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## **THE NATIONAL RUBBER COMPANY (A)**

### **INTRODUCTION**

As Ted Pattenden skimmed through the Globe & Mail's Report on Business for Monday, December 23rd 1991, the familiar byline "Tidings of Pain, Misery Pervade" summed up not only the general recession within the Canadian economy, but more immediately, the situation within his own organization, the National Rubber Company. Pattenden was entering into his second week as the newly appointed president of National Rubber. While his first week involved numerous introductory meetings and much hand-shaking, this morning Pattenden felt a great sense of urgency. With three company presidents in the past three years and cumulative losses of \$22 million over the same period, Pattenden understood that if he was not successful in turning the operation around quickly, the Board of Directors would be forced to close the doors at National Rubber.

A relative newcomer to the specifics of the rubber business, Pattenden brought to the job his experience as a seasoned and successful manager with DuPont Canada Inc. And while Pattenden recognized that his new endeavor would present many challenges, he was not entirely prepared for the onslaught of problems that greeted his arrival. Foremost, he was made aware of several quality and delivery complaints upon discussion with a number of National Rubber's customers. More ominous however, during his first week as president, the National Rubber Company was served with a \$500,000 penalty assessment by the Workers Compensation Board of Ontario for its poor safety record over the previous three years. Greeted with these unpleasant surprises, Pattenden realized that the situation was much worse than he had anticipated.

Faced with the daunting task of bringing National Rubber out of the red, Pattenden set aside an hour that Monday morning to reflect upon his first week as president of National Rubber. In an hour Ted Pattenden was to meet with

Ross Clark, V-P Finance, who at Pattenden's request, had just compiled a breakdown on sales and profit per product. Many questions racked his mind. Where would he start? Was a turnaround possible at all? Was it too late to save the National Rubber Company?

## **COMPANY BACKGROUND**

The National Rubber Company was founded in 1927 in Toronto by the Gross family. In 1961, majority ownership was sold to The Allan Group, but the Gross family continued to manage the business. In 1988, Clairvest, a Toronto holding company bought into National Rubber. At the end of 1991, the Gross family and Clairvest each owned 45% of National Rubber with The Allan Group owning the remaining 10%.

National Rubber owned and operated two rubber manufacturing facilities and employed approximately 750 people at the end of 1991. Located in Toronto, the Symington and Cawthra plants together produced over 700 different rubber products. It's diverse product line ranged from such high volume, low margin products as automotive mud flaps, to low volume, high margin, high-tech products such as precision O-rings for ABS brakes. Each of National Rubber's 700 products was a result of one of three manufacturing processes: die cutting, compression molding and injection molding. Compression molded products accounted for approximately 55% of National Rubber's total sales. Die cut products were second with 30% of total sales, and injection molded products made up the remaining 15% of sales.

The automotive sector was National Rubber's most important customer segment, with the Big Three auto-makers responsible for almost 75% of 1991 total revenues. In this regard, National Rubber enjoyed an unusual automotive OEM-supplier situation supplying not only GM, but Ford and Chrysler as well. Industrial products accounted for the remaining 25% of sales. Almost all of National Rubber's products were produced to customer-defined specifications.

Despite high capacity utilization rates of operation, and offering a wide range of products targeting various market niches, National Rubber was still losing money. In fact, with one week left in the year, National Rubber was on track to posting a \$7 million loss in 1991. [Exhibit 1](#) presents National Rubber's financial performance during the period 1989-1991.

## **THE RUBBER INDUSTRY**

In 1991, the industrial rubber products industry in Canada (excluding tire manufacturing) was composed of about 170 establishments, employing 14,000 people and producing total shipments in excess of \$1.5 billion. The industry in Canada was characterized by a high level of ownership concentration with 10 companies, mostly U.S. owned, collectively accounting for 40% of the value of

the shipments. National Rubber was just outside this group as it ranked as one of the ten to twenty largest rubber manufacturers.

Rubber can be produced either *naturally*, extracted from rubber trees on plantations located primarily in South-East Asia, or *synthetically*, of which the United States is the world's largest producer. Each form has its own properties, thereby allowing manufacturers to choose the rubber or mixture of rubbers that best addresses the needs of their product. Most manufacturers of rubber products, such as tire producers, use a blend of natural and synthetic rubber. In North America, for instance, tire manufacturers use a blend of 40% natural and 60% synthetic rubber in their tires. This contrasts with European tire makers who use a 60% natural and 40% synthetic combination as higher driving speeds demand greater tire performance.

The National Rubber Company did not purchase its rubber directly from a natural or synthetic rubber producer, but relied upon scrap from operations such as tire manufacturers as its raw material. This was an inexpensive source of a relatively high quality blend of natural and synthetic rubber. With raw material costs accounting for about 50% of direct manufacturing costs, National Rubber was very sensitive to fluctuations in the price of rubber ( [Exhibit 2](#)).

The price of rubber scrap had risen over the previous five years owing largely to a decrease in its supply. Responsibility for lower rubber scrap supplies depended largely upon international market forces. In the late 1980s, as the world's economies headed towards recession and automotive sales slumped, the demand for tires decreased. This meant lower scrap generation leading to higher scrap prices.

This cyclical pattern was worsened when the low demand for rubber prompted plantation owners overseas to change their crops from rubber trees to coconut trees. The rubber plantations were caught off-guard when the automotive industry picked up momentum in the early 1990s. The shortage of natural rubber prompted higher natural rubber prices. And higher natural rubber prices provided an incentive for tire manufacturers to maximize their rubber utilization and hence generate less scrap. All of these events contributed to another of National Rubber's dilemma's: rising raw material costs.

## **NATIONAL RUBBER'S OPERATIONS**

Located roughly one kilometer apart, National Rubber's Cawthra and Symington plants were very similar in both layout and machinery, with each occupying 200,000 square feet apiece. Each of these facilities was dedicated, to some degree, to the manufacture of die cut, compression-molded and injection-molded products.

A significant component of National Rubber's operations involved the preparation

of the raw rubber compound for use in the manufacture of die cut and compression molded products. Injection molded products, which comprise a relatively small portion of National Rubber's output, were manufactured from a prepared rubber compound purchased from external suppliers ([Exhibit 3](#)).

## **Raw Material Preparation**

National Rubber utilized two different types of rubber scrap as its raw material: styrene-butadiene rubber (SBR) and friction. As scrap produced by other rubber companies, primarily tire manufacturers, SBR and friction arrived at National Rubber premixed with a combination of both natural and synthetic rubbers. SBR was obtained in the form of thin sheets bundled together in a bale. From these bales, SBR was tested, sorted, cut and finally chipped into pellet sized pieces in preparation for the Basic Friction Blending Process (BFP).

The second traditional raw material was friction. Friction was uncured rubber waste resulting from the manufacture of tire side walls and contained a mixture of cord fibers and rubber. While the rubber component of friction was very similar to SBR, it differed in that friction arrived in large, solid rubber bales and could also contain metal impurities. Preparation of the friction feedstock involved cutting the large bales into smaller, more manageable pieces via a "guillotine". Passed first through a metal detector to identify and remove all metal impurities, the friction, which still contained cord fibers, was chipped into small pellets.

The SBR and friction were mixed together in the BFP Blending Process. The resulting rubber mixture was transferred to the cracker and combined with a variety of compounding ingredients such as oil, olefin polymer, sulfur and wax to modify the rubber's characteristics. By varying both the SBR to friction mix ratio and/or concentration of compounding ingredients, employees created up to 40 rubber "recipes" resulting in 40 different types of rubber to be used in the company's 700 different products. From the cracker machine, the rubber compound was moved into the calendering process.

The calendering process very closely resembled the paper making process. The rubber compound was first fed through hot rolling pins, known as the cracker. This started to form the rubber compound into a continuous sheet approximately 1.5 metres across and 1.5 cm in thickness. A series of belt conveyors moved the continuous sheet onto the calender rolls. Calender machines consisted of 5 large rollers of a 1.5 metre width that stretched and refined the rubber compound into sheeting. The continuous sheet of rubber moved through the calendering machines, past cooling fans, and into a work area where workers cut the sheets into 2 x 1.5 metre sizes as it arrived. Called preforms, these smaller sheets were stacked on pallets and formed the feedstock of the two main finishing processes: die cutting and compression molding.

## **Die Cutting**

In total, approximately 40% of National Rubber's preforms were used in the manufacture of die cut products. Before being die cut, the preforms were first cured or vulcanized. Uncured preforms had a pebbly texture and were sticky to the touch. When the preforms were placed in a curing press for 16 to 20 minutes to cure, the resulting cured preforms were stronger, more resistant to changes in temperature, and had a flat, smooth texture. The resulting cured preform, called sheet stock was moved into the die cutting area which housed various cells of die cutting presses.

The sheet stock was placed on die cutting presses and stamped into various products. Additional assembly of these products, such as stitching, clipping or printing, was usually required. Finished products were packaged right at the press and were cleared out upon completion by a forklift operator. Examples of die cut products included automobile splash guards and truck bed mats.

### **Compression Molding**

The other 60% of uncured preforms were used in the manufacture of compression molded products. Compression molding involved placing one or more uncured preforms onto a press that contained a mold of the desired finished product's form. The press compressed the preform(s) with pressure and heat thereby curing the rubber into the form desired. Depending upon the size and nature of the final product, this process took between one and 25 minutes. Upon completion, the press operator removed the rubber product from the press and trimmed any flashings around the product. The product was packaged at the press and transferred into inventory or directly onto a waiting truck by a forklift operator. Some compression molded products that National Rubber produced included truck wheel chocks, playground mats, and truck and trailer bumpers.

### **Injection Molding**

Injection molded products comprised a relatively small component of National Rubber's total product output. At both the Symington and Cawthra facilities, the raw materials used for injection molding were purchased from outside the company, and hence required little preparation. Injection molding consisted of inserting a custom rubber compound and fiberglass or steel inserts into an injection mold press where heat and pressure were applied to cure the rubber into the form desired. Curing of the rubber in the press required 1 to 3 minutes. Once cured, the operator of the press would deflash, or trim the rubber product. Some of National Rubber's injection molded products required additional minor assembly and packaging to the customer's specifications before shipment. Examples of injection molded products were insulator rods and O-ring seals.

### **CURRENT SITUATION (December 1991)**

## **Management Organization and Systems**

In his first few weeks on the job, Ted began to realize how fundamental some of the problems were at National Rubber. The company certainly showed the effects of years of revolving door leadership. He knew that he could not expect to find the sophistication in management systems of the large multinational where he had spent most of his business life. Still he was surprised to find that many of the most elementary management structures, systems and processes were antiquated or missing altogether. There was no clear strategic plan. But beyond that, there was no orderly leadership structure, no management objectives system. The few processes for communication were largely ad hoc. Many of the essential logistics systems, such as those that link customers' orders to manufacturing, were rudimentary and ineffective. Ted was torn between putting out the immediate fires and taking a fundamental approach to restructuring and modernizing the management processes of the company.

## **Manufacturing Processes**

Through the 1980s there had been a revolution in the manufacturing industry world-wide. Ted had seen this begin to transform his previous employer. The manufacturing revolution was not just a different technical approach. It worked from a new paradigm. If manufacturers made products only for *direct* orders, rather than for inventory, all the processes from raw material supplier through manufacturing to customer could be streamlined. For this to succeed, the quality of product at every step, and the reliability and effectiveness of the processes, had to be dramatically better. With short-coupled processes, there would be but one change: "do it right the first time." These new concepts were leading to virtual elimination of in-plant inventory, to elimination of many steps in manufacturing processes, to a dramatic reduction of response time, to step changes in costs, quality and productivity.

The manufacturing revolution had passed National Rubber by. Their manufacturing systems and processes were traditional, often poorly linked, characterized by large in-process inventories. Ted could see that the long term competitive position would be untenable if National Rubber lagged behind its competitors in such a fundamental way. Yet he could see that the skilled but totally uninvolved, perhaps even demoralized workforce was ill prepared for such a challenge.

## **Employee Relations**

One of Ted Pattenden's greatest worries was the poor workplace environment at National Rubber. Labour relations had steadily worsened over the previous five years. Pattenden considered it almost a miracle that, despite conflict and poor working conditions, National Rubber remained a non-unionized operation.

In his few, brief exposures to the Symington and Cawthra operations, Ted observed a confrontational, "big stick" approach used by supervisors. They explained to Pattenden

that the nature of the work was such that close and constant supervision was required to maintain productivity.

Before taking over as president, Pattenden understood that one of the biggest obstacles impeding a turnaround was the cultural and linguistic diversity of National Rubber's workforce. Amongst the company's 500 semi-skilled employees, 5 different languages were commonly spoken on the plant floor, not including English and French.

Pattenden realized that major changes in National Rubber's operations would have to be made to turn the company around. He also understood that his employees would play a pivotal role in determining the success of any organizational change. He knew that he was faced with a real challenge of effecting change through a largely demoralized and linguistically diverse work force.

### **Health & Safety**

The safety issue at National Rubber revealed itself to Ted Pattenden within his first couple of days when the company was served with a \$500,000 penalty assessment by the Workers Compensation Board (WCB). This hefty increase in assessment was in response to National Rubber's extremely poor safety record of 35 lost time injuries \* in 1991. With the fine came another warning from the WCB that if the company did poorly in another "experience rating audit", in four months, there would be more fines.

The management and employees at National Rubber did not need a heavy fine to alert them to the company's poor health and safety record. Health conditions in the plant were so poor upon his first tour of the plant, that in some areas Pattenden could hardly see 20 feet ahead for all the dust and rubber particles in the air.

Inquiring as to safety training programs that existed within the plant, it was revealed that few were established. In fact, looking for past safety records within the plant, Pattenden discovered that very little personal injury documentation existed. When an injury occurred, there were few steps established to follow up on the incident and address the problem at its source. In fact, the prevailing management attitude to safety was that when an individual was injured, the big push was for Human Resources to simply replace that employee with a new hire.

From previous management's perspective, the major issue with safety was financial. With the company set to lose \$7 million in 1991, it was felt that National Rubber could not afford to invest heavily in plant safety. It was estimated, for example, that to improve the air quality in the Cawthra plant, a new ventilation system had to be installed at a cost of \$1 million. This was \$1 million that National Rubber did not have.

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\* A lost time injury is defined as an injury that causes the worker to be absent from work for more than the day of the injury.

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## **Quality and Delivery**

With over three-quarters of National Rubber's product sales destined for use in the automotive sector, product quality and delivery were paramount. In the automotive industry, suppliers rarely received a second chance to prove their worthiness if a shipped product failed to meet quality standards or was delivered late. Delays were extremely costly for a big-three automotive manufacturer such as General Motors, which operates on a just-in-time (JIT) system of production. While this had failed to materialize in the past, Pattenden heard rumblings about expedited orders and inconsistent product quality.

However, most of the complaints came from the company's 25% of sales to the industrial market. As batch sizes were much smaller and occasionally more specialized, and lacking the clout of a GM, these customers were relegated to a second tier in terms of production scheduling and delivery.

The previous president's strategy had been to concentrate on and expand the quarter of the company's sales to the industrial market. He also made considerable moves towards producing more specialized, higher margin rubber products such as O-rings for ABS brakes. The capital investments over the past year were for high-technology injection molding presses to help National Rubber establish itself in this market. While questioning every other aspect of National Rubber's operation, Pattenden wondered whether he should continue with this relatively new and as yet unproven strategy.

## **WHERE TO BEGIN?**

Ted Pattenden sat feeling a little overwhelmed. Nevertheless, the past hour of reflection helped clarify a number of previously cloudy issues. Just then, he heard a knock at the door followed by Ross Clark's entrance: "Ted, have I got some numbers for you. I spent all weekend pouring over the books and I can't believe that I hadn't seen this before." Clark proceeded to tell his new boss much of what Pattenden had expected. "Of the 700 different products we manufacture, only 80 are actually making money. A further 500 are breaking even. And get this, 120 products actually lose us money."

Ted began to consider this new evidence of the company's problems. He knew that he had many long term structural changes to make. But where should he begin? Was there an issue around which he could knit this passive workforce into a more motivated, contributing team? Was there a place where success might come quickly enough to provide the "flagship" initiative around which to build?

# **EXHIBIT 1**

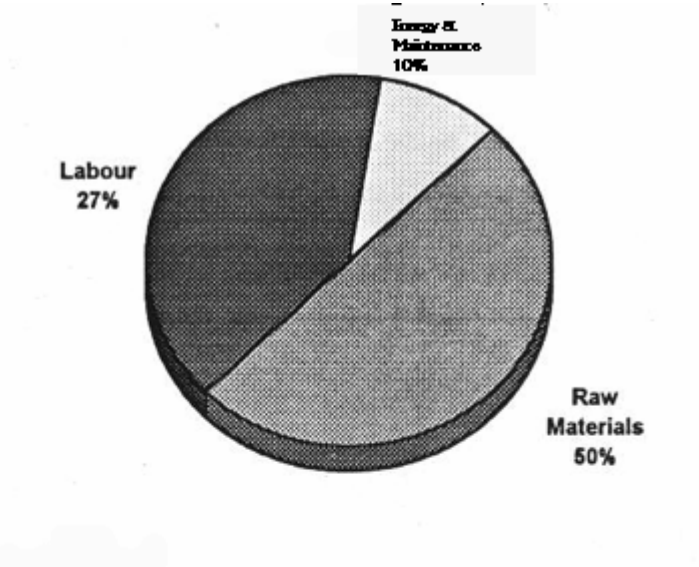


FINANCIAL PERFORMANCE  
The National Rubber Company \*  
1989-1991

	<b>1989</b>	<b>1990</b>	<b>1991</b>
Sales (\$M)	51.3	40.9	43.9
Gross Profit (%)	17.9	15.9	15.4
Fixed Expense (%)	12.6	13.8	11.6
Depreciation (%)	5.5	5.5	4.7
EBIT (%)	-0.2	-3.3	-0.9
Net Profit (\$M)	-3.4	-12.2	-6.7

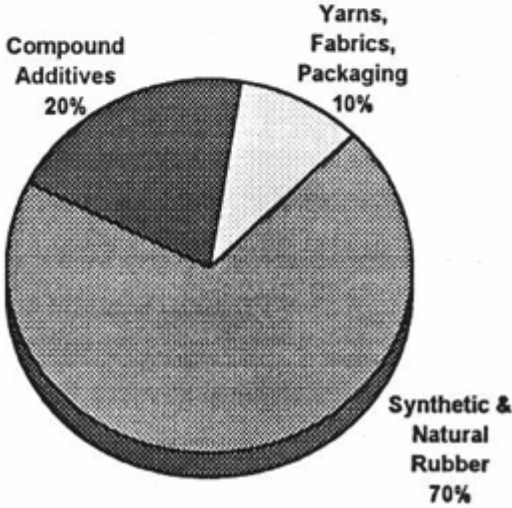
SOURCE: National Rubber Company Files  
(Ted Pattenden)

# EXHIBIT 2



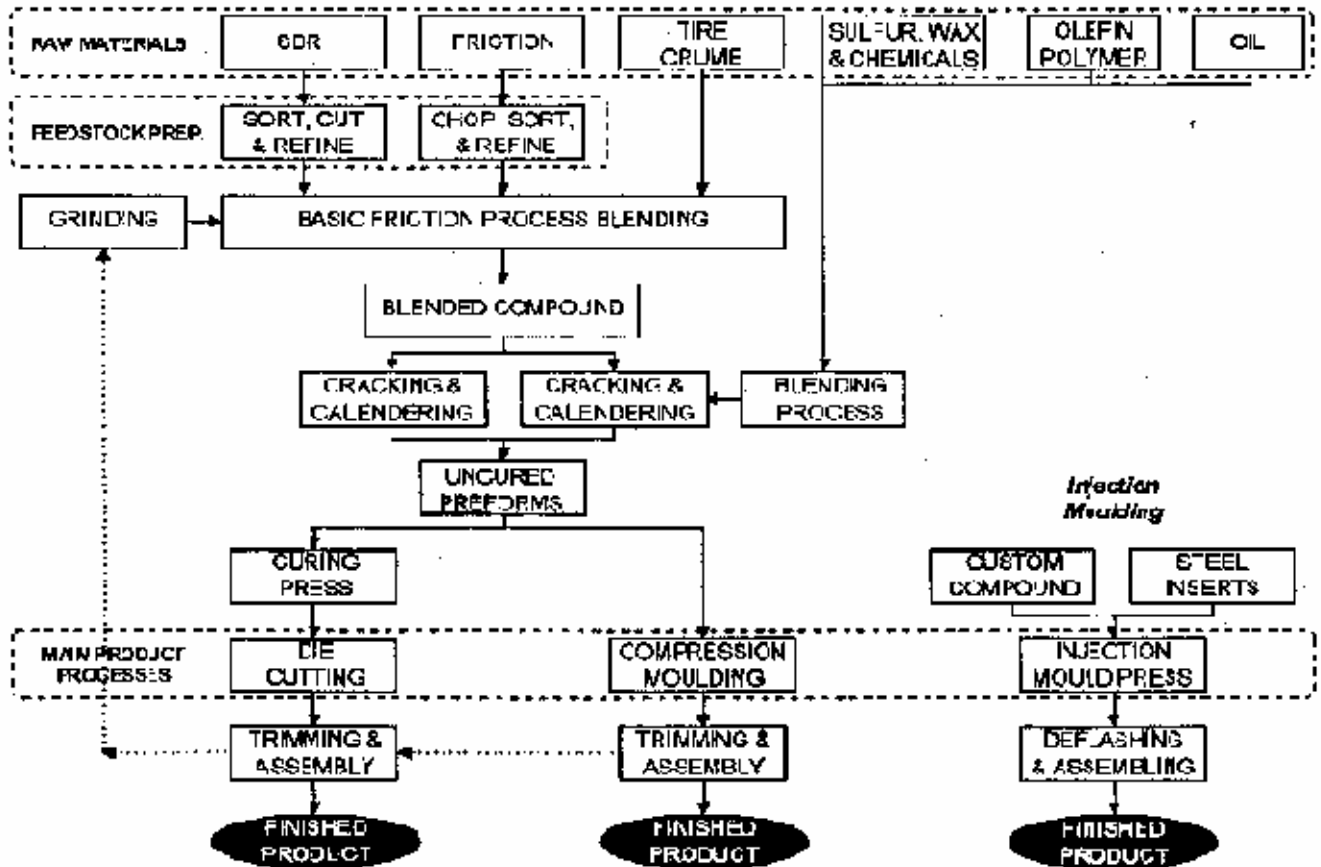
**SOURCE: National Rubber Company**

## RAW MATERIAL COST BREAKDOWN Canadian Industrial Rubber Producers (1991)



# EXHIBIT 3

## Process Flowchart



\* The losses in the 1989-91 period were partly due to extraordinary one-time costs and write-offs as well as high interest charges.

This case was written by James Chisholm and Dr. Perry Bamji under the guidance of Professor John R. M. Gordon and assisted by Dr. J. M. Stewart. This case is intended as a basis for discussion rather than to illustrate either effective or ineffective handling of an administrative situation. Funding for this work was provided by Dr. J. M. Stewart, Executive-in-Residence, Faculty of Management, University of Toronto, from his research fund "World Class Safety and Outstanding Business Performance" through

Project Minerva Canada.

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