

REGIONAL REPORT – ARGENTINA



Lessons Learned from a Turnaround Project in Argentina

By: Ana María Rodríguez

During the last 12 months I have been part of a team in charge of the planning and scheduling of a major turnaround¹ project for a major paper mill plant in Argentina. After more than 10 months of preparing ourselves for the shutdown of the plant, the expected moment arrived last January 4th: We embraced the shutdown of the plant's recovery boiler, following all that was planned, and expecting to achieve the best possible results after the 35 planned days of work.

On March 7th the boiler was restarted, and the plant was back to its usual production processes. Yes, it took us 30 extra days to accomplish the objectives, with additional costs for every involved party. And although we all felt somehow frustrated after having spent such a long time in the shutdown, we all felt that we had succeeded. And the project has been considered by most major stakeholders as successful. Is this possible, although it required more than 180% of the planned time? What happened? Did we fail on our time estimates, did we miss any important issue during the planning phase, or did we fail on managing the project?

¹ In this document we will follow Interplan Systems definition of turnaround: "turnaround is intended to encompass all types of industrial projects for existing process plants (...) where an operating plant must be shut down until the work is completed and then restarted - thus "turning around" the unit/plant. Turnaround is also intended to reference the entire span from pre-turnaround preparations to shutdown to execution to start-up" <http://www.interplansystems.com/turnaround-project-planning-primer/foreword.html>

These questions have probably been on all the project participants' minds since day 36th of the shutdown. Answers are not so easy to achieve, the "what if" approach to the project closure is not the most suggested one if trying to learn from the experience. In contrast, I have been working on identifying the project management challenges that we faced, suggesting everything that could be improved in the paper mill's next turnaround project. I am presenting here my experience, hoping to contribute to any colleague who embraces a similar project. Particular issues about projects in Latin America have been pointed out, since many aspects of the project situation reflect the local picture of industries.

1. The Project

This turnaround project was the major project of the last 10 years at this paper mill plant. Its main objective was the revamping of a recovery boiler. After the revamping, the plant should be able to increase 30% of its production levels, and to substantially reduce odor pollution which is as important as the increase of production. This is due to the critical look that the government and population in Argentina are giving to environmental issues of paper mills, now that they are claiming to Uruguay to avoid the construction of two new plants on their shared border, based on environmental concerns.

Boiler elements, engineering and advice have been provided by Metco Power from Sweden; Diamond Power from USA has been the supplier of boiler cleaning equipment and ash handling systems; ABB Argentina has provided the automation security systems. Most non-critical elements were manufactured in the Rosario region and in Argentina. The engineering department of the plant developed the engineering for some complementary systems. The planning, scheduling and follow-up of the project was performed by NETCDS through its Project Management Division, CDS Project, which I manage.

The jobs were scheduled to be performed during 35 days. The total cost of the project is around 15 million dollars. One main contractor was in charge of the major mechanical works, and another 15-20 minor contractors were also part of the project.

2. The Project Management Challenges – Before the Shutdown

We were invited to become part of the project in February 2006. What did we find? What was the challenge our client gave us? According to the plant experiences of our client and in our opinion, there were 4 critical issues that should be analyzed during the planning phase in order to start the shutdown with the minimum possible risk level:

To establish a realistic and approachable total duration for the shutdown

Advisors from AKER KVAERNER (Now Metco Power) had suggested it was possible to perform the whole shutdown in 35 days. One of the possible main contractors had performed a detailed plan for the shutdown, maintaining the 35 days period. But our client wanted us to check all plans and assure that all relevant issues were included before making conclusions on the shutdown duration. However, the main concern of the plant managers was not the shutdown duration but how the shutdown would affect the plant production levels. Contingency measures were taken to continue paper production during a limited period of time, which would be defined according to our estimates of the shutdown duration. All of these contingency measures were to be monitored during the shutdown to alert before any time variance could affect paper production.

How this challenge was approached: Following the old-fashioned and always useful critical path method, we committed ourselves to an in-depth analysis of the project, gathering and organizing all available information, studying detailed engineering, asking our client about past experience on similar tasks, and involving the main contractor (when defined) in our scheduling effort. We are not boiler experts, so we based the analysis on our client's experience on similar projects and on the contractor estimates. We offered our Project Management knowledge and especially our skills with Microsoft Project as a means to utilize all this data. It took us almost 3 months to get to our first approach to the

shutdown duration (35 days) and another 3 months to finish our in-depth analysis and guarantee all important issues had been considered and the 35 days estimate was still valid.

To strengthen the weak Project Management structure of the plant

As I explained in my regional report of September 2006², industries in Argentina are now expanding with untypical growth as a result of better global scenarios and convenient devaluated prices for production in Argentina. The paper mill plant is not an exception: it has been subject to all fluctuations of economical up and downs in Argentina during the last 10-15 years. The plant owners are now making large investments to improve production processes and increase production levels. However, the in-house resources are very limited. The engineering department is not large enough to face the revamping project only with internal resources. The plant organizational structure is based on a functional matrix and project management skills are not part of the main management policies. The project manager for this particular project usually manages as many as 10 projects at the same time, without any team specifically supporting his management tasks. Since the project had to be executed as soon as possible, there was no time to offer enough project management skills to the plant engineers, and less possible, to re-think the management structure.

How this challenge was approached: The plant decided to outsource the project management tasks, without translating the decision-making issues. We were hired under this logic, and we built what was called "the project management team", supporting the project manager's job. We were in charge of implementing all needed project management processes, and most of all, to provide the project manager with quality information for decision making. We moved our team to the plant offices, and mixed ourselves with the plant staff, embracing the project objectives as our objectives. The result: the plant improved its project management methods on this particular project, at a very fast pace.

To select the main contractor considering Project Management skills and not only its technical background

It also happened to contractors: the economy fluctuations affected their structures. After years of only approaching small projects, just a few contractors have developed project management skills adequate for managing a large project. Most of the contractors in the region have an important technical background that represents a guarantee for the technical quality of a project like the revamping of this boiler. But former experiences at the plant included a long list of shutdowns performed in almost twice the planned time, with all types of problems. And there was no clear reason to be sure this would not happen again. Considering the importance of the total duration of the shutdown in this project, the plant managers decided to select the main contractor not only based on their technical capabilities but also considering their project management skills. Since their expertise on this field was limited, my company was asked to support them in this process.

How this challenge was approached: By analyzing the four possible contractors, it was concluded that only one of them counted with strong project management skills. However, this was a foreign contractor who, due to the involved risk on hiring resources out of its country, was not interested in a fixed price project but rather only a cost plus fixed percentage contract. And plant managers were not willing to use this type of contract for such a large and complex project. The other three possible contractors offered a similar technical background but weak project management structure. We decided to analyze which one was more interested on joining an important planning effort as the one the plant was supporting, and on acquiring the management skills that we required. We also asked for a basic project schedule, and analyzed how feasible it was to follow. Considering all these issues we made our suggestions to the plant managers about which contractor was more suitable for including modern PM methods in their management style. We also suggested that we assume the planning and scheduling tasks as part of the plant responsibilities, counting on the chosen contractor to provide this analysis but not relying on his skills on this particular matter for guarantying an in-depth analysis.

² **Argentina Today: The Time for Project Management.** By: Ana María Rodríguez. *Published in PM World Today -September 2006 (Vol. VIII, Issue 9) "Connecting the World of Project Management"*

To guarantee all engineering, resources and supplies available on time for the shutdown

Our client's experience in former projects included a high level of frustration because shutdowns had started without having all that was needed to perform it. Since this shutdown was a major project with a long list of boiler elements to be replaced, the plant project manager was very concerned about having everything ready before beginning the shutdown.

How this challenge was approached: First, establishing a proper work breakdown structure of the project, in order to check that every issue of the project was considered during the engineering phase, and also at the procurement phase. Second, associate all tasks to the correspondent engineer in charge, in order to be sure every task had an owner. Third, being the link between the engineering department and the procurement department, developing priorities of supplies, and also checking with the warehouse if supplies arrived to the plant.

3. The Project Management Challenges – during the shutdown

Prior to the beginning of the shutdown and as part of the planning phase, we concluded that there were **two main challenges** that we would face while managing the shutdown. One, the need to count with an always updated schedule, no matter how many tasks were performed at the same time, and two, to keep track of all change approvals and avoid extra costs from this approvals:

First, to count with an always updated schedule

The plant managers were very interested on making decisions based on a reliable and updated plan. They did not want to rely on plans presented by contractors, and they wanted to avoid having each supervisor making their own analysis of task advances. With more than 20 contractors working at the same time in the same building, and with all types of interferences between their works, not only the main contractor but also smaller contractors should be able to access information about progress on all tasks. There was a clear need for a unique and reliable updated schedule. The challenge for preparing this schedule was based on the large amount of tasks to be performed at the same time, in different floors of the boiler building, and by different parties. Collecting all the advance information, organizing it in a fast and proper manner, and providing it for management analysis was a clear need of the project.

How this challenge was approached: The Project Management Team (CDS Project's team) was structured considering the needs for an always updated and reliable schedule. For information management purposes, the whole project was divided into three major pieces of work. Three sub-teams were assembled, each consisting of a Junior Engineer in charge of collecting advance information of all types, a Trainee Engineer in charge of placing the information into Microsoft Project and preparing summary schedules for meetings, and a Senior Engineer in charge of constantly analyzing the scenario of his/her piece of work and suggesting better actions for the following days. All functions followed pre-defined and standardized methodologies. We offered an updated schedule, but also all types of project information to all parties interested, not only plant managers but also contractors' managers.

Second, to reduce change orders and claims of extra costs from the major contracts

Due to the reduced size of the engineering department at the paper mill plant, the project specifications for almost all of the contracts did not include enough detailed information and did not lead to a well defined scope of work. As a consequence, there was a great risk of finishing the project with a large amount of approved change orders and many additional costs. During the shutdown, "when the work should be done no matter at what cost" (since affecting the plant production is always more expensive than some extra costs), the plant managers would be in charge of too many issues to analyze all change orders in an efficient mean. Most contractors were aware of this weakness and took advantage of it on former projects, claiming unrealistic extra costs. This could not be the situation on this project.

How this challenge was approached: It seems very obvious, but all we did was a) analyze if each change order was really needed and b) keep track of all change approvals. But even though this seems obvious, project managers by themselves could not perform this detailed analysis. They needed our team to support them on this function. Who else had time to ask around to supervisors about the project needs and to check on the scope of all contracts and change orders?

And, unexpected third challenge: To get in charge of the project!

Yes, I mentioned we prepared ourselves for facing two main challenges during the shutdown. We did not expect to face this third, and most important challenge: At day 20 of the shutdown, the plant managers decided to get in charge of the project, due to the lack of management capabilities of the main contractor! The job was being performed, but the delays were taking the project to a risky situation. It seemed there were enough workers, enough tools, and enough materials. No significant technical problem had been faced, and just very minor elements had to be purchased during the shutdown. But tasks were not being performed efficiently. What was happening? After some analysis, we concluded that delays were being caused by lack of good superintendents in the contractors' structure, and lack of proper management decisions. But, how do you get in charge of a project that is already ongoing, and most difficult of all, without having prepared yourself for such a challenge?

How this challenge was approached: After performing an in-depth planning effort, enough project knowledge was available, and this knowledge allowed getting in charge of the project. We formed a unique team between the plant staff, the planning and monitoring team, the supervisors from Metco Power and the contractors' main supervisors. We worked as a team and the plant's project managers assumed control of all efforts. The need for good information about the advance of the project was greater than ever before, we reinforced our methods for collecting and presenting strategic information as a means to support main decisions. Also, we identified and made adjustments on some important management failures of the contractor, particularly in the organization of information from the x-ray tests of the pressure welds. This was a critical point of the shutdown due to the large amount of welds to be performed (over 1000). It was hard to define a method for organizing such critical data at the same time it was being urgently required, but somehow we made it work. It was possible to take the project to its goal even with strong management problems in the contractor's structure because a strong team was built, and enough information was available as to take proper decisions. So, the challenge we achieved was to build an effective team, and to develop and utilize good information. Good decisions came as a consequence of these two points.

3. The Project Management Challenges – After the shutdown

To achieve a closure with the main contractor

It is always desired to have great contractors and great endings to their work. However, when the project presents too many problems mainly because of the main contractor's (lack of) management, it is problematical to achieve closure. In this particular project, the contract established a series of penalties for delays, which had to be negotiated. And negotiations are never effortless, since all parties have their point of view about the causes of delays. It was expected that the contractor would claim that many problems were caused by the plant structure, as he did.

The final closure to the contract has not yet been achieved, but the analysis is being done with plenty of support information that we gathered during the project. It is likely to achieve a good resolution for both the plant and the contractor because negotiations are being based on good data and a willingness to reach agreement. We faced the project knowing that the closure moment would arrive, so we had prepared ourselves for this moment from the time the contractor was assigned. As a consequence negotiations are possible.

To document all the experience

Maybe experienced readers are considering that this point is not a challenge but a must on every project. However, in Argentina as in most of Latin America, it is not common to invest time and resources in project documentation. The challenge was to convince our client that it was worthwhile to make an additional effort on documenting the experience. The plant managers became interested and fortunately we received the support from all their staff involved in the project. Since this project included work in almost all the elements of the boiler, we have produced a document that will surely be a constant source of information for any future work performed on them. We also performed a survey collecting opinions about best practices and lessons learned. Gathered opinions will contribute to improve future projects.

4. What went well? What went wrong?

Probably all readers have reached their own conclusions about this project based on my narrative of it. And probably all involved parties have their own analysis of the problems and success of the project. So the following is just the result of my personal analysis, and not a definite judgment about the project.

From most of the involved parties, the project succeeded. Yes, there were problems, but the project objectives were achieved: the boiler was revamped, and the shutdown did not seriously affect the plant production, mainly because a contingency plan was followed and adjusted with updated information. Most project supplies were available on time. There were few change orders, and as a result of a good planning effort, nobody reinvented the wheel during the shutdown. In other words, we followed the plans, adjusting them but following the already analyzed logic of the project. This avoided engineering work during the shutdown, or even reviewing the complete project logic.

But to be fair, there were important problems in the project, mainly due to the main contractor's management approach. He had enough technical background, enough resources, and the plant was always willing to share all available information, for the benefit of the project. Good ingredients for a successful project! But he did not work with a structured team, his supervisors were recruited just in time for the shutdown, without enough time to learn about the project, get to know the workers, and develop trust between each other. Subcontracts' established payment methods were not efficient, considering the contractor agreed to provide all tools and materials to subcontractors, who would charge for their work no matter how much time they required for it. Subcontractors did not have any need of motivation for efficiency.

There is another problem that cannot be blamed on the contractor: after more than a decade of lack of important projects in most industries, there are not enough qualified and experienced workers in Argentina. It is hard to achieve expected levels of task production if workers are learning the required skills while performing the tasks. For instance, the shutdown required at least 35 certified pressure welders. More than 100 welders were tested, and less than 50% achieved the certification tests. Of course, the best welders were also the most difficult to recruit, and it turned out impossible to hire the best group. As a result, a critical task of this project such as the pressure welds was performed with less experienced welders. Quality was hard to achieve, and welding times were longer than expected. So it must be said that although good management practices could improve results, without good workers it is almost impossible to avoid problems.

6. Best Practices, Lessons Learned***The Project Best Practices***

1- When the project advance was becoming too risky and the contractor did not present a good recovery plan, the plant managers decided to take control of the project.

- 2- Although the project duration was 180% of the planned time, the project achieved its objectives mainly because a good planning effort was performed. Good engineering, on-time supplies, in-depth knowledge of the project and always available information are important results of the planning effort.
- 3- A good team environment was created in the project. When it was required, the project was led by this team, and the team effort made it possible to achieve the objectives.

The Project Lessons Learned

- 1- Do not hire contractors without previous experience with managing projects of similar size. Projects fail because of lack of management, not because lack of technical expertise and the management skills are different if running a small project or a large project.
- 2- Do not divide your project into subcontracts, if you cannot manage subcontractors as required!
- 3- Do not rely on the management capability of the contractor for the critical issues of your project. In this project, managing the pressure welds information was crucial, and the contractor was not good enough on this task, which led to important delays.
- 4- Do not take for granted money can always buy good workers; what if they are not available?

7. Conclusions

Since I was in charge of the planning, scheduling and control of the project, my conclusions should be based on these issues of the project. And I could not find a better way to conclude than quoting a very proper Murphy Law (to be accurate, it is mentioned as Dunn's Law): "The thorough plan does not replace the pure luck". Yes, you always need a great amount of luck in your projects; too many factors might affect them! However, do not just trust luck: Plan, plan, and do more plan! It will always be somehow worthwhile!



Ana Maria Rodriguez
International Correspondent, Argentina



Ms. Ana Maria Rodriguez is an International Correspondent for www.pmforum.org, based in Rosario, Argentina. Ms. Rodriguez manages CDS Project, a division of NETCDS, a leading IT, project and business services company in Argentina, and is an adjunct professor of project management at the Universidad Nacional de Rosario. She is actively engaged in teaching and promoting project management best practices in Argentina. Ms. Rodriguez is also an active member of PMI in Argentina. Additional information about Ms. Rodriguez can be found at www.pmforum.org/pm_forum_team. Ms. Rodriguez welcomes contact at arodriguez@netcds.com.ar.