

## **Chapter VII**

# **RAILROAD SAFETY PROGRAMS**

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## INTRODUCTION

The management philosophy of both major railroads in Canada, although different in many other respects, appears to be characterized to a considerable extent by an active concern for safety. Managements of both railroads perceive operational safety as directly related to productivity and efficiency. Thus, in both cases, an effort has been made to extend a concern for safety throughout the organizations. Each railroad places emphasis on supervisor accountability for safety as well as on conveying to the individual employees that they have a responsibility for ensuring safety. The Government-mandated Uniform Code of Operating Rules says, in its first point, "Safety is of first importance in the discharge of duty."

Individual responsibility for safety into individual accountability is done in various ways by the two railroads. However, in both case, the significance attached to safety is indicated by the fact that the most senior operating official, the vice president for operations, is responsible to the board of directors for the safety record of the railroad. The Canadian Pacific (CP) requires the vice president for operations to report to its board of directors specifically on the subject of safety four times every year. The Canadian National (CN) requires the vice president for operations to report to its board once a year. In each case, the significant point is that safety is a subject of explicit concern and accountability at the highest corporate levels.

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<sup>1</sup>*Uniform Code of Operating Rules* Revision of 1962, approved and prescribed by the Board of Transport Commissioners for Canada by General Order No. 873, dated the 1.5th day of November 1961. Effective Oct. 28, 1962, p. 2.

## SUPERVISOR ACCOUNTABILITY

Since the highest ranking officials of CN and CP must answer for the safety records of their companies and since both managements appear to be convinced that safety and productivity go hand in hand, they have both implemented systems for monitoring the safety performance of their various divisions. Both managements trace their increased concern for safety in the workplace to about 1974. A representative of CP said that he saw personal injuries in the workplace as an "attitude problem," and in assigning management priority to safety believes that attitudes have changed.

Each railroad is able to get a complete picture of its safety record—both train accidents and

personal injuries—for any particular month as early as 10 days into the following month. Management discussions and decisions flow from this information. A headquarters office in each railroad is charged with accident prevention and so with managing this data system. In CP, when an accident occurs—whether it involves personal injury or property damage—the costs for that accident are charged directly to the budget of the division responsible. CN's system consists of safety performance goals against which supervisors are judged. Goals are set by the joint headquarter/field process. Individual performance of each division is discussed by conference call with headquarters every month. CP has a similar safety performance goal system.

## PREVENTIVE PROGRAMS

In addition to their accident and casualty reporting systems, the data analyses they conduct, and their systematic program of supervisor accountability, the two railroads approach the problem of promoting and maintaining safety in a variety of ways. Generally, the programs implemented by the two railroads are preventive in nature and attempt to integrate safety concerns with other functions. The major programs are:

- inspection and maintenance,
- training,
- research,
- safety committees and other activities, and
- rehabilitation.

Each of these programs is undertaken to some extent by both railroads. However, the emphasis placed on one program over another may differ between the railroads.

### Inspection and Maintenance

#### Track

The railroads inspect the roadbed for a number of reasons. In most cases the inspections have some implications for safety. Neither of the railroads differentiates between safety inspections and maintenance inspections. However, in the track and roadbed area, both railroads agree that safety standards are "minimal" standards. Both claim to maintain their track at a level higher than the standards prescribed by the U.S. Federal Railroad Administration (FRA).<sup>2</sup> A representative of one of the railroads said that if the track gets to the point of being maintained to a level of safety rather than above the minimum safety standard, "then, you have a real problem," in terms of the economic well-being of the railroad. Both railroads apparently recognized that track-related accidents were beginning to be very costly at about the time of the 1971 safety inquiry. Since that time both railroads claim to have expended significant sums to upgrade their track system.

<sup>2</sup>There are no Government-mandated track standards in Canada.

There are specific examples of continuing track improvement programs undertaken by the railroads. For instance, CN has recently instituted a program of installing concrete ties in certain areas where track curvature exceeds two degrees and where there is significant traffic with heavy axle loadings. As another example, CP recently overhauled a difficult section of track along which several derailments took place. Both railroads agree that well-maintained track is the backbone of a productive railroad. However, they acknowledge that the problem of maintaining the roadbed is complicated by increased traffic with heavier axle loadings.

There appears to be a consensus of the two railroads that deferred track maintenance has not been a problem in the same sense that it has in some places in the United States. Canadian railroads recognized in the early 1970's that maintenance of the roadbed had to be a priority item if they were to remain viable. Although track conditions may not have been ideal at that time, the railroads believe that maintenance had not been deferred to the point of causing irreversible problems. However, they acknowledge that this is more true for the mainlines than it is for the branchlines. Many of the branchlines are principally used for hauling grain and are not revenue producing. For that reason, the railroads have consciously limited maintenance on these lines. However, they emphasize that the branchlines are still maintained above a minimum level of safety.

Both railroads are organized by regions. Their inspection force operates four of the regions; however, the headquarters Office of Engineering serves a quality control function, providing the regions with the standards of inspection and performing spot checks to see how the inspection function is being carried out. Track inspections are carried out on a schedule determined by the frequency of track use. One railroad representative stated that although precise inspection requirements exist for different sections of track, it is possible to generalize that the mainline track is inspected at least once every two calendar days. Foremen, supple-



Photo CP Rail

Upgrading —CP Rail spends millions of dollars each year upgrading its track

mented by roadmasters, inspect the track by high rail car, by track motor car or, sometimes, by train looking for specific aberrations.

The inspections reports are used to allocate immediately available resources. The reports also provide some input to decisions about how the projected resources available to the railroad as a whole should be allocated in the long term. However, the two railroads appear to rely on different systems for general allocation of resources. CN relies, to a considerable extent, on a sophisticated data bank that provides information on the condition of the railroad plant, specifically to assist in such decisionmaking. Input to this data bank with regard to track is provided by an inspection report issued after track inspection has been made by track recorder car, which looks at rail surface, gauge, and cross alinement.

### Locomotive and Car Equipment

Canadian railroads are subject to Government-imposed locomotive and car equipment standards. The standards are similar to those promulgated by the U.S. FRA.

One railroad official indicated that a critical difference between the approach of the Canadian railroads to equipment maintenance and that of the U.S. railroads in general is a greater



Photo CN Rail

Upgrading —CN concrete tie and rail installation machine

husbanding of capital. In other words, freight cars are not maintained to standard unless they are called into use or unless there is an influx of money that has not been earmarked for other purposes. Generally, motive power units are inspected every 45 days, with a major overhaul every 4 years. Freight car equipment is inspected every 500 miles, with a major repair every 10 to 12 years.

CN instituted a program in the last 4 to 5 years to analyze a 10-percent sample of the rolling stock twice a year. The analysis includes looking at the equipment both by type and by series. The railroad has found that, by constructing a profile of freight equipment characteristics, sufficient leadtime is given to correct problems before they become severe. The railroad believes that the program prevents accidents. In addition to the safety implications of such an inventory, the program provides a data base to the railroad that helps it in allocating its resources.

Generally, the equipment used by the Canadian railroads is *very* similar to that used by U.S. railroads. However, the locomotives have certain safety features such as a collision post, expanded area of vision, and personal facilities in the cab that are Canadian-designed. Many Canadian freight cars still have plain bearings

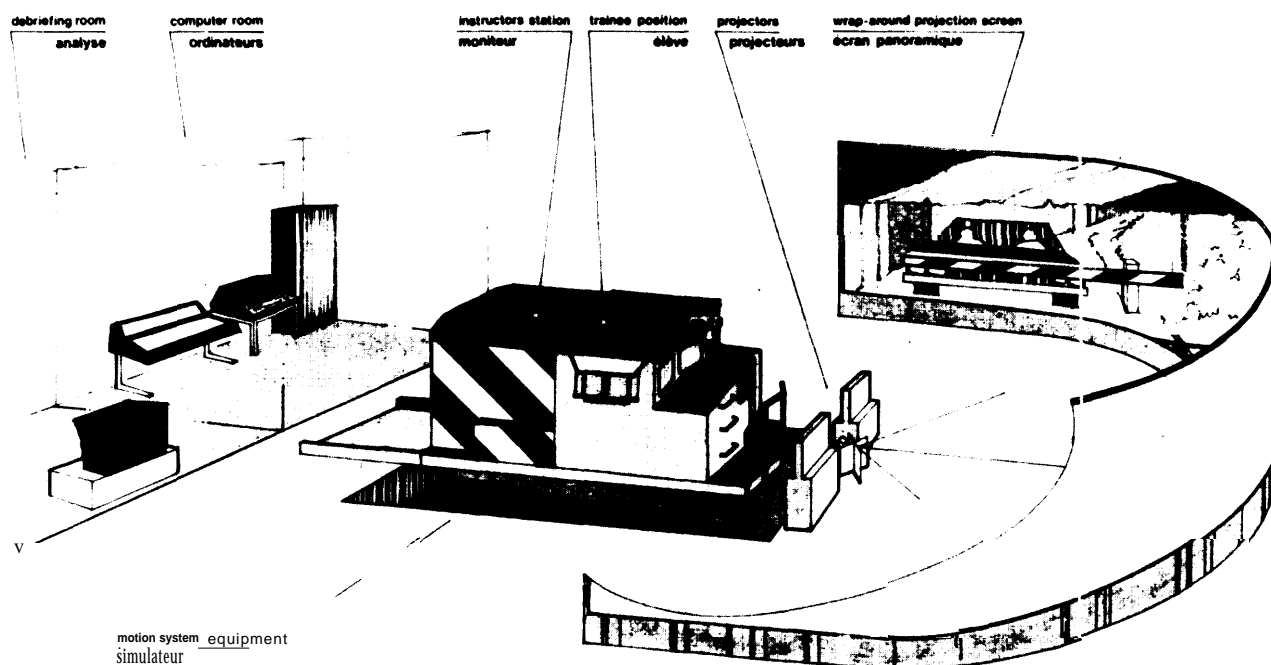
(the failure of which has been related to accidents), but hot box detectors are becoming increasingly common.

As in the case of track, the railroads do not consider it profitable to invest in new equipment for hauling grain. Thus, the Government of Canada itself bought grain hoppers, which the railroads are now using to transport grain. The railroads are responsible for maintaining these cars and replacing them if they are damaged beyond repair.

## Training

Both railroads have instituted several different types of training programs for their employees. The training may be skill-oriented with a specific focus on safety aspects or it may be directed toward safety in a more general way. An example of skill-oriented training that has a specific 'safety focus is the engineering

training school that CN operates at Gimli. This school attempts to replace informal, on-the-job training that locomotive engineers received in the past with a structured program. The engineers receive a 2-month course of which 1 month is concerned almost exclusively with safety. To aid in making the training realistic and transferable, CN built locomotive simulators that it uses during the training. (CP also has two locomotive simulators, which it uses as training aids for locomotive engineers. The simulators are used also as research tools to determine causes of derailments ) After the engineers have completed the training program at Gimli, they must go through a period of on-the-job training and other qualification procedures before they can become engineers. Representatives of CN state that locomotive engineers trained at the school have considerably better safety records with regard to human failure accidents than do engineers not trained at the school.



Locomotive and Train Simulator



Simulateur

The school is located at the site of a former air force base. It has a permanent staff of 28. An estimated 1,500 employees attend the school each year. In addition to locomotive engineers, training programs are also conducted for telegraphers, train dispatchers, and railroad officers.<sup>3</sup> The school is beginning retraining activities to reinforce and refresh knowledge gained previously by employees. CN estimates that it spends about 1 percent of its transportation budget on its training activities.

An important aspect of training for both railroads is the promotion of safety consciousness among employees. Both railroads give supervisor training courses in safety in order to inform employees about the safety implications of various aspects of employee management and railroad operations. This training emphasizes the responsibility that the railroads assign to supervisors for the safety records of their units. The training efforts result in a greater level of safety consciousness in both general and specific terms. For instance, in its operations and maintenance supervisory safety training program, CN instructs its supervisors in such diverse areas as accident problems, human relations, maintaining interest in safety, industrial hygiene, material handling and storage, and fire protection.<sup>4</sup> The supervisors are told, "*Accident prevention and efficient production go together . . .* Implementing the company program, making sure his work area is safe, and that his people work safely, is an integral part of the supervisor's responsibility."<sup>5</sup> CP emphasizes training for first- and second-line supervisors, dispatchers, yardmen, trainmen, and enginemen in order to prevent accidents and promote safety.

## Research

Both railroads are engaged to some degree in research activities. The most extensive rail re-

<sup>3</sup>The *Uniform Code of Operating Rules* requires that railroad officers be re-examined for proficiency in the rules at periods of 2 (for operating officers) or 3 years. This requirement extends through the hierarchy to the vice presidents for operations.

<sup>4</sup>Other items covered in the course are: instructing safety, personal protective equipment, industrial housekeeping, machine guarding, hand tools, and power tools.

<sup>5</sup>*Canadian National Railways Operations and Maintenance, Supervisory Safety Training Program*, pp. 1-2.

search carried out by any entity—Government or private—in Canada, is conducted by CN. A description of the research activities of the two major railways follows.

CP's research is directed primarily toward the application of new technology to continuing problems, such as research on traction motor performance. It is also reviewing technology for application in the Canadian environment, such as the field trials being carried out on self-steering freight car trucks. In addition, CP has also had some research projects with outside groups such as the National Research Council and various universities.

CN's research program began in 1945 when the railroad established the first rail research in Canada. In 1965, CN built an integrated research facility in Montreal. The bulk of CN's research work now is conducted for the rail division, emphasizing track/train dynamics. In addition, the CN research centre is responsible for quality control of materials. Under this program, 18 inspectors are employed by CN to inspect those materials critical to the operation of the railroad; these materials are inspected in the plant, prior to their delivery to the railroad. (CN also requires that suppliers themselves maintain adequate in-plant inspection and monitors this activity.) The inspection reports are sent to the research centre for analysis to detect any trends that might be developing. Another major activity of the research centre is to conduct failure analysis on all components of the railroad that fail and are involved in an accident. The centre looks for trends as well as for specific aberrations.

At the present time, in addition to the ongoing activities mentioned above, CN is conducting research in the following areas that relate specifically to safety:

- fatigue life of track structures,
- fatigue life of bridges,
- hunting of vehicles,
- radially articulated trucks,
- accident investigation—conducted by hybrid computer to simulate the accident and

determine what might have occurred under a variety of conditions, and

- alerter for train crew.

Further, in response to specific problems that have arisen, CN research has been conducted to modify six-axle trucks and to address “rock and roll” problems on the track.

## Safety Committees and Other Activities

Both railroads have a system of safety committees<sup>6</sup> established in the field by supervisors in the different departments, such as the car department or the motive power department, at the operating level. These committees have been a cooperative effort between labor and management and have been used to promote and to monitor safety practices. In general, the committees do a certain amount of accident investigation, observe jobs performed, and make safety recommendations to management. In addition, for instance, CN encourages its safety committees to conduct safety audits, for which it provides forms. CN uses the audits to monitor the safety programs of the various supervisors. CP has a similar safety audit program.

Both railroads indicated that employee involvement in activities that give them responsibility for their own safety has paid off in terms of fewer accidents. Peer pressure and better communication between labor and management about the potential for accidents are seen as the primary contributing factors to the success of the safety committees.

The railroads have detailed requirements for situations in which protective clothing—such as goggles, protective footwear, hard hats, and gloves—must be worn. The railroads generally either provide the protective equipment for their employees or they contribute to its purchase. In addition, CN maintains a list of suppliers, approved for the safety performance of their products, from which all CN purchases are made. Award programs (e.g., the annual certificate program in which CP recognizes groups of em-

ployees who have had no lost-time injuries and the Golden Shoe Club of CN for employees who avoided injury because they were wearing protective footwear) are used to some extent to encourage the use of protective equipment and general safety practices. The railroads also use a variety of safety films, posters, pamphlets, and information sheets to direct the employees' attention toward safety matters in general as well as the importance of wearing appropriate garb for different work situations.

When an employee is involved in an accident, an attempt is made to analyze the reasons for the accident. In some cases, an employee judged to have been negligent, is rebuked or disciplined for having been involved in the accident. However, the approach of the railroads is not merely disciplinary. Its emphasis is to determine ways of preventing accidents in the future.

In addition to the employee-focused safety programs, CP has a program that is aimed at the public. CP rail police visit schools located near railroads to instruct on the dangers of trespassing on railroad property. CP also has a snowmobile safety program to help reduce snowmobile/train accidents.

## Rehabilitation Programs

The Uniform Code of Operating Rules states, “The use of intoxicants or narcotics by employees subject to duty, or possession or use while on duty is prohibited.”<sup>7</sup> The railroads indicated that until recently anyone caught “drinking on the job,” for instance, was summarily dismissed. Today, this is still true for anyone involved in train operations who is found to be under the influence of alcohol or narcotics while on the job. However, several years ago, both railroads recognized that employees with alcohol or drug problems should be assisted with these problems. As a consequence, both railroads have rehabilitation programs in which the troubled employees can get professional help. The railroads are working with the local union representatives to encourage employees with alcohol or drug problems to seek the help that is

<sup>6</sup>The Department of Labour requires the establishment of safety committees if the Department finds them necessary. However, the railroads' safety committees predate this legislation.

<sup>7</sup>*Uniform Code of Operating Rules, op. cit.* p. 3.

available. Although the programs have been in effect for several years, a representative of one of the railroads stated that it does not appear

that alcohol and other drug-related accidents have been statistically reduced since the program's inception.

## PARTICIPATION IN REGULATORY EFFORTS

Both CN and CP believe that one of the significant outcomes of the RTC safety inquiry of 1971 was the formation of the tripartite Railway Safety Advisory Committee. This committee provides a forum for management, labor, and Government to discuss mutual problems and to put forward their varying points of view in a nonadversarial situation. One of the major tasks of the Railway Safety Advisory Committee (see chapter V for discussion of committee organization) is to "integrate divergent viewpoints and provide the Railway Transport Committee with a consentaneous exposition of specific actions required for purposes of improving levels of rail safety."<sup>8</sup> This purpose is carried out to a large extent by a series of technical committees, which report to the Railway Safety Advisory Committee. The Railway Safety Advisory Committee reviews suggested changes in the rules and regulations that come from the committees, in addition to advising generally on railway safety policy.

Both railroads and labor have representatives on each of the technical committees as well as on the advisory committee itself. The railroads recognize that the tripartite forum is one way for the day-to-day concerns of the railroads to be integrated into regulatory policy consideration and so to help ensure that the resulting policies are realistic from a railroad operations point of view.

Nonetheless, while both railroads indicate their support for the committee, they also both indicate that the accomplishments, amount of cooperation, and consensus achieved to date vary with the subject matter. For instance, a proposed revision to the power brake regulation was developed in a technical committee with representatives from labor, railroads, and Government participating. From the railroads'

point of view, however, the product was not adequate, and CN and CP, working together, drafted a different proposal that they then submitted to RTC for consideration.<sup>9</sup> In the area of dangerous commodities, however, both railroads believe that significant progress has been made using the technical committee structure and the advisory committee forum. There has been agreement, for instance, about the usefulness of the Hazardous Information Emergency Response (HEIR) form, which suppliers are required to furnish railroads with each shipment of dangerous commodities and which railroads are required to carry. This form gives the railroad employees information about what steps to take if the shipment of dangerous commodities is involved in an accident. The initiative for the HIER form came from a technical committee of the Railway Safety Committee, with the active support of the railroads.

Both railroads seem to view the regulatory process with regard to safety as nonthreatening. Neither railroad expressed the view that it is not adequately consulted or that it does not have adequate opportunity to participate in the formulation of regulatory safety policy. They view their relationship with the Government as largely nonadversarial and view compliance with Government-imposed safety requirements as a serious responsibility. The incentive to comply with various safety requirements is not the avoidance of penalties, since the Government has not and is not viewed as likely to assess major penalties against the railroads; rather, the incentive seems to come from a combination of the knowledge that operations may be shut down if a violation is considered serious enough, and of the respect for what one railroad official referred to as "the law of the land."

<sup>8</sup>"Railway Safety Advisory Committee Organizational Structure," October 1978.

<sup>9</sup>The outcome of the revision to the power brake regulation is still pending. The railroads proposed revision was submitted in the first part of October 1978.