

Toolbox Talks 2

075: Unsafe Conditions: Startup Testing

Discussion leader duties for this session:

Pick a test procedure, and do a dry run. Walk out to the equipment “under test” and note what safety hazards could exist there.

What this Safety Talk covers:

This Safety Talk addresses unsafe conditions that affect startup testing.

Discussion notes:

Unsafe conditions related to startup testing

- Lockout/tagout problems. Startup testing is often done late in the construction process, with operating personnel already on site. Make sure you and they are working to the same lockout/tagout rules. Report violations to your foreman.
- Energized equipment. Point to point wiring tests, insulation resistance tests, and other signal injection tests require placing specific circuits in the de-energized state. But adjacent circuits or equipment may be energized, even in the same enclosure. Thus, insulated blankets, gloves, and tools may be necessary even though you are working on de-energized circuits. So may blast protection and other items you normally think of belonging to “hot work.”
- Operating equipment. Make sure it’s safe for you to operate any controls or breakers in the circuits you’re testing. Make sure operation won’t cause process problems. If equipment is operating near where you’re testing, identify the hazards presented. Use the barriers, procedures, and PPE needed to protect against those hazards.
- Clearances. The clearances provided by OSHA and the NEC are *minimums*. They may not be enough for your situation. If you don’t have enough room to work safely, especially if you’re injecting high voltages, contact your foreman.
- Outdated drawings. Change orders are common during construction, and your drawings need to be accurate so you can identify the correct energy sources.
- Grounding and bonding errors. Grounding means connecting to the earth, while bonding means creating a metallic path. Bonding eliminates differences of potential, and thus touch shock hazards. Grounding does not. Often it’s the secondary reaction that gets you killed. For example, you jerk back from a minor shock and touch your elbow directly to an energized busbar.
- Miscellaneous NEC violations. Of course, the company needs to know about these so they can be fixed. Sometimes, the repairs can wait. But if a violation poses an immediate safety threat, contact your foreman immediately.
- Portable cord problems. Avoid cord clutter so you don’t have trip hazards or other problems arising from it.
- Inadequate lighting. Don’t hesitate to add temporary task lighting. Shadows can cause you to misread labels or miss potentially lethal hazards.
- Unauthorized activity. Any time covers are removed, normally safe activity from other crews or trades is dangerous. This is obvious in the case of energized equipment. When equipment is not energized, others might leave conductive items in the wrong place. A fault can then occur upon energization. Contact your foreman any time your test environment is violated.

Review and discussion

1. What are some lockout/tagout issues that are particular to startup testing?
2. In what ways do energized circuits present hazards during startup testing? What if you’re not testing energized circuits?

4. If the enclosures are all situated in compliance with the OSHA and NEC clearance requirements, does this mean you have adequate room for conducting your tests? *[Note to Presenter: If there isn't adequate room, moving the enclosures is probably not an available solution. But many other solutions are available, depending on the circumstances. One solution may be to de-energize one side. Often, working room is inadequate because a metal railing, pallet of materials, or minor piece of production equipment is too close to the enclosure. These items can normally be moved. If no items can be moved or de-energized, you'll have to assess the work task to find ways to make it fit safely in the limited space you have. Insulated tools and insulated blankets are often part of this solution.]*

6. What are some NEC violations you have seen in completed work? What are some that can be dangerous to during testing?

8. In what way is lighting important to your safety? What are some dangers if the lighting isn't adequate for the task being performed?

10. What are some safety issues we haven't discussed, yet?

[illegible]