Process Safety Beacon

Messages for Manufacturing Personnel
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Operational Readiness Reviews

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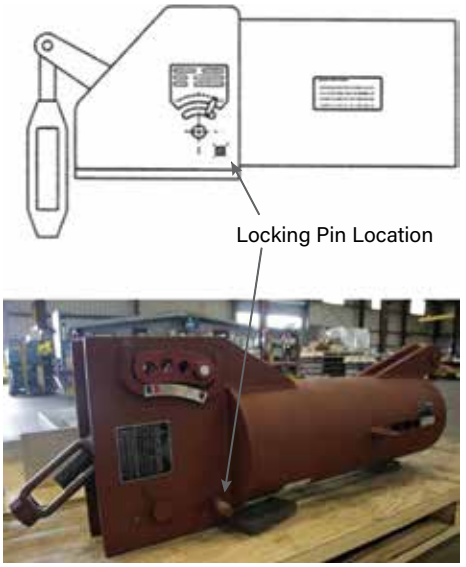

▲ **Figure 1.** Locking pins on spring hangers were used to keep a pendant superheater in place during hydrotesting. After operators completed the testing, they did not complete an operational readiness review (ORR), and the pins were left in place. Although personnel recognized the issue and removed the pins before the hazard could escalate, similar mistakes frequently increase the chance of injury and emergency.

A large plant was restarting after operators performed hydrotesting on the steam superheater coils of a reformer furnace. No modifications had been made to the coils during that testing. Locking pins on spring hangers for the pendant superheater, which is used to increase the steam temperature beyond the saturation temperature, were installed to keep the unit in place and support the extra weight of the water during the test (Figure 1). During the restart procedure, operators missed the step to remove the pins, and, therefore, they were still in place when heating restarted.

As the heating of the reformer furnace continued, the locking pins prevented the superheater coils from expanding. An operator heard an abnormal noise from the coil area and reported it.

Operators halted the restart, removed the locking pins, and resumed the restart with no additional problems.

Here, there was no modification to the superheater coils to require a pre-startup safety review (PSSR), but an operational readiness review (ORR) could have found the locking pins before the startup began.

Did You Know?

- Restoring equipment to service is a dangerous activity since many systems may not be in their normal operating mode or position after maintenance. Even equipment that has been offline for a few hours can present hazards.
- An operational readiness review (ORR) should be conducted when restarting equipment that has been idle, even if nothing has been modified.
- In contrast, a pre-startup safety review (PSSR) verifies that all systems are ready before starting or restarting new or modified equipment. A PSSR must ensure that the modification was completed according to the design. Additionally, it should ensure that any changes were reviewed by a management of change (MOC) procedure and documented on redline drawings.
- Both a PSSR and an ORR must be completed before hazardous materials are introduced to the system to avoid problems that could require clearing the system again.
- The most frequent problems from poor PSSRs or ORRs are drains or bleeder lines left open, incorrect motor rotations, instruments left in bypass mode, and procedures that do not match the new or modified equipment.
- When starting a large system, several reviews may be required to verify that each part of the process is ready to restart operations.

What Can You Do?

- Take the time to verify that each item on the PSSR or ORR checklist is done before signing off.
- If there are items missing on the PSSR or ORR checklist, bring them to the attention of your supervisor.
- Follow the company's lockout and line-break procedures when removing isolation devices.
- Document your actions on the PSSR form and unit logbook so others know what was done and when it was completed.

Operational readiness reviews differ from pre-startup safety reviews.