National Fire Protection Association 70E, Standard for Electrical Safety in the Workplace.
- ▶ An evaluation and selection of appropriate controls, special precautions and energy source controls.

As part of this planning, consider several important questions:

- ▶ Is the voltage and potential incident energy of the circuit known?
- ▶ Are the limited approach, restricted approach and arc flash boundaries established?
- ▶ Have workers reviewed one-line drawings and other equipment documentation?
- ▶ Were all sources of energy identified and was the right equipment de-energized?
- ▶ Could the equipment be back-fed from somewhere else?
- ▶ Are there any other exposed electrical conductors nearby that also need to be de-energized?
- ▶ Does the equipment to be worked on have any unique configurations?
- ▶ Are there any other considerations such as limitations on egress, impacts to proper working clearance or other hazards in the work environment?
- ▶ Were all necessary safe work practices considered?
- ▶ Do all workers have the right tools and testing instruments for the job?
- ▶ Do all workers know and have access to the proper Personal Protective Equipment, or PPE?

PROTECT

Dress with the assumption that equipment is energized until you can verify an electrically safe work condition. Wear the appropriate PPE before the testing phase begins.

Your risk assessment will determine appropriate mitigations, including the proper PPE, and may include:

- ▶ Shock protection
 - Electrically insulated gloves
 - Leather overs
- ▶ Arc flash protective clothing
 - Arc flash suits
 - Arc-rated shirt or pants
 - Helmet and face shield
 - Arc-rated balaclava
 - Hearing protection
 - Safety glasses



It's imperative to always test electrical conductors or circuit parts before you touch it! Follow these testing procedures before work begins:

- ▶ Ensure disconnect blades are separated from the contacts for each phase if sight windows are available on the electrical equipment or the blades are visible.
 - ▶ Check to make sure you have the properly rated test instrument for the equipment voltage and that it was inspected and found in good condition.
 - ▶ Confirm your testing equipment is working using the live-dead-live technique.
 - **Live** — test the instrument on a known similar energized source (same voltage) for the presence of voltage to ensure the instrument is working properly.
 - **Dead** — perform a test on the equipment you're working on to verify it is de-energized.
 - **Live** — re-verify the test instrument on the known similar energized source to confirm the device still works and hasn't failed.
- *Make sure to verify absence of voltage on each conductor or circuit part by testing phase-to-phase and phase-to-ground.**

TEST