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Where the money is made in Shutdowns (or how not to lose your shirt during a shutdown)

Recently, a large chemical plant in Alberta was supposed to shut down for 30 days on July 1. It was scheduled to go back online on August 1. This plant supplied feedstock to plants downstream (the customers had different ownership). All the customers downstream agreed to the duration and timing of the outage. In fact, they were very supportive since they could schedule their outages during the same period for maintenance and process improvements.



The main plant was shut down on July 29 due to some problems with contractor help. Since they went down almost a month late, everyone assumed the plant would return to service by the end of August. August came and went. So did September, October, November, December, and January. By February 15 the following year, the chemical plant was limping to a start-up. Tempers were high, and accusations flew.

As you can imagine, many things have gone wrong. Materials were wrong, labor got messed up (by a wide margin, there were not enough people), engineering was incomplete, and assemblies that were supposed to be fixed immediately broke after they went into service. The list of issues is embarrassingly long. Critical bearings were made the wrong size, turbines didn't survive run-in, compressors crashed, and laborers didn't have the skills as advertised.

There were enough people to blame to fill a good-sized stadium. The customers depending on that plant suffered irretrievable losses, had reached the end of their goodwill for the main plant as a vendor, and were beginning to file lawsuits. The contractors who had a hand in the event were diving for cover (from the potential lawsuits being considered against them), and the company seemed bewildered by what had happened.

But with all that, fundamentally, one thing was wrong. To be more precise, there was confusion or a collapse of two concepts.

A shutdown commenced on an ammonia plant for two thousand plus miles to the south. As you can imagine, the weather in Trinidad was quite a bit warmer than in Ontario. The shutdown was

exquisitely well-planned. Everything proceeded like clockwork right up to the moment the entire plant was shut down!

They carefully checked all materials and supplies to ensure enough for the shutdown. There were adequate cases of welding rods of the type needed for the shutdown in the warehouse. The shutdown started at midnight and would last for (4) 24-hour days. The contractors were ready to go and completed site-specific safety training.

Plant shutdown had been commencing in stages since 9 pm. By 2 am, all processes were shut down, and lockouts were completed. At 2:30 am, the site ran out of welding rods. Some of the cases were, in fact, empty cardboard cartons. They had only one little box of rods instead of what they needed.

Welding distributors on the island were awakened, and their inventories were emptied. Other plants in the area were raided for welding rods. In the end, rod was flown in from Miami and Puerto Rico. The shutdown ran 1 ½ days over waiting for the air shipment.

Like the Canadian shutdown, one fundamental thing went wrong or was confused. Yet, with all the planning, these two events went sour. Even with beautiful color Gantt charts and walls of CPM diagrams, the shutdowns sometimes go sour. How is this so?

We all discuss planning as the solution to the problem, whatever the situation. Remember, planning is the identification of the amounts and timing of all the resources needed to do individual maintenance jobs or projects. Resources include labor with certain skills, scaffolding, and specific parts. Resources include heavy equipment, supplies (like welding rods), and even common tools like torque wrenches. Even obscure items might be constraining resources like penetrating dye or cooling fans. Any missing resource can constrain or even stop a shutdown. Good planning identifies all!

We spend huge amounts of time planning our shutdowns in sometimes endless detail. You have to if you want to catch everything. I am in no way denigrating the planning activity. It is essential but not in itself enough. Planning without its partner is worse than useless. Planning without the secret ingredient deceives you into thinking it must be handled since you thought of it.

The secret ingredient is a simple word with earth-shaking consequences. The secret ingredient is scheduling with follow-up. Scheduling is the movement into time of all the resources outlined in the plan. Scheduling is the precise timing of thousands of resources to converge at the right location and time. Follow-up makes sure the schedule happens and intervenes when something doesn't. Follow-up is not always pretty.

In Canada, the shutdown plan called for hundreds of thousands of hours of labor. The labor should have been expended according to the plan of the job—the schedule called for 50,000 hours by this or that date.

The schedule showed how much by when. What happened when that didn't happen? Nothing happened because the company was not reviewing the schedule against actual. They thought that since they had a plan, they were done.

Lack of follow-up to the schedule is the single biggest trap. Just because a resource is identified in the plan on paper does not mean it is handled in the physical world. We sometimes collapse handling something in the shutdown plan with having handled it on the ground.

Everyone knows they are two distinct domains. But sometimes, we forget and collapse the two. To make the situation worse, people frequently comfortable in and in command of the paper domain are sometimes lost in the physical domain (and the reverse is also true).

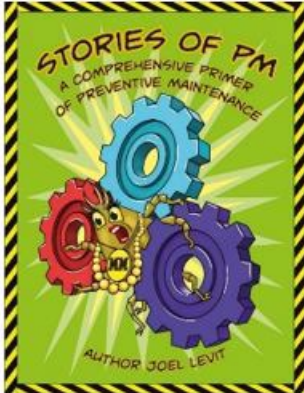
The Real work (I use real to mean physical work, not mental work) begins when physical things need to be moved around, ordered, received, inspected, staged, and delivered to where the work will occur (often within minutes or hours of schedule).

- It is almost obsessively checking and rechecking to see if the resources planned are available on time.
- It means measuring, weighing, inspecting, challenging, fighting, and wooing, all in the service of the shutdown.
- It means no assumptions.
- It means getting one's hands dirty to look inside the box, carton, rail car, or truck.
- It means calling the contractor onto the carpet when they are not mobilizing fast enough, even on the first day, and not giving an inch to being a nice guy (without being a jerk).
- Even before the shutdown begins, it means having a sense of urgency about capital spares.
- It means being everyone's friend but trusting no one -always verify.

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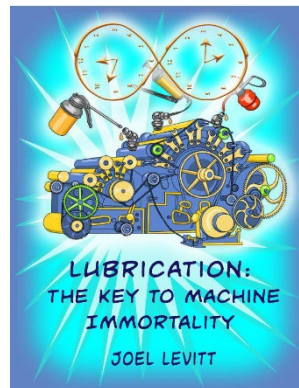
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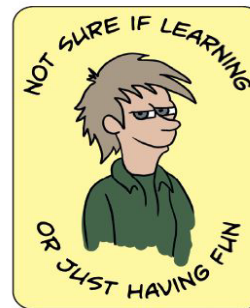
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