Establishing a sound safety program, by following Integrated Safety Management (ISM) principles, helps to ensure that safety is incorporated into every worker’s activities. However, without effective project management, even the best safety program will remain unimplemented. This paper focuses on effective project management at the Fernald Environmental Management Project (FEMP) through projectization, management’s direct and visible field involvement in safety, and establishing open communication.

Projectization means that a team of professionals from functional areas (e.g., health and safety, engineering, construction, and operations) is assigned to a manager to implement a project. Projectization provides managers with the dedicated resources, team members, and authority to plan and conduct work safely following the principles of ISM.

Effective project management also means direct and visible field involvement in safety, including the executive manager. To help establish commitment to safety, management should conduct routine walkthroughs to discuss safe work practices with workers; issue safety incentives; observe work practices; ask for and evaluate worker input; and emphasize management’s expectations and workers’ accountability for safety.

Open communication is also critical to effective project management. While many managers recognize that open communication is essential for safety, communication often breaks down. The projectized organization establishes a partnership with workers, subcontractors, support organizations, and the Department of Energy (DOE). When management effectively develops a team and actively accepts worker feedback and improvement ideas, efficiency, morale, and ultimately, the safety of daily work activities is improved.

This paper discusses how these project management approaches are implemented through the planning and conduct of work, including their relationship to ISM core functions and guiding principles, and provides examples of how effective project management has positively affected the safe and successful implementation of work at the FEMP.

INTRODUCTION

ISM is a DOE program instituted to promote and enhance worker safety and is based on worker involvement and work planning. Although a safety program that incorporates the ISM core functions and guiding principles establishes a foundation to ensure that work is conducted safely, even the best program will be ineffective without management commitment.

ISM requires that the scope of work is defined, hazards analyzed, controls developed and implemented, and that work is performed within those controls. Lessons learned from prior projects, and feedback from workers, should be incorporated throughout a project to ensure
continuous improvement. Workers must also have clear roles and responsibilities to avoid errors resulting from confusion and duplicated efforts. Workers must also be competent at the level of their responsibility.

Work being conducted throughout the DOE is complex and challenging. To accomplish these complex projects safely, the following key organizational objectives need to be met.

- Managers need workers from different functional areas to support them
- Project teams need continuity
- Managers must take responsibility for their team members

The first guiding principal of ISM is line management’s responsibility for safety. Effective project management is critical to the safe completion of work in the DOE complex. ISM tools that have been used effectively at the FEMP include projectization, direct and visible field involvement of management, and open communication.

PROJECTIZATION AS A TOOL FOR EFFECTIVE MANAGEMENT

Although numerous organizational structures can be used to implement projects, not all will meet the three objectives noted above. For example, the functional organization is separated into groups, such as engineering, construction, and operations. As each phase of work is completed, the project is turned over to the next functional group. Engineering turns the work over to construction, who then turns the project over to operations. The functional organization lacks continuity and it is difficult to involve all functional areas in planning. Several years ago, the FEMP organization was structured this way and conducting work was complicated. Complicated work requirements reduce safety.

*Projectization* is a term used by Fluor Fernald to describe an organization that is divided into projects as work objectives (Figure 1). Divisions of the company contain projects that are similar in work scope. For example, at the FEMP several different projects to dismantle buildings are contained in the Demolition Projects Division. Projects to excavate soil, remediate the groundwater, or build the on-site disposal facility are contained within the Soil and Water Division. Project managers are assigned the responsibility to complete individual project objectives within these divisions. Project managers report to a division Vice President.

No individual can be appropriately familiar with all engineering, construction, safety and operational requirements, to name a few, that must be considered and addressed when developing and conducting a project. Complicated project scopes necessitate involving numerous people with various areas of expertise.

Under projectization, project teams are formed combining personnel from each functional area, with each functional area being accountable to the project manager to implement the entire scope of the job. From an organizational standpoint, personnel can either be matrixed to the project manager or work directly for the project manager. Although matrixed personnel still work for a functional area manager, they are assigned to the project manager to implement the specific project. Safety, quality, and procurement personnel are matrixed to maintain independence. For
those functions that do not require full-time support, such as project controls, a functional area representative supports all projects within a division. Projectization provides managers with the dedicated resources, team members, technical expertise, and authority to plan and conduct work safely following the principles of ISM, which creates a team environment and promotes involvement and commitment. Projectization meets the three key organizational objectives noted previously.

My projectized team at the FEMP includes engineering, construction, operations, waste management, health and safety, environmental compliance, quality assurance, and acquisitions personnel, who have worked on the project since the project scope was defined. They will continue to work on the project, with the addition of other personnel as work progresses, to analyze the hazards, design hazard controls, and prepare procedures for operation through start-up and operation of the system. As the project manager, I feel comfortable that I have a unified team of professionals looking at each aspect of the project and working to accomplish the same objectives. They work together as a team and have received praise on ISM reviews and numerous assessments for their dedication, professionalism, and thoroughness. Beyond expected professionalism, I believe that their commitment to the project is affected by the knowledge that they will be the people taking this project into the field. If their plans don’t work, they will be the ones fixing them.
FIGURE 1 – THE PROJECTIZED ORGANIZATION
Projectization facilitates the following core functions and guiding principles of ISM.

- Line management responsibility for safety
- Clear roles and responsibilities
- Competence commensurate with responsibility
- Balanced priorities
- Continuity for effective implementation of the five core functions

Fluor Fernald implemented projectization at the FEMP several years ago, after which the site reached 4 million safe work hours without a lost time accident. This was a 12-month period of work without a lost time accident.

**DIRECT AND VISIBLE FIELD INVOLVEMENT OF MANAGEMENT**

Effective project managers build safe work environments through direct and visible field involvement. There are many pressures on the executive manager and the project manager and the inclination is to manage from the office. Think of the old adage “The squeaky wheel gets the oil.” Since a manager typically starts his or her day in the office, it is easy for the concerns of the office to become consuming. The phone is ringing and a problem arises that requires your attention. There are emails to be answered, people coming into your office with questions and requesting your help, and an endless string of meetings. Each meeting has its own priorities, urgency, and sense of importance. To keep everyone informed and involved in the decision-making process, meetings can consume the largest part of a manager’s day.

As a result, workers in the field are “out of sight, out of mind.” This phenomenon may not be intentional, but it happens. More than once, I have meant to get out in the field that day, but time just slipped away. The pressures of the office must be averted for the important task of spending time in the field.

The effective project manager needs to demonstrate management’s commitment to safety by becoming involved and engaged in the actual work being performed. The project manager doesn’t take the place of the first line supervisor, but instead shows management’s responsibility for ensuring a safe work environment.

First, you must know the job safety requirements. Why should any level of the organization be concerned about safety requirements if management, the highest level, of the team is not concerned? How can you ask people to perform a job if you’re not completely aware of the safety requirements and confident that these requirements are being met? This is one reason why line management is responsible for safety. It is not enough just to know the requirements and make sure they are being followed. The effective project manager discusses the safety requirements with workers.

Attend periodic safety briefings. Perform a walkthrough later that day and ask questions relating to the safety briefing. Provide incentives for workers who get the answer right. This makes a tremendous impression on the workers and focuses their attention on what is being said during the briefings. For example, a FEMP subcontractor has a safety program like that. If a worker
gets a question right regarding that morning’s safety briefing, he or she may get a hat or other reward. If a certain percentage of the entire project gets the questions right in the field, the entire team gets a bonus at the end of the month. The result is that workers start taking notes during briefings and when the project manager is out in the field, they ask to be quizzed. The workers are engaged.

One of the greatest chasms that exist between workers and management is the belief that management doesn’t care. “They’re sitting in their cushy office, while we’re out here working in the heat and the cold.” Ensure that workers understand that you would never ask them to do anything you wouldn’t do. This is extremely important. Demonstrate your commitment to safety and the people by going to the job site during inclement weather, not just on sunny days. Get wet and be cold, just as the people who are working for you. If I can’t stand the cold, why should I expect my workers to feel any different? Dress out if it’s ALARA. A project manager should be trained to access any area of the job site if its ALARA. If you have people working second and third shift, go into the field during the off-shifts to demonstrate your commitment for their personal safety. Your presence sends a clear message and they will want to do well for you. If you are concerned about safety, they will be concerned about safety.

While out in the field, observe and discuss work practices with workers. Get worker feedback and ask their concerns and then, most importantly, follow up on the feedback you receive! One of the basic principles of Enhanced Work Planning and ISM is worker involvement. The workers implementing the work must be involved in developing the work. The same principle, however, applies to the people planning the work. The engineers and safety professionals must be involved in implementing the plans that they develop, which promotes accountability and helps the feedback and improvement process. Planners who see how their plans are implemented in the field are likely to develop better plans.

Do all workers know who you are? Introduce yourself and convey your personal commitment to your project and the people working on it. Tell workers face-to-face your safety expectations for performing the work. It is essential that workers know that they, and their safety, are important to you. It is also one of the most overlooked aspects of management.

Project managers also need to know the names of the people whose safety they are responsible for. Convey to them that safety is both your responsibility and theirs. You will gain the team members’ attention and loyalty. Your concerns become their concerns. Your safety attitude will begin to become their safety attitude. I know I am not getting into the field enough if I don’t know the first name of every person who works for me.

Before we started the pre-operational assessment on our last project, I called the entire work crew together one morning. We sat in the break room and discussed the project. I asked them how they felt about the procedures. Were they comfortable with them? Did they know what to do if they couldn’t implement one of the steps in the procedure? Was there anything that they were still unsure about? We talked for at least one hour. Even though this was a small project that would operate for less than one month, I was not going to declare the project ready for its start-up review until the team assured me that they were ready.
These workers would be working on a breathing air lifeline in a high alpha contamination area. If they weren’t ready to do this job, then we would work together to fix the problem. At the end of our discussion, several things were clear. First, the team felt comfortable performing the operation and I was comfortable with starting up. Second, the workers knew exactly what I expected from them, they knew my commitment to their work, and knew that I would not place them in harm’s way. We began our start-up review with no operational pre-start findings. We had one first aid case at the completion of operations during dismantlement of our facility. We completed more than 34,400 labor hours with no injuries or accidents. There were no environmental or radiological incidents.

Direct and visible field involvement of project management facilitates several ISM principles. You will have personal access to worker feedback and ideas for continuous improvement. You will demonstrate your responsibility for safety and become actively responsible and personally committed. You will know the impacts that your decisions have on the people performing the work. If you have visible involvement in the field, you will never authorize work to start that you aren’t completely sure is safe.

ESTABLISHING OPEN COMMUNICATION

Open communication is key to an effective safety management system. If communication is not open, workers will not provide feedback, roles and responsibilities may become unclear, hazards may not be communicated, and priorities may become unbalanced. Everyone agrees that communication is important. But if everyone thinks this, why does communication often break down?

First, lack of continuity in a team hampers the ability to communicate. Most people communicate better with people they know and with whom they feel comfortable. Second, people are busy, pressured, and just fail to take the time to communicate. Fear is a third reason people don’t communicate. Fear of retribution, shyness, or fear of causing trouble all keep people from sharing concerns or ideas. Finally, complacency contributes to broken lines of communication. Workers believe that management doesn’t care about their ideas or won’t do anything about them. Why bring it up?

The projectized organization provides continuity and helps resolve some communication problems. Under projectized organizations, management has a better span of control, which makes communication easier. However, even with a projectized organization, large job sites with discontinuous work areas cause teams to be scattered across multiple locations. Management needs to do everything possible to collocate personnel to improve communications and facilitate good planning.

To ensure open communications, the project manager must work hard to build a team atmosphere. While a projectized organization helps promote this atmosphere, the manager will establish the tone that others will follow. If management is divisive and critical, a team environment will not develop and morale will be poor. Building a team environment, where workers feel like part of the group reduces fear. Workers feel like they’re part of a family and become more likely to share concerns and ideas. Project managers need to make sure that
subcontractors and DOE are part of the team. “We/they” thinking does not promote communication and will not enhance safety or improve safe work planning.

When our project recently hired a fixed price subcontractor, we spent two days aligning the two project teams, ensuring that the company counterparts got to know each other. Because the subcontractor is based in Denver, Colorado for the first year of the job, it was important that faces could be put with names, and that each team member felt comfortable picking up the phone and calling his or her counterpart. This approach has been very successful in establishing good working relationships within the Fluor Fernald team and with our subcontractor. One year into the contract communication is still good and everyone is working well together. Our approach to managing the subcontractor has been referred to as “the collaborative model.” This simply means that we communicate and work together to solve problems, even though it is a fixed price contract.

A project manager also needs to make communication personal. Establish partnerships with workers, support organizations, and subcontractors. The time spent observing and discussing work in the field pays by improving communication greatly.

On numerous occasions, a craft person has felt comfortable enough to stop me on the sidewalk to discuss a concern or tell me about something that went well that made them proud. I make communication with team members personal by actively listening to their ideas, asking questions, and always following up, which improves my credibility and builds mutual respect. Workers know I will listen to them and that what they have to say is important to me. As a result, they will talk to me.

Finally, an important element to open communication is sincerely thanking people. Let team members know you hear their concerns about the job. Thank them for their ideas, honesty, and participation. This approach has resulted in my project drawing people in to work on it. Word gets out that it’s a good job to work on. People know that they will be listened to and appreciated and it attracts the best people to work on the job. To date, every person I’ve asked to work on our project has accepted the offer. They know the reputation of the project and my management. They know that it will be a good, safe place to work.

Open communication is not a core function or guiding principle of ISM. However, it is a tool that the effective project manager uses to ensure ISM implementation and the safest work environment possible. It is an environment where workers share ideas for improvement and raise concerns so that controls can be established. It is an environment where morale and efficiency improve and priorities are better balanced because management has a better understanding. Confusion is reduced and roles and responsibilities become clearer. All of these factors relate to principles of ISM and contribute to a safer work environment.
CONCLUSION

ISM is a roadmap to help management and workers incorporate safety into every aspect of the job. To facilitate this process, the effective manager needs to use a few tools that are at his or her disposal. These tools come in many forms and from many places, but are sometimes overlooked, disregarded, or taken for granted.

The structure of the organization can either help or hurt the project manager meet his or her objective of implementing ISM. A projectized organization supports integration of safety into every work activity and ensures that management has the continuity and authority necessary to implement the work safely. Once the work has been planned and is in the process of being implemented, management responsibility moves into the field.

Direct and visible involvement of the project manager and the personal commitment of the project manager to the safety of the workers go a long way to ensure that work is being performed within controls. Finally, establishing an environment of open communication is essential to ensuring that work is planned and implemented safely. Workers need to know that they can raise concerns, identify hazards, and implement controls with the support of management. An environment of open communication and teamwork is essential to ensuring this feedback. The effective project manager creates and promotes this environment.

All these elements of effective project management lead to the safe and successful implementation of work and the safety management system. This is the goal of each of us. No respectable manager ever wants to know that a worker was injured, or at worst killed, under his or her supervision. Line management is responsible for safety. The project manager and executive manager are personally responsible for the safety of every person on that job. ISM is an excellent program for helping managers ensure that work will be performed safely. The few steps described here will help make managers more effective and take ISM one step further to personal commitment and a successful job.