

# How Does Plant Management - and Possibly Corporate Management Enable Unreliability?

by Winston Ledet,

When I was a production superintendent at a DuPont nylon plant, I was returning to my office with my mind full of thoughts from a staff meeting. I walked into the central control room still distracted by the issues from the meeting. All of a sudden, I found myself face-to-face with the central control operator and in making small talk I casually asked him, “What rate are you running?” He mumbled something and went back to his work. I thought that I was distracting him from his job, so continued on to my office. The next day, my two assistants came to me and said that I had put enormous pressure on the control room operator the day before.

I asked, “What do you mean?” They said that I had come in just after the operator had recovered from a giant production upset and put pressure on him to get the rates up again. My response was, “We had an upset yesterday?” The operator assumed that, since I was production superintendent, I knew about the upset and was pressuring him to get the rates up again. In fact, I was totally ignorant of the situation at the time. This taught me a great lesson, “a production superintendent should not ask about rates unless he wants to pressure people to produce more product at all costs.” I then worked on training myself to ask questions like “how is the unit running today?” That was what I wanted to know in the first place.

This led me to create an exercise to help myself and others practice the art of asking position appropriate questions. We recognized that people are in different domains of operation so we started with the questions that tend to keep you in the Reactive Domain. We collected questions that management might ask and what message those questions relay to the workers.

Event	Management's Question in Reactive Mode	Intended or unintended message to the workers
Unplanned equipment failure	When will it be fixed?	Fix it fast
	Can we expedite repairs?	Don't take the time to fix it right, just do the minimum to get it back online; cut corners if necessary
	What will it cost?	Spend the minimum money, even if this risks longer range performance. Buy shoddy parts.
	Who was involved in the failure event?	Who is to blame?

Questions that are more appropriate for the Planned Domain would look more like the following table.

Event	Management's Question in Planned Mode	Intended or unintended message to the workers
Unplanned equipment failure	Have you planned the repairs?	We expect an orderly process to ensure quality and safety of repairs.
	Is it likely to happen again?	Now is the time to take actions to get prepared for the next time.
	What prevents you from planning the next occurrence?	Use this as an opportunity to improve your planning process.
	What inspections should we start to ensure we take it down early next time?	We don't want any unplanned outages.
	Are the procedures for handling the next event sufficient?	Organizational learning requires good documentation.
	What spare parts strategy do we need to ensure the next repair goes well?	We don't want lack of spare parts to prolong our repairs.

In the Precision Domain, managers should focus more on the prevention of future episodes of unreliability by asking questions similar to the following table.

Event	Management's Question in Precision Mode	Intended or unintended message to the workers
Unplanned equipment failure	What is the root cause of this failure event?	We want to get to the fundamental causes of failures so we can understand why this type of failure happens.
	Can the failure be totally prevented?	Can we prevent this type of failure altogether in the future?
	What are the defects that lead to the root causes?	The laws of physics often tell us where to look for root causes.
	How will we communicate this failure to everyone, to eliminate it ever happening again?	We should learn from our problems and share learning with others to be proactive about reliability.
	What changes in processes, practices, or equipment need to happen to sustain prevention of future events like this one?	We need to institutionalize the lessons we learn so we don't have to re-learn them in the future

In our exercise, we start with this one unplanned equipment failure event as an example and ask participants to repeat the process for other events that lead to unreliability. This assignment is particularly good when major changes are contemplated in an organization. We use it as a management of change aid for organizational changes. Some of the events that managers addressed in our exercise are product price drops or increases, safety incidents, environmental spills, reorganizations, new initiatives launched, change of management, workforce decides to unionize, senior management demands a step change in growth, raw material supply lags, etc.

There are of course other ways besides the communication problems that can lead to managers enabling unreliability. In a survey we conducted with a client, one of the biggest damages to reliability that a manager can make is to assign the wrong person to a job. When managers ask the wrong question, they cause a reaction that has impact but that impact usually has a fairly limited life both in how many people are affected and how long people remember the incident. However, when a manager puts the wrong person in a job, he/she could be there for many many years. It is the old Peter Principle, which states that people tend to rise to their level of incompetence. If management does not move this person out of

the job where he/she is incompetent, the consequences to reliability can be devastating. This relates back to the quote by Jim Collins in his book *Good to Great*, “In fact, leaders of companies that go from good to great start not with ‘where’ but with ‘who’. They start by getting the right people on the bus, the wrong people off the bus, and the right people in the right seats.”

In many organizations, the subject matter experts take it on themselves to make sure the managers learn their role in creating reliability. This is a great way to pass on information gathered over a lifetime of work. In my first job as a supervisor, I had a group of seven engineers reporting to me in a high pressure polyethylene facility that had compressors that could compress ethylene as high as 30,000 psi. One of the engineers who worked for me was an expert on these compressors and had helped invent some of the seal systems in those compressors. His name was Clarence and he was a proficient, respected mechanical engineer. I am a chemical engineer, and Clarence was the same age as my father at the time, so I just avoided him and hoped that he would carry on without needing my input. One day shortly after my arrival in this job, he walked into my office and said, “put your hard hat on, Boy, and come with me.” I scurried out the door with my hat, worried about what was wrong. We walked across the street and entered the compressor building. I thought, “Oh my God, he is going to ask me to make a decision about compressors, what will I do?” We approached one of the compressors that the mechanics were tearing down and Clarence proceeded to point out the various parts and tell me how they worked and what tolerances they needed to have to hold such high pressure, what kind of packing was used, why they used tungsten carbide for the plungers, how flat the valves had to be to avoid blow by, etc. After an hour or more we were walking back to the office and I said to Clarence, “I really appreciate you taking the time to teach me about these compressors.” As he turned the corner to head for his office, he said, “Don’t worry about it, I consider it part of my job to train my boss.” Clarence was not about to take a chance that I would make a decision without knowing what I was doing. I was appreciative then and still am that he educated me without worrying about repercussions. Every manager should ask himself if that is something that could happen in his work environment today. If it can’t then unreliability could be the result since there is no easy way to pass on expertise from one person to another person, who has limited experience, in spite of the fact that he might have the higher position.

Are managers at your site willing to risk shutting operations down if they deem a risk is present because of unreliable equipment? The other great lesson I learned in that job at the polyethylene plant came from an operations supervisor who had started as an operator and been promoted to a foreman’s job and then to a second line supervisor in this unit. He was not one of the best supervisors, but he taught me an important lesson about the connection between operations and reliability. When we came in one morning, the whole unit was shutdown. We were normally very reluctant to shut the unit down because the large pressure changes were very hard on the equipment. When I asked why we were down, the answer was that the supervisor had shut it down because the public address system in the compressor building had not gotten repaired over night. The supervisor said that it was not safe to run that building with the PA system not functioning (this was before we had radios in the field). I thought this guy was going to get fired for this expensive decision. The thing that amazed me was that our management supported his decision. In DuPont, safety was always first regardless of the cost. The supervisor was right in insisting that the equipment had to be reliable or else he would not run it. Twenty years after this incident, I had to make a similar decision about four stainless steel distillation columns that had stress cracking under insulation and contained cyclohexane. An incident in Flixborough, UK was known to have

killed 29 people at a similar unit when an expansion joint failed and created an explosion of a huge vapor cloud. I found it easy to make the decision to shut the unit down because of the experience I had with that supervisor. The maintenance group replaced four stainless steel distillation columns starting from blueprints and in a month we started up again. We could have taken a chance that nothing bad would happen, since stress cracking is pretty slow to progress, but I could not have enforced the rigorous rules we had in that area if I had not been willing to make that decision. The workers in that unit took this lesson seriously. A couple of months later one of my operators spotted a leak in a pipe that was 140 feet in the air, and when we took it apart, we had to die check the pipe to find the crack. That is the effect I wanted to have by doing my part earlier.

In our survey other concerns about managers contributing to unreliability were cited when the following topics were not expressed clearly:

- o Monetary issues
- o Budget constraints
- o Cost vs production
- o Communications
- o Lack of face to face interaction
- o Lack of input from the workers
- o Unclear directions
- o Vision
- o Lack of strategic planning
- o Linear thinking vs systems thinking
- o Paralysis by analysis (No decision regardless of ample information)
- o Personnel Resources
- o Failure to provide the right number of people
- o Setting targets for individuals instead of team targets
- o Working in functional silos

How many of these can you relate to that have caused reliability issues in your company?  
How could they have been handled in a better way? What would you add?

Howard Gardner, a Harvard professor, who studies how people learn, said the main way they learn is through stories. In his book, *Leading Minds: An Anatomy of Leadership*, he says, "Storytelling is the single most powerful tool in a leader's toolkit." I have recently been involved in writing a book about a fictional plant manager who deals with all of the issues of unreliability listed in the above narrative and discovers the value of defect elimination implemented through cross functional teams. This book - [Don't Just Fix It, Improve It! A Journey to the Precision Domain by Winston P. LeDet, Winston J. LeDet & Sherri M. Abshire](#) will be in print in October but is available for for pre-publication order now.

I hope it will help managers realize the value of reliability and accelerate their learning instead of spending a thirty plus year career acquiring this knowledge, as I had to do. ~  
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