



ABC Technologies Inc.

## Turning Byproducts Into Dollars

*by Clint Dietze  
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As Derrick and Steve walked out of the administration building, Derrick turned to Steve and said, "This afternoon's activity-based management presentation raised a lot of questions about the way that we report and manage our costs."

Steve replied, "yeah, it sure did. I'd like to test this methodology out. Where do you think we can apply it?"

"I've always wondered about the copper sulfate plant. Maybe this would be the best place to start," Derrick responded.

"I agree," said Steve.

"We'll get together and kick off a team and start as soon as possible!"

This is the story of the ABM pilot project and the Copper Sulfate Plant - also known as the BV (Blue Vitriole)\* plant -- at Noranda Copper Smelting & Refining.

### **Low Expectations, Low Profits**

The electrolyrefining facility -known as Canadian copper refineries or CCR- refines copper anodes and other precious metals for Noranda minerals mines. The lions share of revenues have come from copper refining. The BV Plant at CCR – nicknamed a "kidney" because of the purification and refining process it provides – is attached to the silver refinery.

In contrast to Noranda's copper treatment revenues, the BV plant revenues are only \$% million per annum—small potatoes for Noranda.

Mining industry sales for 1993 amounted to \$4 million, mostly from Noranda's mineral mines, with an additional \$2 million from agricultural customers—distributors in Ontario and Quebec, Canada.

The other Facilities in the plant employ 800 people, the BV plant employs only 12 people. Little attention was paid to this plant's profitability. It was a plant that was, from a financial standpoint, only expected to barely sustain itself.

Based on historic data analysis, it was also assumed by Noranda's senior management that customers would continue to purchase at existing levels. In 1993, a conscious decision was made not to perform preventative maintenance in this facility because it, quite simply, wasn't worth it. According to financial figures, the BV Plant was at best, a break even facility, and at worst, a money drain for the company. Due to cost reduction initiatives, many questions were asked about whether to keep this facility operating at all.

## **The ABM Process and Senior Management Buy-In**

In early 1994, the President of CCR was approached by Noranda Head Office personnel regarding an innovative approach to cost determination- activity- based cost management. The President's reaction was a positive one. At a kick-off meeting in April 1994, senior management at CCR decided to go ahead with an ABM pilot project at the BV plant.

It was determined that the project duration would be three months with the following objectives:

- Provide accurate activity costs
- Provide accurate process costs
- Focus on high-cost reduction opportunities
- Highlight causes for unprofitable products and customers
- Assess alternative business strategies- expand or contract the business

It was decided that an empirically proven implementation approach be applied to the BV Plant Foreman, and a sales person from Noranda Sales Corporation. This team was charged with reaching the objectives related above.

Each of the team members were well respected, technically competent individuals. They were selected based, not only on their abilities both technical and interpersonal, but also on the fact that they were decision-makers who had the pull to recommend changes and see to it that these changes were carried out.

Initial core team training included members of the senior management team: the Chief Accountant, the Superintendent of the byproducts area, and the foreman of the BV Plant. These individuals were in a position to "tell the ABM story" to other senior managers as well as operations personnel.

Frequent discussions on ABM concepts, methodology, and analysis results were carried out to other senior managers. The union presidency was also invited to actively participate. The operations analyst also presented results to the hourly personnel. This type of integrated and open communication was key in having the senior management group come to consensus decisions. Three separate presentations were given at three milestone points in the pilot.

Approximately one week prior to each presentation, the plant foreman and superintendent were asked to visit the core team to discuss results and potential tactical and strategic changes that could come about. Tactical changes included producing more waste products, automating parts of the purification process such as centrifuging and automating measurement methods. Strategic changes included weeding out high cost customers and unprofitable products and moving into new markets that necessitated producing higher purity products. Not surprisingly, vigorous and intense discussions ensued.

## **The Turning Point**

Several events occurred during the course of the project that led to unconditional management support for the proposed changes:

- Product quality had deteriorated to the point that, at one of the presentations, it was decided to stop all shipments to agricultural customers- a loss of \$2 million per year.
- A large column of product had been returned from valued agricultural customers, and several mining customers were complaining about the quality of the product.

- A serious incident occurred at the plant that caused it to shut down operations completely for several days.

At the final ABM project presentation, the General manager turned to the Superintendent and exclaimed, "looks like you've got your work cut out for you- we're keeping this plant."

### **ABM as a Support Tool For TQM and Work reorganization**

In 1988, CCR embarked on a quality initiative. "Quality our way of life" was the slogan. Massive training ensued. Every employee was required to attend days of classroom instruction- a significant investment on Noranda's part.

At the start of the ABM project, however, the BV Plant still didn't have a operating plan of any kind in place. The ABM initiative was there to help put one in place.

During the first few days of the ABM project, the core team went through process mapping training. Suppliers, inputs, activities, outputs, customers, stakeholders, and core competencies were identified. Core team members commented that this process was the practical application of the 1988 quality theory.

During the activity analysis stage, all activities were assigned attributes. One of these attributes was called "cost of Quality" attribute. Core team members categorized activities into one of four areas:

1. Internal failure
2. External failure
3. Appraisal
4. Preventative

The breakdown of activity costs in these four categories is given in figure 1. This chart was of great importance to three different groups of people:

- Sales. The salespeople recognized that during 1993 the amount of returned poor quality product was minimal and that this would need to continue if sales were to be sustained or increased. (this story changed for the worse in 1994)
- Maintenance. The maintenance people were alarmed at the disproportionately high cost of internal failure activities that were directly linked to ill maintained equipment.
- Process technology. The process technology group began to see that much of their effort was spent in assessing product quality after production. They realized that their energy needed to be focused on preventative efforts- proper production and monitoring equipment, design, and designation of raw materials inputs.

### **Rolling Out ABM**

Early in 1994, the general manager, in conjunction with the union executive, identified a need to enhance worker participation in the day to day operation of the company, as well as streamline the number of job classifications. A program entitled "work Reorganization" had begun.

The results from ABM are now providing initial data for this initiative. Process mapping and activity determination will aid operations personnel in determining which classifications to give people performing certain tasks. By attaching a value or nonvalue-added designation to activities, the foreman and his workers can analyze activities for redundancy or rework. This may even drive the need to redesign certain processes entirely.

## **Dramatic Results at CCR**

As mentioned earlier, a number of operational changes were made almost immediately after the final presentation of ABM results. During the ABM analysis, it was found that purchasing No. 1 copper scrap – scrap that contains no contaminants such as plastic coatings—as a raw material feed would result in several activities being eliminated altogether. The additional cost of the scrap would be offset by a decrease in support activity costs.

Production of waste material from the process would be reduced and the efficiency of the dissolution process would increase dramatically—possibly by as much as 25% -- leading to and overall reduction in production cycle time.

The maintenance group put together a team of mechanical, electrical, and operations personnel to identify critical equipment. A preventative maintenance was re-initiated.

Once the superintendent received approval from the General Manager, two employees were assigned, on overtime, to produce a waste product, called BV press mud. After only one month of intense monitoring by the process technology group and operations personnel, the product quality increased dramatically. One contaminant level decreased six fold, and production increased by 25%! In the long run, this will reduce annual operating costs by over \$500,000.

Sales for the operation are handled by Noranda Sales Corporation in Toronto, Ontario. The sales personnel for this by product examined customer profitability. Negotiations for product pricing for certain customers were based on ABM reported costs rather than the standard unit costs previously used the difference in some instances was greater than 20%.

Due to the plant now producing higher purity product, the sales group can recapture lost agricultural customers and even penetrate new markets in the pesticidal, industries.

ABM has been proven to enable fact based, tactical and strategic decision-making and in the long run, significant, positive results. Now that the senior management team has seen the viability of applying ABM at the BV Plant they are planning on applying ABM in other plant areas. In fact, another project will begin in 1995.

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