

Case Study: SHE by Design Led Exclusively by Management

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Introduction

Choosing the correct management structure ensures an organization's safe operation, continued growth, satisfied employees, and profitable returns for the investors. Selecting the wrong management structure creates a hostile work environment between employees and managers, allows for unsafe practices and conditions to exist, permits inefficient work practices to flourish, and reduces company profitability. In the worst case, an incorrect management structure may lead to failure of a company and closure or sale. Structuring a business organization requires task definition and allocation, and alignment of available resources; these are all aimed at achieving the established goals. By correctly aligning the safety management tasks on an international mega construction project, senior management was able to demonstrate the positions with the most responsibility and authority for meeting the goals of safety, cost, quality, production, and employee satisfaction are best positioned for meeting the safety goals by formulating their management structure, supported by a professional safety staff.

With these prerequisites in mind, what is the best management structure to drive optimal safety performance? This question was asked repeatedly by the management team on a mega construction project in the Middle East, following several unrelated industrial accidents that resulted in death to the employees involved, as well as an escalating recordable injury rate. Although the incidents were not necessarily unique in the annals of general construction, the management group created initiatives that were needed to prevent reoccurrence, which forced a hard look at the management structure, values, and the hierarchy of needs of both management and labor. Shown in Table 1 are five of the most serious incidents that occurred from 2008 to present.

DATE	DESCRIPTION	RESULT
May 2009	Dump Truck Backs Over Banksman	Fatality (1)
July 2009	Operator Run Over by a Dozer	Fatality (1)
August 2009	Water Truck Collision with Dump Truck	Fatality (1)
August 2009	Near Head-on Collision of Dump Trucks	Fatality (2)
September 2011	Crushed by a Roller	Fatality (1)

Table 1. Listed above are the most serious site incidents. Each forced a reexamination of the management processes involved to assure corrective actions were put into place.

Types of Management and Safety Structures

To establish the basis for the correct management structure that drives a *zero accident* culture and performance, one should first consider the characteristics of the various management structures.

There are six primary management structures utilized in free enterprise business systems today:

- *Pre-bureaucratic*: Generally relegated to one- and two-person organizations devoted to simple tasks, with a very centralized structure.
- *Bureaucratic*: Best considered in military terms with a very structured reporting system with little breadth to the organization but very tall organizationally.
- *Post-bureaucratic*: More of a decentralized form of an organization; considered to be "management by committee."
- *Functional*: Where the functional groups (i.e., safety, engineering, accounting) produce standardized goods and procedures but a structure that is not flexible.
- *Divisional*: Centered on specific products, which are produced by contributions of selected functions where each product group has similar functional assignments.
- *Matrix*: Characterized by teams of employees established to produce grouped tasks or products that serve to support the end product or add value.

Within these six types of management structures, there can be subgroups, such as project-based teams, flat-organization teams, cross-functional teams, network-based teams and virtual teams.

Simply establishing a basic framework for management to exercise its ability to reach such goals as *zero accidents* will not create the needed environment. Beyond the lofty goals there is a need to create key operating components that will establish the foundation for the product and business being considered. These elements should include the following:

- *Defining the tasks and deliverables*: Designing who will do what to produce the desired product.
- *Communication style*: Establishing the change of command and the hierarchy of control.

- *Documenting procedural parameters:* Standardizing the rules for managing change related to improvement in meeting goals.
- *Influencing factors or drivers:* Motivating the human element in the organization.

As a management system relates to safety, critical elements that create a robust foundation for effective safety management are required. Although there are universal and commonly utilized safety practices within the safety profession, many members of front-line or middle management lack an understanding of the essential elements that create the framework for not only a company's individual production unit to be successful but the company as a whole. Therefore, the critical elements should be embraced by an organization's safety professionals as well as its management professionals are encompassed in the following criteria:

- *Documented Management Philosophy:* Publicly sets management's expectation with regard to safety.
- *Safety Plan:* Describes the management plan for how safety will be an integral part of daily operations.
- *Rules and Procedures:* Standardization of the method in which the work will be performed.
- *Committees:* By focusing on safety initiatives, employee recommendations and incident investigations, the committees are an additional safety change agent.
- *Accident and Near-Miss Investigation:* This element establishes the process for who does what by when so the noted incidents are not repeated.
- *Assessments:* Similar to a quality control program, operations are compared to a known standard. This is followed by a corrective action plan for any deficiencies.
- *Professional Safety Staff:* In order to support the development of all elements listed here, a professional staff is required to assist with implementation and technical advice to management.
- *Employee Involvement:* Allowing those most affected by safety controls in the work area, the employees must be included in the solution development and control implementation actions.
- *Positive Reinforcements:* As much as standardized discipline is needed for deliberate or flagrant disregard of rules and procedures, human nature also requires positive and frequent reinforcement when correct work methods are used.
- *Training:* Following the belief that all personnel must know and understand the rules and procedures, training should be provided to standardize the approach to the work.
- *Personal Protective Equipment (PPE):* Although engineering and administrative controls should be the only controls to limit the potential effects of a hazard, PPE is needed in case all other control measures fail.
- *Contractor Control:* Because contractors, suppliers and visitors may not have the same management philosophy and controls established for safety, a company should ensure the contractors working under their direction adhere to the same safety management controls that management has established for the site.
- *Medical Care:* In the event an incident does occur, prompt and professional emergency services and care are needed.

Application of the Theory

During the early days of the mega construction project discussed in the introduction, which is the case example in this discussion, senior project management, construction management and safety management met to agree on the system to be used that would be most effective at driving the contractors to zero accident performance. With an expected life of the project scheduled to be 3.5 to 4 years and a planned rotation of upwards of 20 different contractors with 15,000 employees at any one time, along with as many as 5 languages spoken during the construction of the project, a common yet unified approach to safety was required.

As construction began during the early days of the project, work related injuries were more common as compared to the latter days of the project. As a result of the early undesired safety performance, project management realized another approach was needed to assure the presence of the basic safety requirements as the schedule advanced. With a common realization that senior project management and construction management had the most power to effect change for cost and production, safety must also be driven by the same management group in order to implement and carry forth the needed emphasis in safety.

Using the basic framework of a sound safety process, the management team identified seven critical elements that would drive total ownership of safety down to the management members who had the most control to effect outstanding safety performance, that being construction management in this case.

Boiler Plate: In much the same way that the requirements for "who does what by when" are established for cost and production deliverables, so are the requirements and deliverables established for safety. Therefore, the topics typically seen in the OSHA construction standard under 29 CFR 1926 are customized to fit not only the foreign location, but the emphasis on construction management is reinforced. By incorporating the core values of sustainability and corporate responsibility, a business strategy is created that has meaning and purpose.

Weekly Contractor Safety Meetings: In addition to the expected weekly construction meetings with the contractors, construction management also met with their assigned contractor management counterparts. The meeting agendas were set following the 13 critical elements of a sound safety program described above.

Biweekly Management Review Committee: The charter of such an organization was established by the senior management person onsite with a focus on three key topics of (1) incident review/corrective actions; (2) assessment findings/corrective actions; and (3) safety initiatives to advance on topics that would continue the march toward the goal of zero accidents.

Biannual Corporate or Independent Assessments: In order for the management team to understand their compliance versus non-compliance with as little bias as possible, an independent assessment team was allowed to observe the site operations twice per year using the projects SHE rules and procedures as the basis for comparison. Both pluses and deltas would be published in an assessment report in which each member of management was held accountable both for their compliance with the procedures and the correction of any noted discrepancies.

SHE Staff-Assigned Contracts: On mega projects where upwards of hundreds of contractors may be present, the SHE staff were assigned to specific contractors instead of assigned to contractors operating in a geographic area in order to promote common management direction and to align with how the construction management team generally lead the work within their area of responsibility.

Two-Phase Inductions: As much as each contractor was responsible for inducting their own employees and contractors, a follow-up safety induction was conducted by the SHE staff and other management personnel of the general or managing contractor in order to reinforce what the contractor had previously established as the requirements for adhering to the safety requirements with their company as well as those rules for the site. This also allowed management to define safety compliance as a condition of continued employment.

Key Performance Indicators: In order for management personnel to be totally involved in the outcome of the safety performance for their assigned contractors, key performance indicators were established that reflected not only trailing indicators (i.e., recordable and lost time rates) but leading indicators that measured the success and or failure of implementing all of the critical elements listed in this paper, all with the concept that what is measured will be actioned or completed. The measures used were categorized into three areas that were assessed against quality, quantity and trailing performance indicators.

With these seven concepts in mind, senior management could then implement and validate to gauge the desired level of activity and/or performance. In the case of the mega project in the Middle East, at the time of field deployment in late 2009, injuries were much more common as compared to late in the life of the project (see Table 2). As 2010 began, the management team, with the advice of the team's SHE professionals and the project personnel, embarked on a safety management system where a fully matrixed organization was driving ever-improving safety performance, despite short-cycle contractors that equated to short onsite contracts for each of the contracts that were awarded, which in turn equated to a high turnover of employees, while maintaining a high number of work hours in order to complete the project on time and within budget.

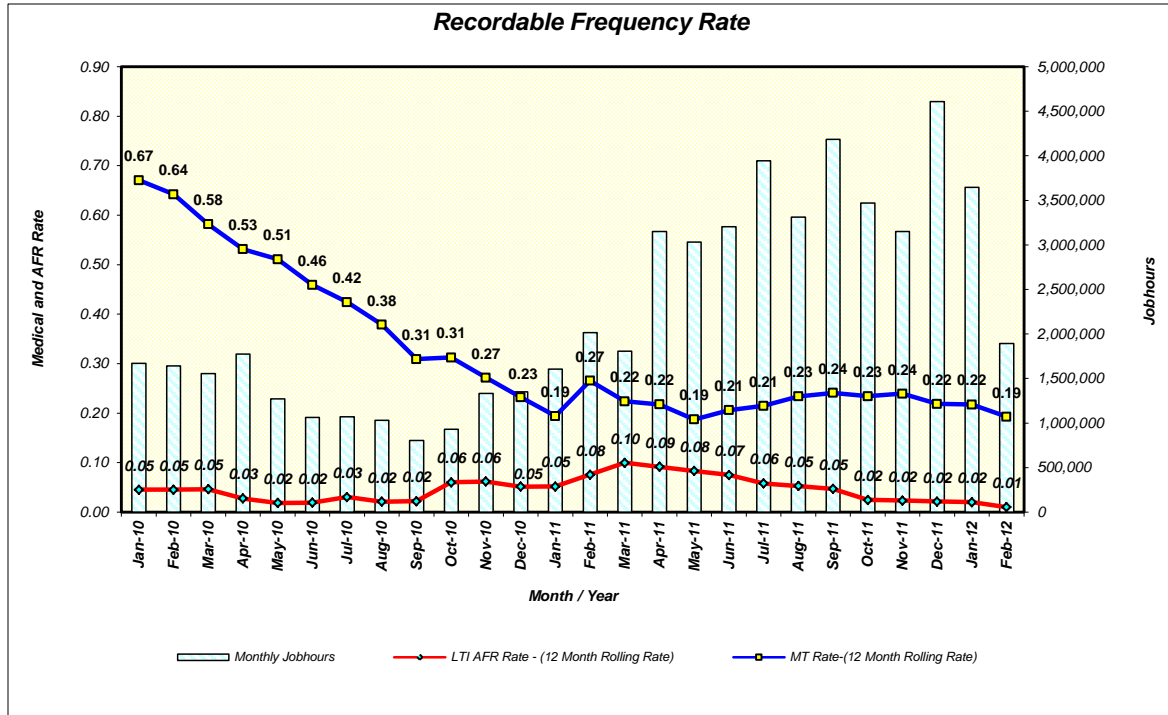


Table 2. The falling accident rate over time demonstrates the effectiveness of the various management lead initiatives.

In Summary

The concept described in this paper is only one example of how senior management and SHE management agreed on the leadership roles required of management and yet strongly supported by the SHE personnel to assure consistency and an ever-improving drive to zero accidents. There is one inescapable fact proven over time by hundreds of organizations around the world - when management actively leads a progressive safety effort committed to zero accidents and supported by a dynamic and aggressive safety organization, the best safety performance is possible.

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