

# Testing Times

A newsletter for the electrical construction and maintenance industry

Volume 6 No. 2

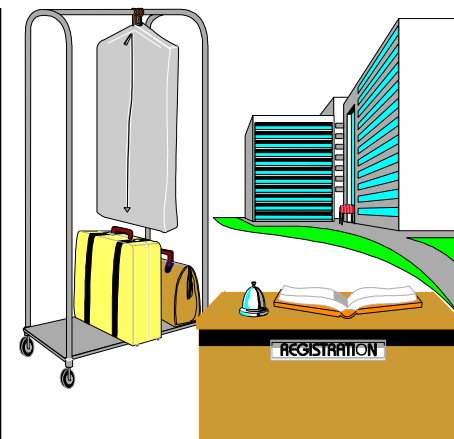
## MCC Meltdown: Who's to blame?

Recently, an article appeared in Electrical Construction & Maintenance magazine (EC&M) detailing the forensic inspection of a motor control center (MCC) that melted down at a major hotel causing a complete shutdown. The investigating engineer's conclusion: the bus bar joints were not properly torqued.

What caused this condition? The engineer cited several contributing factors:

1. The owner never verified that the joints were properly torqued when the MCC was originally installed
2. The owner did no preventive maintenance including checking torque
3. The owner had no documented maintenance procedures informing the maintenance staff how to maintain the equipment
4. The equipment was not accessible (it was installed against a wall)

How many of these conditions apply to you, your clients, or your customers? What can you do to ensure that this situation does not



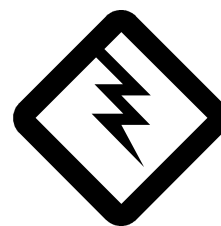
***This true story took place at a hotel, but the deficiencies discovered here can apply to any facility***

happen to you?

- As an owner or a consulting engineer, you can specify that an independent electrical testing firm perform start-up and acceptance testing before the equipment is energized. This step will avoid the potential for joints that are not properly torqued at installation.
- Maintenance procedures should be identified and documented upon building completion. This includes tasks that can be performed in-house by maintenance personnel and work that will

be subcontracted to specialists. An example of routine in-house work includes monthly visual inspections by removing equipment covers to inspect bus bars and components. Often, a problem connection or component can be identified (discoloration, noticeable heat, etc.) before a failure occurs. Subcontracted work should include an annual infrared survey of all electrical equipment. In this survey, equipment is scanned under load and problems not yet visible can be uncovered.

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## Commissioning

An industry buzz word for the 90's - commissioning. What is it? In simple terms, it is the final operational checkout of an entire system. On most large projects, several manufacturers and contractors are involved. The equipment and systems are installed by companies who try to coordinate their efforts

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*(MCC Meltdown, Continued from page 1)*

- Space is always at a premium in electrical/mechanical rooms, but the better the access an engineer can design for electrical equipment (e.g., not putting switchboards and MCCs against the wall) the better the chance for proper inspection and maintenance.

Money is always an issue both at construction time and in maintenance budgets. But compared to the high costs of unplanned outages, acceptance testing and maintenance planning is extremely inexpensive. ❖

EC&M, "Motor Control Center Meltdown", March 1999, pg. 26-28

*(Commissioning, Continued from page 1)*

but often items get overlooked.

The only way to ensure that everything works together properly is to actually operate it, proving that equipment works as it should, and identifying any ways that it will not operate as intended. For large data/telecommunication facilities, the electrical power systems are very complex, with redundant feeds to nearly everything which is automatically switched and monitored. Also, the uninterruptible power systems (UPS) have to function so power to the critical load will never be lost.

There are so many possible combinations of equipment and scenarios, it can be a daunting task to check out every one. Not only performing the tasks but also documenting the tasks is a huge job. It is not uncommon to have three 3-inch binders filled with all the commissioning test reports. To make matters worse, this work often has to be done at odd hours, since it causes power interruptions that are unacceptable while other trades are working. Commissioning isn't glamorous work, but it is necessary to ensure the proper operation of a complex facility. ❖

## Website News!

Hood-Patterson & Dewar's website is up and running. Check us out at:

**[www.hoodpd.com](http://www.hoodpd.com)**

In addition to general company information, we've included past Testing Times newsletter articles for your convenience.

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