



8 Steps to a Best-in-Class Safety Record

Bobby Stuart
Honeywell Process Solutions

Today, many chemical process companies and related manufacturers are investing in new and upgraded equipment, systems, and automation and control technologies, during both the construction of grassroots facilities and the modernization of existing ones. These investments can yield higher returns, improved process performance, greater business agility and more-effective use of assets and people. However, the engineering and installation of these projects also heightens potential risks to employee safety. Related liabilities may also significantly impact the project's return on investment.

Safe from the start

Safety is a hallmark of best-in-class companies. In an effort to maximize safety, such companies often strive to establish rigorous health and safety programs that yield a Total Case Incident Rate (TCIR) of <1.0, which the U.S. Occupational Safety and Health Admin. (osha.gov) mandated as the industry standard in 2002.

TCIR is calculated based on the injury/illness rate reported during a 200,000-employee-hour time period (the approximate number of hours worked by 100 employees during 50 weeks at 40 hours per week). The U.S. Bureau of Labor Statistics (BLS) uses TCIR in reporting occupational injury and illness statistics. TCIR data are developed from OSHA-required recordkeeping by industries and organizations following the system. As mentioned, attaining a TCIR of <1.0 requires a strong commitment to safety, the development of a comprehensive plan for each project, and the ability to execute to that plan.

Large-scale engineering and installation projects are often highly

complex, involving the skills and services of construction companies, engineering firms, suppliers and the operating or manufacturing company itself. Companies that achieve superior safety records typically do so because they have the philosophy that all incidents are preventable. In addition, they make safety the company's number one value and make each employee responsible for creating a safe and healthy workplace.

To achieve a culture that strives for a best-in-class safety performance, you must create and execute a safety plan for each engineering and installation project. This written plan must integrate procedures, instructions, discipline, communications, training, inspections, incident investigations, process reviews and recognition programs for each project. The goal is to detail — in advance — every significant safety risk that could cause:

- injuries, illnesses or fatalities
- significant environmental excursions or impacts
- regulatory violations or enforcement actions, or
- major asset, product or business losses

Eight steps to safer operations

More than nine years ago, Honeywell Process Solutions (HPS) began initiating the eight-point safety program described here at all of its project sites to keep workers safe and prevent equipment losses, production interruptions

When striving for incident-free project management and operations, be alert for unsafe practices, and work quickly to correct deficiencies. Managers and executives must lead by example

and environmental releases. Today, HPS leads its industry, with an average Total Case Incident Rate (TCIR) of 0.29 (OSHA mandates a TCIR rate of less than 1.0). For 2003, the HPS Project Operations Group alone had a TCIR rate of just 0.05.

- The process involves these steps:
1. Project Safety Assessment (PSA)
 2. Data gathering and scope definition
 3. Defining the Safety Action Plan
 4. Management sign-off
 5. Kickoff and training
 6. Project execution
 7. Reward and recognition
 8. Project review and closeout (lessons learned)

The intent of the eight-point process is to outline a program that details the "who" and "how" of preventing incidents or conditions that could lead to incidents. The success of any safety program depends upon the direct involvement of front-line management. While effective training and education programs provide a foundation, the management objective is to integrate the good practices that accomplish work on the project with zero incidences. The key players in this process — whose involvement and commitment are of paramount importance — are stakeholders of the customer company's organization, project managers, process engineers, project engineers, construction management, and construction and commissioning personnel.

To ensure that safe work practices are carried out, the eight-point process

must also incorporate a closed-loop feedback technique for risk assessment, procedural definition, employee training and communication. If structured properly, this strategic feedback mechanism will provide a vehicle for identifying unforeseen risk in the project plan at any point in the cycle.

STEP 1. Project Safety Assessment (PSA). Once any new project is initiated, a Project Safety Assessment or PSA should be conducted to integrate team selection, data gathering, engineering design, hazard identification and the site-work planning process. During this phase, a project safety team (selected by the project manager) is developed to ask pertinent questions and identify every factor that may have a potential impact on the project. Through detailed scope definition, engineering assessment and the process safety review, a course is set to identify the needs of all involved, and to mitigate the potential for injury or equipment damage.

Combining expertise from the construction, engineering subcontractor and safety organizations, the team usually comprises individuals with responsibilities for establishing, monitoring and reporting on the company's safety processes and safety record. This team should outline a strategy to accomplish the project scope, summarize the logistics for implementation and identify the associated safety considerations. A checklist should be used to determine which resources will be required.

STEP 2. Data gathering and scope definition. To complete the PSA checklist, project safety leaders visit the site and interview safety representatives and construction managers. The goal is to confirm the applicable safety issues for each of the project phases. Hazardous operations (HAZOP) reviews are particularly helpful in determining how processes will work once the plant becomes operational. Based upon the outcome of the PSA process, the project team is now ready to define the specific project safety requirements.

Close coordination among the members of the plant operations team ensures that every applicable safety procedure and equipment requirement is identified and coordinated into the project timeline. From this analysis,

HOT-LOOP CUTOVERS: STAYING SAFE REQUIRES EXPERIENCE, PLANNING

When considering the requirements for individual control loops, consider the energized or de-energized operating state of the device. A thorough understanding of each loop in the process requires close communication among the project managers, site-support personnel, and various operations teams and onsite contractors.

De-energized loops are frequently defined as cold cutovers and may include only standard risk considerations, such as lockout or tagging procedures. However, process break-ins and hot cutovers on energized loops are reserved for the most experienced employees, as they require a unique level of mitigation planning. From the standpoint of employee safety and environmental impact, process break-ins and hot cutovers represent the highest potential for risk in operating plants. The Process Safety Assessment (PSA) approach is especially useful in overcoming the unique challenges of these complex environments. □

project costs can be developed, along with a detailed schedule of implementation. Finally, the scope of work — including total manpower requirements, safety equipment and procedures — are brought together and presented to the project management team in the form of the Project Execution Plan.

STEP 3. Defining the Safety Action Plan. Gathering all applicable safety policies and procedures for inclusion in the site-specific Safety Action Plan culminates the definition stage of the process. Here the project team should detail the safety execution plan that is the focal point in preventing injury/illness of all employees who are assigned to the project.

The program document is divided into the following four sections:

- **Section 1. Executive overview and project description.** Considers the scope of the project and the companies' commitment to the goals and values of a world-class safety program
- **Section 2. Administrative issues.** Lists the tasks to be completed prior to commencement of project activities
- **Section 3. Policies and procedures.** Details the applicable Safety Policies and Procedures for activities associated with requirements for personal protection equipment and training to environmental management
- **Section 4. Forms.** Provides a consolidated list of forms to be used on the project in relation to employee testing, inspections, incident investigation and reporting

Once all of the required information has been consolidated, a draft copy of the Safety Action Plan is simultane-

ously presented to the project manager, the subcontractor(s) and the engineering contractor for review and commentary. Following this thorough review, the project safety professional resolves each comment while maintaining compliance with the company policies and procedures.

STEP 4. Management sign-off. Addressing the objectives of the Safety Action Plan, the project manager, engineering contractor, their subcontractors and the plant operations/maintenance staff must commit to conducting business in a manner that protects the health and safety of the employees, the environment, customers, contractors, and public, and obligate each other to these commitments by the following statements:

- It shall be company policy that we will conduct operations with the highest regard for the safety of our employees, customers, contractors and the general public
- Safety must be considered an integral and equal part of the quality control, cost reduction and job efficiency, and will never be sacrificed for production
- All levels of management and supervision are ultimately responsible for a safe workplace and will lead by example. They will encourage employees to strive for an accident-free workplace, to be alert for unsafe practices and to take immediate action to correct deficiencies
- By understanding how each task is performed in a safe manner and following all safety requirements, employees must accept the responsibil-

| HSE Training Matrix | Click on course title to enter the training program | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|--|-----------------------|---------------------------------|---------------------------------|-----------------|----------------------|-------------------|------------------------|-----------------------------|---------------|-----------------|-------------------------|-----------------|---------------|----------------------|------------------------|-----------------------|--|---------------|----------------|-----------------------------|-------------------------------|---------------------------|---------------------------|------------------------|------------------------|-----------------------------|--|---|---|---|---|
| | Alcohol & Drugs in the Workplace for Employees | Alcohol & Drugs in the Workplace for Managers | ACS Safety Awareness / Orientation | Blood Borne Pathogens | Chemical Handling/Spill Control | Compressed Gas Cylinder Control | Confined Spaces | Crane & Sling Safety | Electrical Safety | Emergency Preparedness | Emergency General Awareness | Driver Safety | Fire Protection | Fire Extinguisher Usage | Fall Protection | First Aid/CPR | Hearing Conservation | Incident Investigation | Lead Safety Awareness | Manual Material Handling / Back Safety | Line Breaking | Lockout/Tagout | Office Ergonomics Awareness | Personal Protective Equipment | Powered Industrial Trucks | Process Safety Management | Radiological Awareness | Respiratory Protection | Toxic Substance Control Act | Hazardous Materials / Dangerous Goods Transportation | | | | |
| Hazardous Equipment and/or Chemical Purchasers | 1 | 1 | | | 2 | 1 | 1 | 1 | | | | | | 1 | | 2 | | | | | | | | | | | | 2 | | 1 | 2 | | | |
| Emergency / Medical Team Member | 1 | 1 | | | 1 | 1 | 1 | | 2 | | | | | 1 | 2 | 1 | 1 | | 2 | | | | | | 1 | | | | | | | | | |
| Engineers | 1 | 1 | | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | |
| Factory Personnel / Production | 1 | 1 | | | 2 | 2 | 1 | 2 | 2 | 2 | | | 1 | 1 | 2 | 2 | | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | | | |
| Field Personnel Visiting Customer Sites (Service & Sales) | 1 | 1 | | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | | | |
| Maintenance | 1 | 1 | | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | | |
| Management | 1 | * | 1 | * | * | * | 1 | * | * | * | * | * | 1 | * | * | * | * | 1 | * | * | * | * | 1 | * | * | * | * | * | * | * | * | | | |
| Office Personnel / Administrative | 1 | 1 | | | 2 | | 1 | | | | 2 | 1 | 1 | | 2 | | | | 2 | | | 2 | | 1 | 2 | | | | | | | | | |
| Receiving/Shipping | 1 | 1 | | | 2 | 1 | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | 2 | | 2 | 2 | | | 1 | 1 | 2 | 1 | 1 | | 2 | | 2 | 1 | | | | |
| Availability - O=Online C=Classroom | O | O | O | O | O | C | O | C | O | O | O | O | O | O | O | O | O | C | O | O | O | O | O | O | O | O | O | O | C | O | O | O | | |
| Frequency - A=Annual I=Initial V=Varies | I | I | I | I | A | V | A | V | A | V | A | V | A | V | A | V | A | V | A | V | A | V | A | V | A | V | A | V | V | V | V | A | A | V |
| 1=Required by Honeywell Standard | 2=As needed based on job analysis and/or risk assessment | | * Should participate in all training their employees are required to have. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

FIGURE 1. Great organization is need to ensure that the specific training needs of all key stakeholders are identified and met

ity to prevent accidents and make such a commitment to themselves and to fellow employees

- Managers and supervisors will frequently measure all aspects of safety performance, holding each employee responsible for safe behaviors and program adherence
- We will implement procedures and practices reflecting the standards of a global safety leader

Once the document-review process has been completed, the formal sign-off by the customer, project manager, safety professional, and subcontracting firm is carried out at the project kickoff meeting.

STEP 5. Safety program kickoff and training.

Lasting between one hour and six hours, the safety kickoff meeting is the time to review the initial schedule of activities and possible scenarios involving onsite personnel. By bringing the plant operators, engineers, constructors and subcontractors into a conference with the project implementation team, the detailed safety-related project plan can be outlined and discussed. Every issue is covered, and nothing should be left to chance.

Experience has shown that safety-improvement effectiveness comes only from considering each of the customer's site requirements during the planning process. While "adherence to all safety metrics" should be an acknowledged

condition of employment; the safety training program must be sufficiently detailed and organized to define the specific safety responsibilities of each person in the organization.

It begins with acceptance of employment. At Honeywell, for example, all employees are required to successfully complete the requisite safety training courses, including applicable OSHA-required training, prior to engaging in any work assignments. The site safety coordinator also ensures that each employee receives the New Hire Orientation and Hazardous Communication training upon his or her arrival at the job site.

Based upon the potential hazards of the site, the project safety leader develops the site-specific Safety Training Matrix (Figure 1) as a guide for equipment and task training. The matrix lists the areas of safety risks, identifies the training that will be required to operate safely in each area and designates who will receive what training.

Employees will be trained only in areas in which they have responsibilities. Select employees will receive training on the safe operation of aerial lifts, forklifts, scissors lifts and other specialized equipment. Additional training is offered for those employees working in hazardous areas such as lockout and tagging procedures, permitting and

process safety management.

After completion of the training program, employees are required to take a written exam to demonstrate that they fully understand the course material. The site safety coordinator conducts all exams, and a passing score of 70 out of 100 is mandated for employee certification. Each training course is documented and all test results, training rosters and certificates issued by third parties are maintained onsite for the duration of the project. After completion of the course, it becomes each employee's responsibility to remain current and inform management of his or her need to become re-certified.

In addition to the certification required by the Safety Training Matrix, all engineering contractor project managers, construction contractor project managers and subcontractor project managers are required to attend management safety training. This program was developed to inculcate their responsibility and to verify that all employees and subcontractors have received certification and practice safe work habits.

Experience has shown that much of the project's success is attributable to the strict evaluation of subcontractors and suppliers. When it comes to non-employees, the emphasis on the quality and training of each subcontractor employee is critical. Each subcontractor

tor must be rated by the safety management team as Preferred, Qualified or Conditional. The intention is to make it difficult to use subcontractors who don't meet the criteria.

In fact, to utilize a Conditional subcontractor, project safety leaders are required to obtain a signature from executive management, along with a detailed training schedule within the Safety Action Plan. To reinforce the importance of subcontractor training, initiatives are frequently introduced to motivate the subcontractors to attain "preferred status" certification.

In the event that an abnormal or highly hazardous job task exists for which a training program is not currently available; the employee subcontractor is obligated to contact the project safety leader. The project safety leader is required to identify or develop a suitable program to address the situation.

STEP 6. Project execution. Once the scope definition and project kickoff meetings are complete, the focus of the project turns to the daily coordination of onsite activities. It is at this point that the true value of the Safety Action Plan is put to test. Standard procedure calls for daily meetings to review the scheduled activity summary for a three-day rolling window. For projects that involve hot cutover of process control loops (see the box, p. 64), the engineering staff generates the schedule and hazard definition for cutovers. With the project safety leader providing the Job Safety Analysis (JSA) review for personal protection equipment and procedure requirements.

Within the project plan, each project activity is defined and assigned a Category 0 through 6. Categories 0 through 2 indicate the lowest risk levels (such as devices requiring field wiring but not requiring process break-in or electrical tagout). Categories 3 and 4 indicate elevated health and fire hazard risk levels (such as points requiring process break-in). Categories 5 and 6 denote high-risk activities (such as loops requiring hot cutover).

During high-risk activities, procedures dictate that the activity should be monitored by a safety professional. An effective tool for proactively managing these communications is the

| HEALTH AND SAFETY PLAN | | | | | |
|---|-----|-----|--------------------------|-----|-----|
| Safety Task Analysis Risk Reduction Talk (STARRT) | | | | | |
| PRE-PLANNING REMINDER LIST (Not limited to the following) | | | | | |
| Craft: _____ | | | | | |
| Supervisor: _____ | | | | | |
| Date: _____ Time: _____ | | | | | |
| Job description: _____ | | | | | |
| Location: _____ | | | | | |
| Electrical | | | Emergency Equipment | | |
| Locked & tagged | Y__ | N__ | Fire extinguisher | Y__ | N__ |
| Try & test | Y__ | N__ | Safety shower | Y__ | N__ |
| Disconnected | Y__ | N__ | Eyewash | Y__ | N__ |
| Excavation | | | Permit displayed | Y__ | N__ |
| Shored/sloped | Y__ | N__ | All conditions met | Y__ | N__ |
| Ladder provided | Y__ | N__ | Evacuation assembly area | Y__ | N__ |
| Daily inspection | Y__ | N__ | Hazards (environmental) | | |
| Entry permit | Y__ | N__ | Airborne particles | Y__ | N__ |
| Hazards (body) | | | Vapors | Y__ | N__ |
| Fall potential | Y__ | N__ | Hot/cold surfaces | | |
| Pinch points | Y__ | N__ | Or materials | Y__ | N__ |
| Electrical shock | Y__ | N__ | Noise | Y__ | N__ |
| Housekeeping | Y__ | N__ | Heat stress | Y__ | N__ |
| Slip-trip | Y__ | N__ | Proper equipment | | |
| Flying particles | Y__ | N__ | Man lift | Y__ | N__ |
| Thermal burns | Y__ | N__ | Personal basket | Y__ | N__ |
| Manual lifting | Y__ | N__ | Forklift | Y__ | N__ |
| Sharp objects | Y__ | N__ | Jlg lift | Y__ | N__ |
| Permits | | | Crane | Y__ | N__ |
| Hot work | Y__ | N__ | Chainfall | Y__ | N__ |
| Confined space | Y__ | N__ | Hand tools | Y__ | N__ |
| Breaking process | Y__ | N__ | Hand power tools | Y__ | N__ |
| Excavation | Y__ | N__ | Good condition | Y__ | N__ |
| Critical lift plan | Y__ | N__ | Operator cert. | Y__ | N__ |
| Personnel basket | Y__ | N__ | Proper rigging | Y__ | N__ |
| Interface considerations | | | Current inspection. | Y__ | N__ |
| | | | Trucks, tractors, etc. | Y__ | N__ |
| | | | Back-up alarms | Y__ | N__ |

STARRT (Safety Task Analysis Risk Reduction Talk) checklist (Figure 2). This checklist helps to define — in advance — which activities and steps should be taken to address potential areas of risk. Representing the most important part of the pre-task process, this formal checklist should be completed on a loop-by-loop basis. It serves as the final affirmation that all safety-related items are covered. It generally addresses issues related to permitting, emergency preparedness, hazards, personal protective equip-

ment, operational equipment and task-specific training (such as locking and tag-out certification).

The STARRT checklist must be reviewed, signed by each employee involved with the loop assignment, and then verified by the safety professional. It also serves to coordinate the task of job assignment in that verification of training certification is required for all hazardous activities. An example of this is that only personnel certified in electrical lockout and tagging procedures are allowed to certify the safe

| Safety Task Analysis Risk Reduction Talk (STARTR), continued | | | | | |
|--|-----|-----|-------------------------------|-----|-----|
| Overhead work or Floor opening | | | Hazards (chemical) | | |
| Fixed barricades | Y__ | N__ | MSDSs reviewed | Y__ | N__ |
| (Tape) danger | Y__ | N__ | Chemical burn | Y__ | N__ |
| (Tape) caution | Y__ | N__ | Skin/eye irritant | Y__ | N__ |
| Barricade tags | Y__ | N__ | Inhalation | Y__ | N__ |
| Signs | Y__ | N__ | Personal protective equipment | | |
| Hole cover/cleat | Y__ | N__ | Work gloves | Y__ | N__ |
| Handrails/toebd. | Y__ | N__ | Chemical gloves | Y__ | N__ |
| Process equipment | | | Antivibration gloves | Y__ | N__ |
| Valves locked | Y__ | N__ | Slicker suits | Y__ | N__ |
| Tags hung | Y__ | N__ | Foot guards | Y__ | N__ |
| Blinds installed & tagged | Y__ | N__ | Rubber boots | Y__ | N__ |
| Proofed | Y__ | N__ | Mono goggles | Y__ | N__ |
| Standby person | | | Face shield | Y__ | N__ |
| Confined space | Y__ | N__ | Fresh air | Y__ | N__ |
| Fire watch | Y__ | N__ | Ear protection | Y__ | N__ |
| Sandblast person | Y__ | N__ | Safety harness | Y__ | N__ |
| Traffic watch | Y__ | N__ | Burning goggles | Y__ | N__ |
| Welding | | | Hardhat | Y__ | N__ |
| Shields | Y__ | N__ | Safety glasses | Y__ | N__ |
| Fire blanket | Y__ | N__ | Respirator | Y__ | N__ |
| Fire extinguisher | Y__ | N__ | Other | | |
| Cylinders secured | Y__ | N__ | | | |
| Cylinder caps on | Y__ | N__ | | | |
| Combustibles moved | Y__ | N__ | | | |
| Sparks contained | Y__ | N__ | | | |
| Ground within 18" | Y__ | N__ | | | |
| Print employee names | | | Employee initials | | |
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| Supervisor INITIALS | | | | | |
| Source: Honeywell | | | | | |

FIGURE 2. While this checklist should be customized for individual sites, and for individual projects, this example can help get you started

state condition on loops classified as 3 or above. The safety policy and procedure in this case should require that employees demonstrate the safe, de-energized condition and install their own lock/tag only after the client engineer has removed and locked-out the energy source from the loop.

On many projects, the project execution phase will be challenged by project business drivers, cultural influences, workforce market, statutory requirements, cleanup remediation/disposal, constructability and other factors that

have a direct impact on workplace safety. This is why the project safety team should constantly validate the safety organizations' roles and responsibilities through the implementation of project safety improvements, continuous safety training programs and subcontractor safety management. Monitoring the safety contingency planning, safety metrics, reporting and record keeping rounds out the process and confirms the project safety team's commitment to identifying all potential risk factors. Maintaining effective

communication with the members of the project execution team, identifying critical behaviors, and diligently reviewing the STARTR checklist will help all to leverage past experience.

While the safety team must constantly review and revise the plan to consider any issue that could impact the safety record of the project, it is equally important to communicate these issues to the workforce. The results of inspections for both equipment and behavioral issues should be communicated at every opportunity to the onsite team through weekly staff meetings, discussion of safety at all employee gatherings and site leadership evaluations. At the completion of the implementation phase, a review based on safety performance will be given to every employee, including managers, engineers and subcontractors.

STEP 7. Reward and recognition.

The object of the reward and recognition program is to recognize an exemplary safety performance and the achievement of specific goals over a sustained period of time. It is based upon the establishment of clear expectations, well-defined lines of communications and behavior modification.

Operating companies are often the driving force behind the programs, noting that greater safety awareness and employee support for an injury-free work environment result in a reduction of the TCIR and lost-work-day cases, and reduced overall project costs. While many of the benefits are realized in the Project Safety Assessment stage of the project (discussed previously) where the identification of potential risk is most cost-effective, extending these programs throughout the project cycle gives employees an incentive to take responsibility for themselves and their colleagues.

Award qualification requirements vary from project to project and client to client, but generally include proof of safe work, elimination of near-miss incidents and a world-class TCIR of <1.0. These qualifications are typically driven by effective communications; frequent safety audits and documented attendance of employees at ongoing safety training meetings.

STEP 8. Project review and close-out. At the project conclusion, a post-project appraisal of the safety processes, procedures and results should be conducted. Critical issues relating to incident investigation, obstacles to performance and recordkeeping should be examined and rectified. Every item in the plan should be subject to review. It is by this process of documenting and communicating the lessons learned that the safety processes continuously improve.

A safety survey should be completed by the operating company to verify that the project team has met all technical issues, planning and scheduling goals. Using a scale of 1 to 5, performance ratings should be developed for topics such as the elimination of at-risk behaviors and completion of employee safety evaluations, incident investigations and subcontractor reporting methods. By documenting all statistics, trends and problem areas,

this Final Safety Report can help the team to improve the ongoing safety performance.

Perpetuating success

Safety professionals will tell you that success in a safety-driven environment is attained when you finish a project with no injuries, and the plant experienced no process interruptions or equipment damage. With the number of subcontractors, vehicles and equipment employed on a major project, there is a significant risk that unsafe conditions could develop. Diligence must be used to create a safe work environment. While the safety team on a project is small, these people are significant contributors to the overall success of the project, and operating companies should consider safety to be their number one value. When the safety team speaks, everybody listens.

At the end of the day, the main ob-

jective is that each person returns home the same way he or she arrived at work — safely. ■

Edited by Suzanne Shelley

Author



Bobby Stuart is the Global Health, Safety and Environmental (HSE) Director of the Honeywell Process Solutions business of Honeywell's Automation and Control Solutions group (1250 W. Sam Houston Parkway S., Houston, TX 77042; Phone: 832-252-3247; Fax: 832-252-3200; Email: bobby.stuart@honeywell.com).

He joined Honeywell in 1995 as site safety manager for the Philips Map Program. In 1996, he was named Shell Program safety manager, developing procedures and safety cost estimates for projects while managing several other programs. Prior to joining Honeywell, Stuart was a HSE instructor at Delmar College in Corpus Christi, Tex. He has also held instructor positions with CSCC, BEK and Jacobs Engineering. He was also the HSE instructor at Contractors Safety Council in Corpus Christi, Tex., developing safety contractor training curricula for several chemical and refinery plants within the Corpus Christi area. Stuart is a member of the American Society of Safety Engineers, World Safety Organization, Texas Safety Association, National Safety Council, American National Standards Institute and American Society for Quality.