



Team Effort

By Scott Terrell, CH2M HILL FMP Superintendent

I was teamed up with a co-worker of 25+ years at the Continuous Improvement Game. He and I are both very competitive. We both started the Game on Day 1 wondering why we were forced to be there when we had a lot of work that needed to be performed in the field. We both felt as if this was a big waste of time.

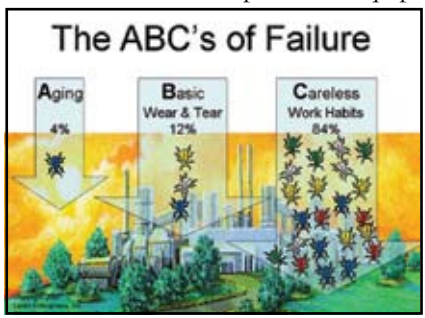
During the first hours of the game I noticed a real sense of urgency building within me to eliminate all defects. No matter how I tried I could not figure out how to make things better for the long haul by myself. I was able to have minor victories, but none were sustainable. Defects just kept piling up. I felt like giving up several times during the first half of the day, but inner drive would not let me. I felt a need of urgency; I was running out of time to make a difference.

Halfway through the afternoon I recognized that the team was not working together or assisting one another to come up with solutions. Everyone was doing as I had been, going it alone and not supporting one another. I mentioned this to the team, that we should all kick in to keep the defects to a minimum, while still progressing the game. Success began. I was happy to have figured this out. It made me reflect on how the Continuous Improvement process was working in my real team. We were doing the same thing, not supporting our CI champion from the top down. Support was needed by my position, the supervisor's position

ABC's of Failure Revisited

by Winston P. Ledet

In 2007, we presented a paper on the ABC's of failure to help people recognize that 84% of work orders are caused by random events that produce defects in the equipment. We labeled these defects Careless work habits (not taking proper care of your equipment). A for Aging, which accounts for 4% of the failures, and B for Basic wear and tear, accounting for 12% of the failures, were our first two categories of defects. Our reason for taking this perspective on defects was to help people understand why so many sites and companies have experienced multiple attempts to establish planning and scheduling which succeeds at first and then just fades away. In the 27 years I spent at DuPont we saw five cycles of planning and scheduling start in some of our plants with varying degrees of success, but none of them were able to sustain the initiative for very long.



it was in the way that maintenance work is generated in the first place. There is simply no way to deal with a series of random failures in an orderly process unless you are willing to let broken equipment remain idle for long periods of time to smooth out the flow of maintenance work or have a large number of spare pieces of equipment to continue the production while orderly repair processes deal with the breakdowns. Of course if you have a nuclear power plant, you choose one of these two options because of the dire consequences of random failures. Planning and scheduling makes the work more orderly and efficient but there is no process for eliminating any of the work, so the sources of the defects still exist, and equipment continues to fail.

As we studied the benchmark data, we came across a quote from a well known management consultant, Peter F. Drucker, who said, “There is nothing so useless as doing efficiently that which should not be done at all.” At that point, we decided to come up with a third option to remove the randomness from the generation of maintenance work. This third option eliminates the sources of the defects that cause the maintenance work in the first place. This is what we mean

In our worldwide benchmarking studies in the early 1990's we discovered why we had such a problem with sustaining planning and scheduling. We simply had too much randomness in our maintenance process. This is when we recognized that the problem was not in how we planned and scheduled the maintenance work;

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by defect elimination. By eliminating defects at their source, you remove the noise from the system that is causing the 84% of random failures.

Our modeling studies of the benchmark data in DuPont led us to conclude that there are five

major sources of defects that need to be addressed. These sources of defects are equipment design, how we operate the equipment, how we maintain the equipment, how we procure spare parts for equipment repair, and failure events. To remove the randomness out of maintenance work we had to deal with all of these sources in a systematic way.

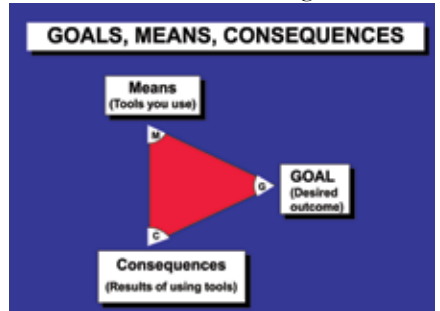
Our experience with trying to implement planning and scheduling alone showed us that this did not take care of the operations needs so it caused a lot of conflicts between maintenance and operations. As we considered the performance of Total Productive Maintenance in Japan and the observations of our people conducting the benchmarks, we recognized that the only way to achieve the results they were producing was to take action as a cross functional team to avoid solving a maintenance problem by creating an operations problem or a procurement problem. W. Edwards Deming provided great help to people in Japan by introducing them to the analytical approach we use in the western world. That

enhanced their teams' dedication to look at the whole system from the logical/analytical side as well as the social side. Today, many people think that this analytical approach is the way to improve performance in the western world, but we think the defect in the western world is lack of the social cohesion needed to master the technically complex machines that produce the vast majority of products today. In order to achieve the kind of performance we saw in Japan, we need to create an organization that has the cohesion that we saw in Japan, the dedication to cross functional work and the rigorous attention to the technical detail that we have practiced in the western world for many years. We did not find technical skills in Japan that did not exist in our DuPont plants in the USA and Europe. The higher level of performance in Japan was created by practicing their technical

skills most of the time whereas we practiced them only some of the time.

If we want to perform planned and scheduled maintenance work 90% of the time, we simply have to get rid of the 84% of the work that is generated from the careless work habits. This takes a coherent work culture that pursues defect elimination as a normal part of their regular work. And it must be done with cross functional action teams to insure that our solutions to today's problems do not create random failures in tomorrow's work.

One of the frameworks that we have found to be helpful in organizing our thoughts about reliability is to separate our desires into goals, means, and consequences. In this case we think that good



planning and scheduling is not the goal. It is the consequence of good maintenance work. The means for creating good maintenance work is to make sure that we do defect elimination as part of all of our regular work each time we interact with our machines so that we avoid random failure events that disrupt our schedules and spoil our plans. The goal is to have highly reliable equipment. As companies attempt to achieve higher reliability it is imperative that they recognize that the only way to achieve a higher level of planning and scheduling and to sustain it over the long haul is to get the noise out of their systems by using defect elimination. The increase in planned work will automatically follow. By trying to impose planning and scheduling first, into a system that is reactive, only frustration will result and the program will have to be started again and again.



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Conferences of Interest



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Golf Tournament August 22, 2012
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Mark Your Calendar!



Why?

by Winston P. Ledet

Recently, I read a book that brought up a thought provoking question. It advised that you should really understand WHY you do what you do as a business so that you can clearly explain that to potential customers. It went on to explain that most of us talk about WHAT we do and HOW we do it, but the essence of a successful business is WHY they do it.

So I asked myself the question, “Why am I in business today?” This question brought me back to my early life and my introduction to the all-important function of work, so pardon me if I digress for a few paragraphs. Growing up on a farm, we were all expected to do some of the work to keep the farm going. When my parents were young they both had to quit school while in the elementary grades—my mother to help care for her 10 siblings and my father to help work the farm. This caused my parents to have a great respect for education, and they swore that their children would not miss school for farm work and would at least finish high school.

Of course, we still participated in chores before and after school each day, but I was only taken out of school for one day to work on the farm in my entire life. I was eight years old and my job that day was to replace a mule that was needed for other work. Corn was being harvested that day. They usually had a mule pulled wagon that they could throw the corn into as they broke it off of the corn stalks. That day they replaced the mule with a small tractor connected to the wagon and me. I sat in the seat and held the clutch down until they said “giddy up!” That was the cue for me to release the clutch, and then the tractor pulled the wagon forward down the row, which kept us going in the right direction. Fortunately the rows meant there was no steering involved. When they said “whoa,” I pushed the clutch back down and held it again until the next cue. Even though it was pretty exciting to me at the age of 8 to “drive” a tractor for the first time, I have to reflect on it now as being pretty basic—I replaced a mule for a day! It was probably important work but certainly did not make use of anything but an 8 year old boy’s legs

and feet. This was meaningful work for an 8 year old, as a first driving experience, but certainly would not be for most people.

So, the answer to the question of why I am in business is simple. I feel a strong obligation to create meaningful work for myself and to help other people conduct meaningful work, both now and in the future. No one wants to be just a pair of hands (or in my case—feet). They want their ideas, abilities experiences and intellect to count, and they want to be a part of the creative process. When I look around the world today, I see that much of the manual work that predominated in the farming families of the past has now been assigned to machines. The mule is no longer needed, and the tractor can almost drive itself providing the freedom for the farmer to perform other tasks.

It appears to me that the meaningful work of man today is changing once again. It is increasingly more imperative to make sure the machinery is properly cared for so it can reliably produce the tangible products we need in today’s world.

In my days on the farm, fifty

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and the lead positions.

This was a personal action I took on after attending the Continuous Improvement Game. I started attending our weekly CI meetings. I would take on action items and help the champion delegate action items to others. We were still lacking full support from the foremen level. People were not being released from the field to come to the meetings to help support our champion or work any of the many Solutions Without Boundaries (SWB) that we were getting from our craft hands. Crew members worried about leaving certain jobsites, as they didn’t want to leave co-workers in a bind by being one crew member shy. The problem was easily solved by proper planning—getting the foremen to

coordinate with one another and agree to share crew members back and forth when needed.

I made Continuous Improvement a regular topic at safety meetings and foremen/lead meetings. I showed the group that I was 100% behind CI. Now when I attend the weekly meeting, if there is no support, I call and have the foremen attend. I set a KPI for their continued support. The two original CI champions stuck with me even through the non-supported times. Team members were skeptical at first, but once they started seeing results from working the “SWB’s” things got better.

The beauty of the whole thing is that it was teamwork that solved the defect problems in the game and teamwork that has given my group a strong top down driven

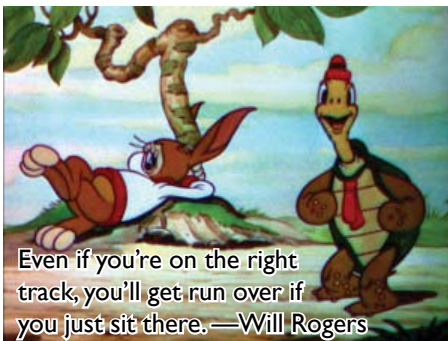
CI supporting “TEAM”. If asked what benefit I derived from the actions that I chose, I would have to say, “Regular attendance at the CI meetings, thousands of dollars in cost savings and numerous safety related actions.” I would suggest that if anyone is struggling with CI in their group, they should take a step back and evaluate who is actually driving the program. Chances are it is not a team effort.

On the last day of the CI Game, when the facilitator said stop, my colleague and I both got agitated as we were very close to having all the money that was in the bank in our pockets and wanted the game to go on just a little longer.

The Continuous Improvement Game is a customization of The Manufacturing Game® used by CH2M Hill in Alaska.



7702 FM 1960 East, Ste. 226
Humble, TX 77346
(281) 812-4148
(281) 812-4149 Fax
<http://www.ManufacturingGame.com>
email: info@ManufacturingGame.com



Spring

TMG News

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pound bundles of sugar cane stalks were hoisted on a man's shoulder. He would walk over to the wagon and climb up a step and drop it in the wagon. One day a local record was set when my dad, an uncle and a farm hand loaded almost twenty-six tons in this fashion. That was a record in their day, but today that amount is easily done with a cane loader mounted on a tractor in only a fraction of a day. Once, I observed a dragline operator, at a coal mine in Wyoming, who was moving sixty-five tons of overburden fifty yards and dumping it every twenty-five seconds while sitting in a comfortable chair with two joysticks like the ones used in computer games twenty years ago. He said he had learned the skill on Atari. These are only two examples of the huge impact today's machinery has on the manual work that had to be done in the past.

John Bennett said that you can

summarize the evolution of the human race as some human using creative energy to develop something new; that later someone else uses conscious energy to organize the process of creating that invention. Later it is mass produced using sensitive energy to duplicate the original creation. This leads to improving the invention again so that it can be created and used with automatic energy. At that point, it can be transferred to some animal or machine to free up humans to start the next creation. I believe that all humans want to participate in this evolution to become a better human race and that is why we are all motivated to do meaningful work.

The future depends on humans including improvement work into their daily routine so that the productivity of machines continues to rise and humans are free to deal with a much more complex world on a global scale.

San Jacinto College is holding a public Manufacturing Game Workshop at its Central Campus in Pasadena, Texas, May 10–11, 2012.

This is a full 2-day workshop giving companies the perfect opportunity to see how bringing The Manufacturing Game® into their company can reinforce and improve the reliability initiatives. The March workshop sold out so be sure to register early!

Call or email David Lewis at (281)542-2061 David.lewis@sjcd.edu or visit <http://www.sanjac.edu/node/7443> for more information or to register.

The Manufacturing Game® is a hands on learning experience that creates a reliability culture. Participants will experience how they can increase reliability through defect elimination and cross functional work, become more proactive and increase business performance. As an additional benefit each participant will receive the book, "Don't Just Fix It, Improve It!"