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CONSTRUCTION SAFETY: CAN MANAGEMENT PREVENT ALL ACCIDENTS OR ARE WORKERS  
RESPONSIBLE FOR THEIR OWN ACTIONS?

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ABSTRACT

The construction industry has struggled for many years with the answer to the question posed in the title: *Can Management Prevent All Accidents or Are Workers Responsible for Their Own Actions?* In the litigious society that we live, it has become more important to find someone "at fault" for an accident than it is to find out how we can prevent it from ever happening again. Most successful companies subscribe to the theme that "all accidents can be prevented." They institute training and qualification programs, safe performance incentives, and culture-change-driven directorates such as the Voluntary Protection Program (VPP); yet we still see construction accidents that result in lost time, and occasionally death, which is extremely costly in the shortsighted measure of money and, in real terms, impact to the worker's family.

Workers need to be properly trained in safety and health protection before they are assigned to a job that may expose them to safety and health hazards. A management committed to improving worker safety and health will bring about significant results in terms of financial savings, improved employee morale, enhanced communities, and increased production. But, how can this happen, you say? Reduction in injury and lost workdays are the rewards. A decline in reduction of injuries and lost workdays results in lower workers' compensation premiums and insurance rates. In 1991, United States workplace injuries and illnesses cost public and private sector employers an estimated \$62 billion in workers' compensation expenditures.

If Forrest Gump had been a safety officer, I am sure he would have been quoted as saying, "Safety Is as Safety Does." This is what safety is all about—working safely. This is very plain language. When there are procedures to be followed to do the work safely, the procedures must be followed. When jobs require safety glasses, the glasses must be worn. When guidance for walking on the roof says to wear a harness and be tied off (personal fall arrest system), the worker must recognize that it is his/her life that is at stake and follow the procedures.

Safety is not about placards, slogans, and tailgate meetings. The worker must perform the work safely or, eventually, there will be an accident.

The supervisor must monitor the worker with a more global viewpoint so as to consider external effects that the worker, conscientious to the task at hand, may not have considered. Management must provide the necessary training and hardware to minimize the risk to the worker while stressing that safety is an integral part of meeting budget, schedule, and/or performance goals.

In order to accomplish all of this, the worker, line supervision, and management must work as a team to make the safety culture a way of life—not taken for granted. Management needs to support their workers and their safety program and demonstrate they are committed to doing so. It is the worker who must actively participate in doing his/her work safely and be able to recognize surroundings or working conditions which are unsanitary, hazardous, or dangerous, and who has

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the authorization to take prompt corrective measures to eliminate the hazards. Workers must actively participate in and subscribe to the safety program. By actively participating in the safety program, the result is ownership: ownership of how to work safely. Workers need to return home at night in the same condition in which they arrived at work in the morning—if not better.

## I. INTRODUCTION

Working safely during construction phases has become increasingly difficult. Accidents are happening. Responsibility for workers' safety has rested on management. Management has provided safe working environments and procedures for their workers to work safely, however, accidents are still happening. Could workers' attitudes be the basis for accidents that are still happening? Developing a safety culture that requires workers and management to work together could be the answer. Safety attitudes are the basis for a safe work environment, not corporate mandates.

## II. OCCUPATIONAL SAFETY STATISTICAL SUMMARY

The Occupational Injury and Illness Incident Rates<sup>a</sup> per 100 full-time workers from 1973 to 1994<sup>b</sup> range as shown in Table 1.<sup>1</sup>

<sup>a</sup> The incident rates represent the number of recordable injuries and illnesses per 100 full-time workers and were calculated as:  $(N/EH) \times 200,000$ , where

$n$  = number of injuries and illnesses  
 $EH$  = total hours worked by all employees during the calendar year

200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

<sup>b</sup> Data for 1973-1975 are based on the Standard Industrial Classification Manual, 1967 Edition; data for 1976-1987 are based on the Standard Industrial Classification Manual, 1972 Edition; and data for 1988-1993 are based on the Standard Industrial Classification Manual, 1987 Edition.

Table 1 - OSHA Injury & Illness Rates

Year	Total	Cases Lost	Workday Cases <sup>c</sup>
73	11	3.4	
74	10.4	3.5	
75	9.1	3.5	
76	9.2	3.5	
77	9.3	3.8	
78 <sup>d</sup>	9.4	4.1	
79 <sup>d</sup>	9.5	4.3	
80	8.7	4.0	
81	8.3	3.8	
82	7.7	3.5	
83 <sup>d</sup>	7.6	3.4	
84 <sup>d</sup>	8.0	3.7	
85	7.9	3.6	
86	7.9	3.6	
87	8.3	3.8	
88	8.6	4.0	
89	8.6	4.0	
90	8.8	4.1	
91	8.4	3.9	
92 <sup>e</sup>	8.9	3.9	
93 <sup>e</sup>	8.5	3.8	
94	8.4	3.8	

The rate of injuries and illnesses in construction has dropped—from 13.1 cases per 100 workers in 1992, to 12.2 in 1993. Lost workday injury rates have also declined from 5.8 cases in 1992, to 5.5 in 1993, according to the Bureau of Labor Statistics.

In 1994, the construction industry had the greatest number of occupation fatalities due to injuries (1027) of all industry groups.<sup>2</sup> This breaks down to an average of three construction workers dying each day.

<sup>c</sup> Total includes cases involving restricted work activity only in addition to days-away-from-work cases with or without restricted work activity.

<sup>d</sup> To maintain historical comparability with the rest of the series, data for small non-farm employers in low-risk industries who were not surveyed were imputed and included in the survey estimates.

<sup>e</sup> Data for 1992-1993 exclude fatal work-related injuries and illnesses.

Workers'-compensation-earned premiums for construction as well as incurred losses for the industry have nearly doubled in the past decade—from \$3.2 billion in earned premiums in 1984; to \$6.3 billion in 1993; and \$2.8 billion in incurred losses in 1984; to \$5 billion in 1993, according to the National Council on Compensation Insurance.<sup>2</sup>

### III. VOLUNTARY PROTECTION PROGRAM

In the construction industry, the Construction Safety Excellence Demonstration Program (CSEDP) has been developed by the Occupational Safety and Health Administration (OSHA), which is comparable to the Star Program in OSHA, or Department of Energy (DOE) VPP for general industry. The difference is that the construction company, not the worksites as in the VPP, applies for program participation. It is set up this way because most construction sites are not around long enough to meet certain VPP requirements.<sup>2</sup>

In 1994, those companies participating in VPP showed that of the 178 companies participating in the VPP, nine sites had no injuries at all. Overall, the sites had only 45% of the injuries expected, or were 55% below the expected average for similar industries.<sup>3</sup> These statistics show that participation in the VPP can dramatically increase safety performance.

In 1996, Congress asked OSHA to continue placing a high priority on its VPP. VPP recognizes worksites around the nation for excellence in safety and health. These sites are considered by OSHA as models for their industries. Those companies reaching "Star" status have comprehensive safety and health programs and injury rates 53% below the national average. VPP participation has grown by 52% since January 1996, to a total of 294 federal sites and 42 state sites—a total of 336 sites.<sup>4</sup>

In 1995, 221 sites using VPP were protecting approximately 167,000 workers. The VPP mentoring outreach program is providing a positive safety and health approach for another 71,250 workers in non-VPP sites. Other outreach activities, such as speeches by VPP participants at conferences and trade associations and assistance at OSHA training events have informed an additional 100,000 workers about VPP.<sup>5</sup>

Participants in the VPP program are not subjected to routine OSHA inspections. The reason is that OSHA VPP onsite reviews ensure that their safety and health programs provide superior protection. VPP sites are the models for the best in partnerships for excellence in workplace safety and health.

The Idaho National Engineering & Environmental Laboratory (INEEL) VPP

The following describes and discusses the basis for the VPP as it is being implemented at the INEEL. The goal of VPP is to create and maintain a workplace free of injuries and illnesses using employee involvement and management leadership. The policy is to integrate safety and health into all aspects of the site mission through a partnership between employees and management. The value statement is, "I will actively care for my safety and the safety of others." The five key elements are as follows:

- Management commitment
- Employee involvement
- Worksite analysis
- Hazard prevention and control
- Safety and health training

The bill of rights states:

I have a right to

- Willingly participate in safety and health issues
- Report or stop unsafe acts
- Report or stop unsafe acts and conditions without fear of reprisal
- Be informed of accident/incident and safety inspection results
- Demonstrate continuous improvement
- Become actively involved

The OSHA recordable Injury and Illness Incident rates for the INEEL<sup>6</sup> are shown in Table 2 below.

Table 2 - INEEL Injury and Illness Recordable Case Rates

<i>Fiscal Year</i>	<i>Total Recordable Cases</i>	<i>Rate</i>
95	234	3.6
96	254	4.33
97 YTD	108	4.22

The INEEL has an excellent safety record even though a recent tragic fatality and some near misses have drawn attention to the fact that there is room for improvement. The rates shown in Table 2, when compared to the rates ("Lost Cases") shown in Table 1, indicate that INEEL incidents are roughly one-half of the average.

Another indicator, the Day Away Case (DAC)<sup>f</sup> rate, which represents lost workday cases due to occupational-related accidents or injuries. Table 3 shows the trend in DAC<sup>7</sup> since Lockheed-Martin became the INEEL M&O Contractor.

Table 3 - Day Away Case Rate for the INEEL

<i>Fiscal Year</i>	<i>Total Day Away Cases</i>	<i>DAC Rate</i>
95	51	0.78
96	38	0.65
97 YTD	13	0.51

When compared to Table 1 ("Workday Cases"), the INEEL DAC is significantly below average. This indicates that the INEEL is not only a very safe work environment compared to all industry, but the severity of the incidents are also on the decline.

The downward trend is believed to be a direct result of the phased approach of VPP implementation, because each successive safety improvement coincides with the completion of additional VPP training modules and INEEL employees become advocates for safety through the VPP.

The INEEL is working towards reaching the VPP STAR status through the following various programs.

Points of contact have been developed for each of 11 geographically designated sites within the 890-square-mile facility and the city of Idaho Falls. All employees are represented and encouraged to participate various area safety committees. Unsafe behavior has been changed through continuous cycling of a four-step process called, "DO IT." DO IT is interpreted as Define, Observe, Intervene, and

<sup>f</sup> DAC is calculated similarly to the incident rate in footnote "a":  $DAC = (Total\ Days\ Away/EH) * 200,000$ .

Test. Several DO ITs have been successfully implemented and completed. Monthly safety slogan contests with prizes have been ongoing. Safety days with team-building events have also been ongoing to increase enthusiasm, optimism, participation, and awareness. The focus on a safe work area is increasingly being recognized, as indicated by participation from all levels of employees. The culture is changing from one of being environmentally directed through procedures, to emphases being placed on each employee actively caring and looking out for each other.

More than 5,000 INEEL employees and subcontractor employees had the opportunity to attend and listen to the experiences of Charlie Morecraft. Charlie was severely burned in an oil refinery explosion and has lived to tell about his experiences. Charlie's experiences have had a major impact on the majority of those that heard his two-hour presentation. Knowledge of Charlie's experiences can save many people from a very traumatic experience because of his emphasis on personal responsibility for safety.

A positive attitude plays an important role in creating safe behavior. Positive attitudes toward safety can save money and keep jobs. Dr. Norman Vincent Peale in his "Power of Positive Thinking" lectures states that "positive thinking leads to a positive attitude." VPP discusses positive attitudes leading to positive behavior which leads to positive consequences.

A good attitudes means:

- Construction workers need to stay focused on the task at hand.
- Taking time to do the job right.
- You have the strength to do the right thing.
- Thinking of yourself as part of a team and taking responsibility.
- Being smart and avoiding taking risks whenever you can.<sup>8</sup>

Firms that do not ensure safety, or have a history of endangering their employees, will face serious consequences. OSHA recently proposed record penalties of \$8.2 million against a construction contractor following investigation of a worker fatality at the Guam International Air Terminal expansion and renovation project. This

penalty is the largest ever proposed in a construction industry case, and was based on 118 alleged willful violations of requirements for protection against fall hazards.<sup>2</sup>

### III. CONCLUSIONS

A good attitude towards safety can save lives. Safety is a partnership requiring common sense, dedication, and partnership. VPP very beautifully symbolizes this kind of partnership. Management and worker commitment to health and safety in the workplace requires every working man and woman's energy, talent and imagination. This is the essence of an actively caring safety culture—employees caring about themselves and the other employees.

### IV. ACKNOWLEDGEMENTS

This is to recognize the management support of G. E. (Jud) Ellis, Acting Executive Vice President of Operations and Chief Operating Officer for Lockheed Martin Idaho Technologies (LMITCO). Mr. Ellis is a VPP Champion at the INEEL Woodruff Avenue Complex.

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<sup>3</sup> The United States Department of Labor, Occupational Safety and Health Administration, "The Benefits of Participating in VPP," April 28, 1997. (<http://spider.osha.gov/oshprogs/vpp/benefits.html>.)

<sup>4</sup> The United States Department of Labor Occupational Safety and Health Administration, Statement of Gregory R. Watchman Acting Assistance Secretary of Labor for Occupational Safety and Health before the House Appropriations

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<sup>5</sup> The United States Department of Labor, Occupational Safety and Health Administration, Remarks of Joseph a. Dear, Assistant Secretary of Labor for Occupational Safety and Health before the Voluntary Protection Program Participation Association, September 26, 1995. (<http://www.osha.gov/media/speeches/092695.html>.)

<sup>6</sup> Statistics provided in e-mail from Anthony J. Kavran, LMITCO, May, 14, 1997.

<sup>7</sup> Statistics provided in e-mail from Anthony J. Kavran, LMITCO, May, 13, 1997.

<sup>8</sup> LMITCO's Safety Recognition Program Presents The Safety Success Series, A Program that Supports the Voluntary Protection Program. "A New Attitude Invariably Creates a New Result," #4, April, 1997.