

Planning for Disaster **by James Piper, P. E**

Attacks on Sept. 11 prompt managers to rethink plans for preventing disaster and, if needed, bring order to chaos.

The events of Sept. 11, 2001 must serve as a wake-up call to facility managers everywhere.

Perhaps the most important lesson to be learned from any disaster is that preparedness is essential. People and equipment that are needed to deal with whatever circumstances result from a disaster must be ready to respond well in advance of the incident.

If maintenance and engineering managers assume, they can wait to react to a disaster, they are likely to find that it is too late to take any successful action.

Setting goals

Thoroughness is paramount for successful disaster preparedness. Managers must approach the issue with open eyes and open ears, as well as an open mind. Facilities have grown more complex, and their operations have become increasingly dependent on many of the systems for which maintenance managers are responsible.

Interruption in the operation of any essential systems electrical power, telecommunications, HVAC or lighting - can result in interruptions of business operations that can cost thousands of dollars per minute.

Managers who have weathered a disaster in their facilities stress the importance of having a disaster preparedness program in place well before the incident. But developing that plan is not something managers can accomplish overnight. Comprehensive disaster recovery plans typically take months or even years to develop and implement.

Disaster preparedness programs must be tailored to a specific facility. Facilities vary widely in designs, operations, occupancy, locations, adjacent facilities, potential threats, and the ability to respond to threats, and these differences greatly affect the shape of the final plan.

Faced with such a task, managers might not know where to begin. But the steps leading to disaster preparedness are not that different from other challenges maintenance and engineering managers face regularly.

Identifying risks

Risks to facilities come in all sizes and shapes. They can come from within or outside a facility, and they can be natural or manmade. To identify the risks to a facility and its operations, managers will need to know the facility inside and out, including:

- operations within the facility
- services required to support operations
- the people who work in a facility, their location and the activities they perform
- the building's systems, their operation, and the impact to both building operations and occupants of the loss of any building system
- adjacent facilities, including the types of operations performed in those facilities.

Risk assessment requires performing an audit to uncover risk exposures. Start by asking several basic questions. What are the relevant natural hazards? What are the internal and external threats? Some risks might be obvious - fire, flood and storm damage, for instance - but some are easily overlooked.

Facilities have grown increasingly dependent on services supplied by building utility systems. What would be the impact of a loss of electricity or natural gas for an hour, a day or a week? What would happen if a central chiller catastrophically failed and took months to replace?

The purpose of risk assessment is to identify areas where a facility is vulnerable. To do this, maintenance managers also must look at a facility's operations not only through their eyes but also those of building occupants, whose needs will be quite different from those of the maintenance department.

Evaluating risks

Having identified the risks, managers will have to study those risks to determine what can be done about them. There are two elements to evaluate - the risk's probability of occurring and its impact.

Evaluating risks must be a team effort involving facility occupants and managers. While managers will have a better idea of the probability of a particular risk occurring, building occupants will be better able to judge a risk's impact on their operations.

Managers should meet with occupants to review the list of identified risks and evaluate the impact each would have on operations. For each risk, occupants will have to identify an acceptable downtime for their operation, as well as identify its impact of downtime.

Managers and occupants should look closely at each risk, particularly those that have a high probability of occurrence. Managers should look for critical points of failure that can be eliminated by building redundancy into a facility system or by modifying facility operations.

Managers also will have to prioritize risks based on their probability and on the potential impact on critical business functions for both maintenance operations and that of building occupants.

Finally, managers will have to remember that facilities change constantly. As conditions change, managers will have to reevaluate risks, assign new priorities and develop new strategies to deal with them.

Risk responses

Organizations can greatly reduce or eliminate the impact of many risks with careful planning. For example, in facilities with critical electricity needs, managers can reduce the risk of a total electrical outage by supplying the facility with two separate electrical services from independent utility sources.

Unfortunately, not all facilities feature redundant systems. In these cases, maintenance managers will have to develop comprehensive plans for dealing with each type of potential disaster. For emergencies involving the loss of utilities, managers must develop plans for temporary systems, such as emergency generators, temporary boilers or spot-cooling systems.

If the facility does not already own equipment, managers can arrange ahead of time for its rental. Well-written procedures must be in place for identifying loads that are critical and must be connected to or serviced by temporary systems.

In cases of physical damage to a facility, plans must be in place for securing and sealing building envelopes. Temporary fences can help to secure building perimeters, and people might have to be relocated temporarily within a facility or to another facility.

Managers should consider lining up outside contractors and suppliers ahead of time to help deal with these situations. Depending on the nature and extent of a disaster, a facility might not be the only one needing these outside sources of help. Facilities that plan ahead of time as part of a disaster plan can avoid competing with others.

Communications before, during and after a disaster are essential, so managers must consider arrangements for communications systems. When a disaster occurs, building occupants will need to be notified what to do and where to go, and they'll need constant updates as to the status of the facility and its systems. Also, maintenance personnel must be notified of details of a disaster and how to respond, and managers might need to notify local, state and federal officials.

In some cases, the disaster might disrupt normal communications systems - for example, jamming telephones and cellular phones. Plans must be in place for alternative methods of getting information to the people who need it.

Testing the plan

Simply developing and implementing a disaster preparedness plan is not sufficient. Without testing and evaluation, there is no plan. An actual emergency is not the time to test a plan. Testing must take place under controlled conditions in order to properly evaluate the plan, identify weaknesses and validate support system operation.

Organizations will have to perform disaster drills to evaluate some parts of the plan. The performance of maintenance personnel and building systems must be monitored closely during these drills to ensure that all perform as intended. Once the drill has been completed, managers will have to evaluate the response to the emergency and incorporate necessary changes in the plan.

Performing drills is essential for the success of a disaster preparedness plan, but few organizations have invested the time and effort needed to conduct even simple drills, such as a building evacuation or fire alarm tests. Drills must be conducted on a regular and repeated basis.

Other portions of a plan require no drills. Rather, they simply must be reviewed periodically to make certain they are current - identifying and marking building evacuation routes, and developing maintenance personnel lists with phone numbers, skills and anticipated response times.

Routine maintenance activities involving building systems play an important role in controlling and limiting the impact of disasters, so testing should cover such activities:

- Monthly, run emergency generators under load.
- Annually, test building fire alarms and smoke detection systems.
- At least twice a year, inspect and test building exit signs and battery-powered emergency lighting.
- Performance-test all building FIVAC smoke control systems.

It is difficult to keep ongoing interest in a program that shows no immediate return. It is difficult but critical to the organization. The problem is that you can never predict when a disaster plan will be needed.

Secrets of Long-Term Success

One problem in preparing facilities for disasters is keeping people focused on the effort. In too

many cases, managers develop, implement and test programs, only to see them shelved and forgotten over time. Then, when disaster strikes, it is almost as if no plan ever existed.

The problem is particularly bad for maintenance and engineering managers, in that most already face tight operating budgets. To reduce costs, they scale back or eliminate many of the activities needed to keep a plan current.

False perceptions about the need for disaster planning only make things worse. For example, it is estimated that businesses in the United States spent \$3 trillion preparing for Y2K. When the century changeover occurred, there were only minor problems in a limited number of areas.

But instead of crediting extensive planning and preparation with making Y2K a nonevent, more than a few people claimed the whole crisis was manufactured by computer consultants to line their pockets. This same attitude toward disaster planning will put facilities at risk.

If disaster planning is to be a long-term success, it must become a way of doing business for facilities. Managers must train their employees on the needs and benefits of disaster planning. They must continually demonstrate to senior management the reasons that disaster planning is not an optional program. And they must be aware of how other facilities are working to avoid disasters in their operations.

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