TMG News

January 5, 2002 The Manufacturing Game®

"Sharing Information to Improve Reliability"

Dodging Silver Bullets: Our New Project Approach

A client of ours is fond of saying, "We keep shooting ourselves in the foot with silver bullets." There is a common misperception that a tool like The Manufacturing Game® can be the one silver bullet that solves all problems. The idea of a silver bullet is tempting because the alternative is hard work, but it is also dangerous because it allows us to ignore important elements of success. Over the last 2 years we have been examining the root causes of success and failure for clients implementing the Manufacturing Game®.

As we have made progress in our understanding, we have reported to you in this newsletter. Our articles on the Users' Conference, ExxonMobil's success in Beaumont, Whirlpool's success in Ohio, and the approaches at BP and Premcor are all examples of some of the work that we have done. We have taken this input and devised an implementation plan for widespread, front-line defect elimination that becomes an ongoing part of the culture which we call the Project Approach.

This article gives a brief overview of this Project Approach. A PowerPoint presentation on our Web site at *www.mfg-game.com/docs/intpres.pdf* gives a more detailed description of the process and steps. The Project Approach is built around the key root causes of success and failure that we have found. A diagram of the Project Approach is shown in Figure 1.

An articulated business need for change and a roadmap to follow In every example of success that we looked at, there was a clear business need for improvement and a vision of how the organization was going to improve. In situations where the business need was unclear, organizations failed to involve the right people and provide the necessary resources and integration of the various pieces that must come together. An assessment can identify the business need especially if it includes an estimate of the cost of unreliability. In our plan, we start with an assessment that looks at the causes and costs of unreliability and gauges the organization's readiness for change. In the assessment process, we also have the site leadership go through a workshop with the game and have them create the path forward.

A focused implementation team Successful implementations all had strong teams that led the effort in the beginning. The makeup of the team varied considerably from client to client, but all had strong representation from maintenance and operations. They all had at least a few full-time members early on as well. Successful implementation teams typically report to the site manager and not to a functional or staff organization. At the end of the strategy stage our process identifies the implementation team and trains them to facilitate the process.

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BP Success Story: Andrew Action Teams and the Ton of Bricks

BP, Aberdeen teams are using the Operations Excellence Game™ – the petroleum industry-specific version of The Manufacturing Game® – to eliminate defects and improve efficiency and reliability in their offshore facilities. As part of an ongoing program involving their North Sea facilities, they are running the OEG every month. According to Production Efficiency Engineer David Duguid, up to the end of November 2001, 1,088 people have attended 36 Operations Excellence Game™ Workshops and 3 Supervising the Change Process Workshops. Over 384 Action Teams have been formed – 136 of which have already delivered results as an increase in oil or gas production or a reduction in man-hours, costs, or at-risk behaviors/hazards. So far in 2001, BP's assets in the North Sea have attributed the following to Action Teams:

- 9,100 barrels of oil equivalent per day (annualized)
- 908 man-hours per week saved
- $1,626,000 in cost savings
- 17 At-Risk Behaviors/ Hazards removed

Among the most successful of these sites has been Andrew platform. Brian McLeod, an Ops Team Leader on Andrew, reported the Andrew story: "We woke up one morning, and we had a mature field. We had no clue what was happening. A technician came to me and said, 'If it's happening here, it's happening somewhere else.' It wasn't a conscious decision not to network, but it wasn't embodied in our culture to ask other people what their story was. These were huge issues with multiple defects, and we knew the Action Team concept was primarily aimed at £5,000 improvement. What was the defect? The defect we had was ignorance. We were ignorant of the problem. We didn't know what was happening. So what we did was set up Action Teams."

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What's Inside?

Public Workshop Calendar

Throughout the year, The Manufacturing Game® holds workshops for the general public at various universities and/or professional organizations across the country.

10 May 2002
NPRA Maintenance Conference
San Antonio, TX

Other workshops for 2002 will be announced at a later date.

Project Value Game®
Public Workshops:

4-5 April 2002
PMI Conference
Scottsdale, AZ

21-22 August 2002
PMI Conference
Denver, CO

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Identifying the defects and teams We found this to be the single biggest factor in success and failure. Identifying defects and teams is the hard work that makes the "silver bullet" work. At several clients little effort was made to bring in the "right people" to tackle defects that would close identified gaps. The results were predictable: few teams were launched, or poor teams with little chance of success. We recently did a yield analysis on Action Teams at a client and even after significant front-end effort to recruit effective teams, a desire to "fill the seats" led to a yield of below 50% successful teams. Our Project Approach systematically identifies the defects that cause the performance gaps found in the assessment, builds an appropriate team to eliminate the defects, and schedules the teams for launch at a workshop. This approach engages the unit or area leaders and ensures that the defects identified are important to them and appropriate for Action Teams. We continue to give Action Teams wide latitude in picking the actual defect to pursue and the method to pursue it, but careful selection of potential defects and teams can significantly improve results.

A workforce motivated to eliminate defects This continues to be the strength of The Manufacturing Game®. If there is a "silver bullet" element to our approach, it is the systematic ability of the game to inspire front-line, hourly workers to take action.

Leadership, follow-up and recognition At sites that were successful, there was a structured approach for the site leadership to review performance and recognize successes. Successful implementations had regular meetings of the site leadership group to review the progress of defect elimination, remove barriers, recognize success, and continue to focus the effort on identified gaps. These reviews included representatives of all three types of leadership – executive, network, and operational – which we have written about in previous articles. The leadership group also played a key role in sustaining the vision of success, creating visible signs of that vision and integrating new initiatives that inevitably came along. Successful implementations typically have this process centralized throughout the first wave of improvements and move to decentralize it over 6-18 months depending on the size of the site. In our project process, we work with the site leadership to set up a structured Leadership Forum.

Making defect elimination a part of the everyday culture There is a limit to even a well-organized and executed implementation. At best you can hope to eliminate hundreds of defects and sources of defects. While this can be worth millions of dollars in improvements, we have found that it is not likely to be sustained without some changes to the organization, rewards, and culture. The Manufacturing Game® and Action Teams are a great start to that culture-building. The centralized approach described above is helpful in the first wave of the effort but must be replaced over time with a decentralized approach that is driven by the natural work team in the area or unit. There needs to be a formal hand-off to these unit teams after defect elimination has taken root. The unit- level teams take over the identification of defects and the launching and tracking of teams. Ideally this activity becomes part of the formal performance measures of the area team and the supervisors in the area. We have seen clients track defects identified, defects eliminated, and teams launched as good leading indicators of success. The

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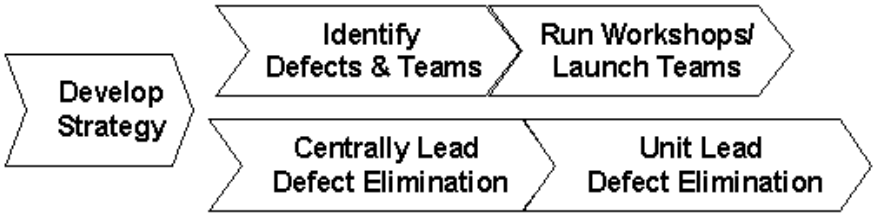

Figure 1:The Manufacturing Game® Project Approach

WORD IS SPREADING!

As told by Kelly Taylor,
No. 1 Power Plant Engineer
at Premcor Inc. Oil & Refining,
Port Arthur, TX

Since the publication of the June 2000 article "You Light Up My Life" in The Manufacturing Game® quarterly newsletter, the positive results of one action team have spread far beyond their refinery. The article focused on an action team formed during a Manufacturing Game® workshop which committed itself to review and reduce lighting inefficiencies within the Premcor, Inc. Oil & Refining Port Arthur, Texas, refinery. Kelly Taylor, head operator at Premcor and an amateur astronomer who spearheaded the Action Team's successful lighting defect elimination efforts, recently reported that Barbara Wilson from the George Observatory was subsequently asked to present lighting statistics to a Texas House of Representatives committee studying how outdoor lighting glare can impede major observatories' scientific astronomical research, including their gathering of data on asteroid trajectories in close proximity to the earth. As a result of data provided by Kelly and others, Texas House Bill 164 was passed into law, effective May 2001, giving Texas counties the right to oversee outdoor lighting installation for private industry in unincorporated areas.

This led to an invitation for Kelly to talk with a representative of a large power plant located in two counties covered by Texas HB 164. His enthusiasm and solid facts may lead to this power plant dropping from 205 circuit wattage on mercury 175-watt fixtures to 50-watt high-pressure sodium fixtures, and implementing shields to improve contrast and lumens, estimated to save them 142 watts per fixture. Concurrently, Bob Gent and Dave Crawford, the President of International Dark Sky, met with the Environmental Protection Agency in Washington, D.C., and supplied them with backup data and The Manufacturing Game® newsletter to show the types of safety, environmental and cost savings that can be realized with the motivation and forum to eliminate lighting defects.

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The teams sought to eliminate the lack of communication and information that formed such an obstacle to resolving Andrew's problems, then sought to deal with the problems themselves. The problems -- including Sand, Scale, MOL Pump Seals and Well Start Up as the top four issues -- involved so many different defects that when looked at in their totality they might have seemed insurmountable. The problems and defects the Andrew teams were looking at were likened to a ton of bricks. Breaking up this ton of bricks into individual components and dealing with them one by one was crucial, as the Action Teams discovered. As McLeod said, "We've got a ton of bricks to deal with here, so we can either try to do them all at once, and do them poorly, or we can pick them off, like in a game of 'Space Invaders,' one at a time. Do them right, and you never have to worry about it [again]. If you're facing a ton of bricks, you procrastinate. You spend more time worrying about all these things that have got defects than actually picking them off."

The Andrew crew set up several small, cross-functional action teams, comprised of individuals who felt passionately about the issue at stake. Each team set clear objectives to be delivered within 60 days. The overarching goals of the project were established: safety, defect elimination, increased efficiency, reduced unplanned maintenance, no losses. And less tangible, but no less significant, goals were established as well: higher morale, more opportunities, and perhaps most importantly, personal satisfaction for team members. With the implementation of the Action Teams' solutions, brick by brick – problem by problem – the "ton of bricks" the Andrew platform was burdened with has diminished.

While the project and the Operations Excellence Game™ provided the tools and acted as a catalyst for the success of the Andrew Action Teams, it is the energy, the desire, the skills, the attitude, and the actions of the people at Andrew that made the changes work. As McLeod says, "We will not be throwing away the ownership. Area ownership is the behavior that underpins the very things we do. We've got to be proud to lead, eager to learn, keen to share…there is an admission by us that we need to learn and we need to share ideas, and this is how we are going to embody our interdependent culture. We've all got a part to play, we've got to share, we've got to talk a common language with the rest of the company."

Also useful on Andrew was the paradigm that current systems of doing things did not need to be fully revamped and replaced with new systems, that changes could be made without, as McLeod says, "throwing the baby out with the bathwater." Not needlessly and reflexively replacing procedures means greater efficiency when instituting changes.

Although there are still issues to be dealt with – there are still seal failures, for instance – many of the problems that have plagued Andrew for years have been solved or reduced considerably. And the teams accomplished this in part by employing the way of thinking that the Operation Excellence Game™ strives to instill – the need to work together, the need to identify the issues and obstacles, the need to look at the small defects that can lead to greater problems. Brian McLeod sums it up: "We're picking away at the small defects. David Lane, the Field Manager, has made it crystal clear to us that we've got to go after these small defects, and that's how we get the guys engaged. It's business as usual – we're doing this every day. It's just taking it to the next level – allowing the project to help us."

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other part of this effort is to transition the role of the supervisor.

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We have learned from our successes and failures and put together a comprehensive approach that can consistently yield improved performance. Our new Project Approach identifies the business need, creates a road map for success, identifies the critical defects, assigns them to teams, and launches those teams in a way that inspires widespread participation. This focused effort is led centrally at first so that the vision is clear, barriers can be removed, and success can be recognized. The leadership is transitioned over the implementation to area teams who eventually take the lead on defect elimination. Clients that have followed all or most of this approach have made significant improvements in production, cost and HSE. It is not a silver bullet; in fact, it is a lot of hard work and it takes a lot of leadership at all levels of the organization, but when done properly the rewards are great.

"Word is Spreading," cont'd. from pg. 3

In specific reference to the Premcor Port Arthur refinery HOUP project, which was in progress at the time our original article was published, learning that the lights scheduled for installation would not be cut off during the day, Kelly persuaded the engineers to recommend shields and daytime cutoffs. The operators on the 325-foot derricks are reportedly very pleased with the more efficient lighting that ensued.

We applaud the defect elimination efforts of this Action Team, which is still serving their refinery daily through the safety, environmental and financial benefits of their successful team efforts over a year and a half ago. At that time, the operating cost of lighting at Premcor Port Arthur was 3.3 cents per kWh. In 2001, the cost has risen due to rising fuel costs, making their contribution even more significant. An Action Team has the power to affect your plant, company, industry and possibly the nation!

To share your company's action team successes for possible publication in future newsletters, please e-mail Mary Payne at MaryIPayne@aol.com.