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Messages for Manufacturing Personnel

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What happens when the lights go out?

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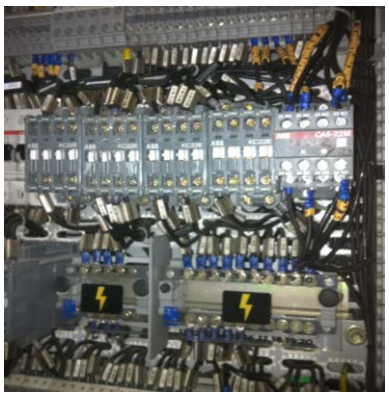

A maintenance worker went into the electrical room to shut off a non-process circuit. By mistake, he turned off the circuit breaker for the plant programmable logic controller (PLC) power. He realized his error, reset the PLC circuit breaker and turned off the intended circuit breaker. The short power interruption to the PLC caused some process equipment to stop while other equipment continued to operate. The result was a process trying to run with partial controls. The process operation was upset, isolation valves closed, and toxic material was vented at a rate that overloaded a vent scrubber. Fortunately, no one was injured and the release did not leave the plant site.

Why did this happen?

➔ We do not know how well the individual breakers were labeled, or how well the electrician was trained. In a process hazard analysis (PHA), this type of failure should be considered when discussing human factors. Unfortunately, the potential consequences of a small event such as this may be missed in the scope of a PHA.

➔ When doing a PHA, be sure that you know what happens to instruments, valves, and other equipment in case of failure of electric power or other utilities such as instrument air. Do they move to a "fail-safe" position or remain in their last position? If you are not sure, follow the rule: "when in doubt, check it out".

➔ Knowing the failure state of a single device may not be enough to understand what happens to a process if a large number of devices move to the failure position at the same time. Think about what happens if a lot of equipment loses power at the same time.

What can you do?

➔ Know what happens if the power fails for a single piece of equipment, or to a part of the plant, but the rest of the equipment continues to operate. What happens if power is lost to computer displays or the control panel, but not to the process?

➔ Ensure that all electrical controls, including electrical panels and circuit breakers, are properly and clearly labeled. At home you may be able to flip a few circuit breakers until you get the right one, but not at work!

➔ If you are asked by a PHA team to verify the proper operation of a device or procedure, take that task seriously. Follow the test procedure and document what you observe.

➔ When power failures occur, follow emergency procedures. These should tell you what actions are needed to keep the plant safe, and how to safely resume operation following a power failure.

➔ Review and practice utility failure procedures periodically and correct any problems or omissions. Confirm that you will be able to find the emergency procedures in the event of a power failure.

Be prepared for utility failures!

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