Developing a Zero Incident Safety Culture A Case Study

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Identifying Strengths and Weaknesses Merging Existing Safety Cultures Defining a Path Forward Establishing Leading Metrics

Preface

Several years ago, while teaching a safe boating class in a school near Syracuse, NY I discovered the junior high school football team's game strategy. I didn't come across a secret play book, nor did I locate a talkative team member. This team's plan to achieve victory wasn't a secret at all. Their expectations, goals and priorities were clearly laid out and posted on the bulletin board near their impressively stuffed trophy case. Their plan read something like this:

- We will control the ball for 60 % of the game clock or greater
- We will return kickoffs 30 yards or more at least 90 % of the time
- Our defense will deny third down conversions 85 % of the time
- We will limit turnovers (fumbles and interceptions) to 2 or fewer per half
- You get the idea...

I suddenly understood that if the right things were done in the right way, the final score would take care of itself. Long before I had studied management as a science, I was exposed to a clear, intelligible, and practical example of the effective use of what we now call upstream indicators or leading metrics, the foundation I believe, of effective management.

In my own sports background, I was more experienced with another form of coaching: Red faced, impassioned coaches jumping up and down, imploring us to go, fight and win! Go where? Fight

whom? Win? While we cannot diminish the effect of charismatic leadership in high performance teams, even the most effective of leaders will fail in the absence of a coherent game plan.

This paper is a study in the creation of a game plan- one aimed at an outcome of Zero Injuries and Zero Incidents on large, complex construction, technological and remediation projects. The case study under consideration is the GE Hudson River Remediation program, one of the largest and most complex environmental projects ever undertaken. Phase one, will include the construction of a processing and transportation facility and the dredging of some 265,000 cubic yards of PCB impacted sediments from the upper Hudson River region. The project requires a Zero Incident safety approach involving the client (GE), the Construction Manager (Parsons), seven prime contractors and dozens of lower tier subcontractors.

Establishing a Zero Incident Goal

There are many possible goals for a safety program. "Fifty per cent better than average," "among the best 10%" and other worthy goals come to mind. Early in the planning stages for the Hudson River project, GE and Parsons agreed upon and articulated this Project Safety Goal: "To achieve Zero Injuries and Zero Incidents with all work tasks designed to minimize or eliminate hazards..."

- Zero?
- Is this a realistic expectation?
- Is it an achievable goal?

Long before Parsons begins to build a bridge or dam, disassemble chemical weaponry or remediate an impacted environment, we create blueprints and plans. We study them, refine them and when we are certain they will work, we proceed to the execution stage. The difficulty and risk of many of our projects requires an uncompromising goal of Zero Incidents and precision plans to reach that goal. We believe that a blueprint and plan for exceptional safety performance is equally important. As potential prime contractors are identified for each segment of the project, their capability of performing in a Zero Incident safety culture is evaluated.

Nine Zero Incident Elements

Parsons, as a member of the Construction Industry Institute (CII), ascribes to the nine Zero Incident elements that have been identified by the CII as critical to the achievement of safety excellence. The CII arrived upon these elements from studies of large projects with very low or even zero injury outcomes. During the implementation phase of a project, these are the nine key principles that guide our execution.

The nine elements are:

- 1. Management Commitment
- 2. Staffing for Safety
- 3. Safety Planning/Risk Analysis
- 4. Safety Training & Education
- 5. Worker Involvement
- 6. Recognition & Rewards
- 7. Contractor Management
- 8. Incident Reporting & Investigation
- 9. Drug & Alcohol Testing

During the early construction stage of the GE Hudson River project, one particular challenge was to identify and acknowledging cultural differences among various participants. Some of the team members that joined GE and Parsons included local companies skilled at roads and bridge construction, brush clearing and grubbing, landfill membrane installation and railroad construction. Each brought their own unique perspective to the safety program; each brought strengths and vulnerabilities. We found that the nine CII elements provided a unifying framework that we could all agree with and build upon.

Rather than express the CII elements as philosophical guiding principles, we went a step further and created leading metrics for each one so we could communicate our expectations and chart our progress. The elements and some of the leading metrics for each one are described below:

1. Management Commitment as an essential element is easy to agree upon, but what is the actual expression of such commitment? Words? Resources? Presence? We created the following matrix and incorporated it into performance requirements for each project team member. Note that the criteria expressed are specific, observable and measurable.

	Routinely	Weekly	Monthly	Quarterly
GE	-Demonstrate	-Site safety visit:	-Review safety	-Conduct a
Operations	leadership, show	provide a visible	performance	behavioral safety
Manager	visible support.	presence in work	report	observation.
	-Participate in	area with a	-Hold team	-Participate in
Parsons	incident investigation	safety emphasis	members	audits/inspections.
Program	process		accountable for	-Lead safety toolbox
Manager			safety	meeting.
			requirements	-Participate in
				reward/recognition
				event
Site Project	-Demonstrate a	-Participate in	-Conduct	
Manager	personal commitment	weekly safety	behavioral safety	
	to safety at all times.	meetings.	observation.	
	-Continuously educate		-Participate in	
Contractor	and involve workers in		audits/inspection	
Project	Zero Incident		S	
Manager	Techniques		-Lead safety	
and	-Investigate all		toolbox meeting	
Superinten	incidents			
dent	-Recognize safety			
	achievements.			
	-Implement			
	disciplinary program			

2. Staffing for Safety: Although line management is responsible for safety, they are assisted by safety specialists at several organizational levels. To assure the quality of safety services provided, certification and experience requirements were described.

	Minimum Certifications	Experience
CM Project Safety Manager	Board Certified Safety Professional (CSP) or	>15 years
	Certified Industrial Hygienist (CIH)	
Contractor Site Safety Officer	Construction Health and Safety Technician	> 10 years
(SSO)	(CHST)	
CM and Contractor	30-hr OSHA Construction or General Industry	> 5 years
Site Safety Representatives	Safety certification	
(SSRs)		

3. Safety Planning and Risk Assessment is an ongoing process that began well before the start of construction. At the Program Level, we utilized GE Framework Health and Safety Elements, Parsons' Safety, Health and Risk Program (SHARP) and the CII Zero Incident Techniques.

At the project level, there are several safety guidance documents including the Community Health and Safety Plan (C-HASP), Remedial Action Health and Safety Plan (RA HASP), contract specifications and specific contractor HASPs for all prime contractors. Subcontractors are allowed to work in accordance with their prime contractor's HASP. The metrics involved in this element appear to be primarily pass/fail; either a plan exists or it does not. A more sophisticated approach is to create inspection, audit and behavioral observation instruments and to measure conformance to the specific goals expressed in the various plans.

4. Safety Training and Education requirements are written into the RA HASP which is incorporated by reference into contract performance requirements. Training completion is a meaningful leading metric.

	CM and Contractor Project Management	Project Personnel	Visitors
Supervisor Training in Accident Reduction Techniques (START)	Yes	No	No
Controlled Substance and Alcohol Abuse Awareness	Yes	Yes	No
HAZWOPER (if exposed to PCB- impacted sediment)	Yes	Yes	No
Project Safety Orientation	Yes	Yes	Yes
Behavior-based Observations	Yes	Yes	No

- 5. Worker Involvement is another area that is easy to agree to in principle, but can be more challenging to demonstrate. We require contractor workers to lead 50% of the following:
 - Morning Toolbox Safety Talks
 - Worker Behavioral Observations
 - Inspections
 - Incident Investigations and Root Cause Determinations
 - Team-written Job Safety Analyses (JSAs) and periodic review

All workers are empowered with "Stop Work Authority" where imminent danger exists. Our empowered workers seem to take pride and ownership of the safety program with the assistance of the site safety professionals, who act as coaches rather than cops.

- 6. The Recognition and Rewards Program is used as a management communication technique. We have a budget and plan for the year and we celebrate team victories as well as individual excellence. Our program includes recognition events such as picnics, lunches and gift rewards for man-hour or safe day milestones. Although these are celebrations of training indicators, we feel that these events help us to keep our ultimate safety goals visible while allowing us to celebrate victories as a team. We also use the program to encourage the types of proactive safe behaviors that we desire. Gas cards, gift certificates and cash have been used to encourage Near Miss reporting, hazard identification, safety suggestions and similar activities. Our metrics include numbers of individuals involved in the program, budget amount per worker and frequency of rewards for positive activities.
- 7. Contractor and Subcontractor Management acknowledges the variable that these entities introduce into the project. We manage the fencing contractor or landscaper in the same manner as the experienced iron worker, remediation technician or tug boat captain. Each one is included in site specific project orientation, daily Toolbox safety talks, a weekly all-hands meeting, the recognition & rewards program, incident investigations and all other elements of

the project safety program. Managing every worker in a similar manner assures consistency and builds teamwork.

- **8. Incident Reporting and Investigation** has been a positive rather than punitive process. Here are the principles we apply:
 - All Incidents are reported
 - Investigations use a team approach
 - Root causes are discovered
 - Corrective actions are described
 - Trends are analyzed
 - Lessons Learned are shared

The metrics we track include incident distribution by severity level, contractor, trade and task. More importantly, we track the closure of corrective actions that are identified in a root cause analysis.

9. Drug and Alcohol Testing assures that drug or alcohol influenced workers do not injure themselves or others on the job. The testing program includes pre-employment, random, post accident (excluding Near Miss events) and reasonable suspicion. A distinct module of the site specific orientation addresses the effects and consequences of controlled substance and alcohol use on personal health, safety and the work environment. This proactive communication again reinforces the role of the safety professional as coach rather than cop.

Conclusion

A complex project that involves many participants with different and distinct safety cultures can be merged into a high performance safety team. The key is to state and agree upon unifying principles, express those principles in terms of observable and quantifiable metrics and then to trend and communicate the status of those metrics. This need not be performed in a sterile, clinical or robotic manner. The GE-Hudson River Project is a demonstration of an effective blend of leadership and management, literally the art and science of safety.

Bibliography

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