MANAGEMENT OF CHANGE

INTRODUCTION

The 14 parts of *OVERVIEW* that are laid out in the *OVERVIEW* Manual and in the following sections of PRC.1 have an important feature in common: they will fail if they are implemented once and then forgotten. Every time a change occurs in the facility, all 14 parts in the *OVERVIEW* Manual must be reapplied as needed because there is considerable evidence that failures to reapply *OVERVIEW* to changes have directly caused or led to many major accidents. The concept of change management and of the need to properly manage change is not new; many companies have adopted management of change (MOC) procedures. These companies are concentrated in industries where accidents have especially severe consequences such as the chemical process and aerospace industries. Yet incidents and near misses that are attributable to the lack of, or inadequacy of, MOC systems continue to occur. To improve the performance of MOC systems throughout industry, managers need to better implement MOC systems within their companies and plants.

Changes occur when modifications are made to the physical plant, operation, replacement equipment, personnel, or procedures. The most obvious changes occur when a new plant, or a major addition to an existing one, is constructed. Other, more subtle changes can occur when new suppliers are hired, when procedures are modified, when plant staffing is revised, and when equipment is repaired or replaced. All such changes, if they are not carefully implemented, can increase the risk of a loss. Experience has demonstrated that inadvertent, unintended, erroneous or poorly performed changes have resulted in many catastrophic fires, explosions and other losses.

Changes large enough to be considered capital projects are obvious candidates for MOC procedures. The construction of a new plant or new addition to an existing plant should automatically activate all the corporate MOC procedures.

A related problem is that the construction process itself poses dangers different from, and usually greater than, those of a completed operating plant. As a consequence, the execution phase of a large construction or renovation project itself constitutes a change that must be managed. See PRC.1.5.0.

Changes involving smaller expenditures and less obvious projects can cause unexpected losses if they are more likely to escape notice. For example, replacing electrical equipment with newer equipment meeting seemingly identical product specifications can introduce new hazards requiring increased protection.

The Property Risk Consulting Guideline listed in Table 1 contains additional information expanding upon the contents of this section.

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TABLE 1
Supporting Sections

PRC Section	Title
1.0.2.1	Replacement in Kind
1.0.2.2	Processing Requests for Change
1.0.2.3	Request for Change Forms
1.0.2.4	Auditing Management of Change
1.0.2.5	Measuring Management of Change Performance
1.0.2.6	Management of Change at Small Facilities
1.0.4	Outside Contractors

This guide can be used to establish new MOC systems or to improve existing MOC systems. All the features described in this guide may not be appropriate for all MOC systems. This guide supplements those other loss prevention and loss control programs required by *OVERVIEW*, and which may contain specific MOC requirements.

Establishing communication between management and AXA XL Risk Consulting at the earliest planning stages of large projects is vital. This will allow AXA XL Risk Consulting to offer valuable consultation from our loss prevention and control experience.

POSITION

To manage change, take these steps:

Design the MOC System

- Establish terminology. Establishing appropriate and consistent terminology can help minimize confusion during implementation and operation of an MOC system.
- Define roles and responsibilities. Implementation and maintenance of an effective MOC system require actions by many different departments and individuals. The MOC design specification should describe the titles and roles for the key personnel in the MOC system. Identify all areas of expertise needed to perform tasks to aid the selection process.
- Define the scope of the MOC system. Establish the physical areas, equipment, processes, procedures, etc. covered by the MOC. Generally, the entire facility will be included so exercise care as to what, if anything, is excluded.
- Integrate MOC with company practices. The design specification for the MOC system should define anticipated interfaces with other systems, such as new construction (PRC.1.5.0) or the hazard evaluation system (PRC.1.13.0). The developers of an MOC system should coordinate their efforts with the plant personnel who are responsible for carrying out the requirements of other company guidelines.
- Establish requirements for review and authorization. The MOC design specification should recognize that some types of changes will require more or less review, based on potential safety variables (e.g., complexity of the change, magnitude of the change, hazards involved).
- Issue guidelines for key MOC issues. Within its MOC design specification, management should identify the key issues and special situations that they expect the development team to consider.
- Set up an MOC system development team to create the MOC system procedures, based on the MOC system design specification that is provided by management. Select team members from a cross section of company departments. Include people from several different organizations, with different types and levels of experience, and with specific day-to-day involvement in changes. For a small plant, the MOC system development might be conducted by an individual; however, others should then review the draft procedure.

Develop A Written Description of the MOC System Based on the Design Requirements

- Identify likely change situations. Based on the design specification supplied by management, the team must define what is, and is not, a change for the plant that will be handled by its MOC system.
- Coordinate the MOC system with existing plant procedures. Numerous other management systems interface with a company's MOC system. The MOC system development team should consider how the MOC procedure will deal with each of the other administrative programs.
- Establish "request for change" review and approval procedures. For each category of change, the development team determines the steps (i.e., reviews, actions and approvals) that will be necessary before a change can be implemented.
- Develop guidelines for key MOC issues. The development team should create specific guidelines to help MOC system users address some of the key MOC issues, such as evaluating hazards, communicating changes, tracking temporary changes, integrating MOC with hazard evaluation, and providing for an emergency change review protocol.
- Design MOC system documentation. The development team should establish the documentation format for the MOC system. The change documentation should describe proposed changes; establish what reviews, actions and approvals are necessary; document approvals for changes; track the status of temporary changes; and provide summaries of actual changes to affected organizations and individuals.
- Define employee training requirements. Define how each type of training will be developed and provided. Educate all employees to recognize which changes are within the scope of the MOC systems. Give initial training to employees who will be involved in the MOC system (e.g., personnel who are expected to request changes or provide initial reviews). Give initial training for personnel who will have major roles in MOC system operation (e.g., reviewers at other levels and approvers). Institute regular refresher training requirements for all MOC system personnel including those who initiate MOC requests.
- Establish a procedure to modify the MOC system. The procedure should address ways for employees to propose changes to the MOC system, the reviews and approvals necessary for making a proposed change, methods of communicating changes to employees involved with the MOC system, and the means for updating MOC system documentation.
- Compare the MOC system with its design specification. The development team and senior management should ensure that the MOC system meets the requirements. Furthermore, the development team and senior management should make certain that the MOC system is understandable to and convenient for the potential users.

Install the MOC System

- Integrate the MOC system with existing plant procedures. Resolve any conflicts or overlaps by modifying the existing procedures or the MOC system.
- Develop a phased implementation plan. The development team should plan a phased implementation, including a field test of the MOC system procedures and documentation to identify and correct any weaknesses. The field test should exercise all the major features of the MOC system, including special circumstances like temporary and emergency changes.
- Train all personnel. All employees involved in making changes at the plant should be trained in the MOC philosophy, procedures and documentation. This training should include individuals at all levels of authority, with special emphasis on the line maintenance and operating personnel as well as the front-line supervisors.

Operate the MOC System over the Life of the Plant

- Monitor the operation of the MOC system. This ensures that the phased implementation of the MOC system is progressing in a timely manner, the MOC system is working well with other systems and other site procedures, the MOC procedures are being followed as intended, and the MOC system is fulfilling its design intent. Monitor these factors through routine administration of the MOC system and periodic internal audits/reviews of the MOC system. Correct any deficiencies in the MOC system according to the procedures for modifying the MOC system. Monitor emergency changes particularly closely. Review any changes that are implemented on an emergency basis in more detail after their implementation.
- Resolve MOC questions and disputes. When uncertainties develop in the interpretation of MOC procedures (e.g., a proposed change does not fit into any category of changes that has a prescribed review process), or when multiple reviewers disagree over an MOC requirement, an MOC coordinator appointed by the team must resolve these issues.
- Maintain the MOC system documentation and records. Update the MOC procedures as necessary so that those with responsibilities under the MOC system are always aware of current procedures. The records of requested changes, change approvals, and tracking forms for temporary changes must be archived for use in monitoring the MOC system and for use by other systems (e.g., process hazard analyses [PRC.1.13.0], compliance audits).

Maintain the MOC System

- Collect and retain MOC system performance data. Collect only the data useful for making decisions about the MOC system's performance and making needed improvements. Review the data collected.
- Audit program compliance. Plant personnel should periodically review the MOC system by examining random samples of work that has been performed to see whether the correct MOC review protocol was used. They should also determine whether any MOC deficiencies exist.
- Monitor performance and effectiveness. Use key MOC performance indicators to determine the effectiveness of the MOC system.
- Identify opportunities for improvements. Based on the results of audits and on the results of analyzing key performance indicators, periodically review the MOC to determine whether any improvements should be made.

DISCUSSION

MOC systems are formal administrative procedures that mandate review and approval of proposed changes in designated areas of an organization. The objective of MOC is to prevent changes in structures, equipment, materials, operations, maintenance and supporting functions from introducing unacceptable risks. MOC systems encourage careful review of proposed changes. MOC systems avoid changes that compromise the design basis of carefully engineered equipment or that degrade the safety of processes that have operated safely for years.

Changes

Large capital projects such as new construction and major renovations are obvious candidates for MOC. *OVERVIEW* Manual (PRC.1.5.0) are devoted to them. Changes not involving capitol expenditures are smaller and less obvious than large capitol projects, but they can be even more hazardous because they can escape notice.

Incremental increases in the amount of combustibles can eventually render the existing fire protection systems inadequate. A more subtle change would be the gradual replacement of metal parts in a warehouse with plastic ones of the same size and shape. The MOC system must contain a mechanism that enables those people most likely to encounter change to initiate the MOC process. PRC.1.0.2.3 addresses this issue by giving examples of forms requesting change management.

Seemingly inconsequential changes to a process, such as a slight increase in temperature, pressure or speed, can lead to a major increase in hazards. Many fires have been caused by the replacement of a material or a part by what was assumed to be "equivalent." The ability to distinguish between changes that require management and changes that do not is vital. PRC.1.0.2.1 addresses this issue.

The human factor is also important. Downsizing, layoffs, and retirements can lead to a decrease in the number or experience level of operating personnel. Over time, small "obviously unimportant" changes to operating or maintenance procedures can lead to hazardous practices.

The size or the complexity of the facility in which the proposed change is to be implemented does not limit the hazards associated with a proposed change. Thus, just because a plant may be small or have relatively simple processes (e.g., storage), the need to properly manage change is no less important than at larger or more complex facilities. Also, managing change at small plants is not necessarily easier than implementing an MOC system at a large facility. Each situation carries its own special challenges. Large facilities, where it is more difficult to make plant culture adjustments, usually find it difficult to gain consensus on the procedures for managing change. Smaller facilities, which are often more receptive to change, lack the resources (e.g., people, technical specialties) that large companies/facilities find more commonplace. PRC.1.0.2.6 discusses how to modify MOC systems to fit small facilities.

Implementation

Consistent and effective MOC is one of the most important, yet may be one of the most difficult, activities to implement in a company. MOC is important because improperly managed changes can directly cause or lead to catastrophic accidents as well as degrade the quality of manufacturing operations. Formal MOC systems implement administrative procedures for the review and approval of changes before they are made. This process helps ensure the continued safe and high-quality operation of facilities. PRC.1.0.2.2 addresses procedures for the generation and handling of MOC documentation and gives examples of flow charts for MOC systems for various sized facilities.

The scope, level of detail, and bureaucratic complexity of an MOC system can have a significant impact on its success. MOC systems must be designed to precisely fit the organizational structure, culture and work force of a facility. MOC systems designed in this manner are much less likely to be used in a perfunctory fashion or circumvented on a regular basis. Having an inadequate MOC system or one that is dormant is worse than having no MOC system at all because management can be lulled into complacency, thinking that they are effectively managing change when they are not.

Principles for successfully implementing MOC systems:

- Keep it simple. A modest MOC system that works is better than an elegant one that does not.
- Obtain widespread acceptance and commitment. Elicit all plant employee perspectives and concerns when developing an MOC system.
- Field-test the MOC system prior to its official implementation. Debugging it early will pay off in the long run.
- Provide adequate training. All personnel must be appropriately educated on the existence of the MOC system and their roles and responsibilities. Outside contractors in particular should not be overlooked. PRC.1.0.4 addresses this issue.
- Monitor the progress and performance of the MOC system through the use of audits and other means. Any management system that is never reviewed will eventually degrade. A program to measure, record and analyze key indicators relevant to the MOC system will help to detect deviations within the operation of an MOC system before these deviations can cause accidents. PRC.1.0.2.5 discusses ways to perform such measurements on an ongoing basis. PRC.1.0.2.4 discusses ways to periodically audit MOC systems. Use the results of such audits to improve your MOC procedures.
- Demonstrate management leadership and commitment. Properly support the MOC program by providing adequate resources and by making the hard decisions in favor of safety when

MOC reviews indicate a problem. Like most aspects of loss prevention and control, MOC success begins at the top.