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## Quality Circles in Transportation: The Milwaukee Road Experience

### INTRODUCTION

During the past several years many factors have changed the nature but not the importance of labor-management relations in transportation. The weak economy, high unemployment, regulatory reform, and changes in government policies and federal funding have changed the traditional frames of reference used by both management and labor in dealing with one another.

In an effort to improve productivity, some companies have begun to experiment with joint labor-management programs of various types, including forms of so-called Japanese-style management. Among these programs is a technique called the quality circle (QC). Although begun in the 1960s as an effort to improve quality control in manufacturing companies such as Honeywell, Lockheed, and IBM, the QC concept has been applied more recently to service-oriented industries. Estimates place the number of companies currently using quality circles in the thousands. Several airlines<sup>1</sup> and the Chicago, Milwaukee, St. Paul, and Pacific Railroad (the Milwaukee Road) have successfully installed quality circles.

While it is possible for quality circles to differ in structure and implementation, this paper outlines the "ideal" quality circle concept, how it developed, its main objectives, and how the process works. Next the

paper examines the recent experience with quality circles at the Milwaukee Road. The Milwaukee Road Quality Circles (MRQC) Project is the first of its kind in the railroad industry. Special attention is given to the results of the MRQC Project after its first year of operation. This project provides valuable insights for other transportation companies, especially railroads, considering this kind of labor-management program. The final portion of the paper briefly discusses potential problem areas of quality circles and how they might be avoided.

### QUALITY CIRCLE DEFINED

A quality circle is a group of people who meet together voluntarily on a regular basis to identify, analyze, and solve problems in their work place. A specially trained first-line supervisor leads the circle meetings. Circle membership can range from three to fifteen, with six to ten members being the ideal size. The circle should be small enough that each member can participate at each meeting. Weekly meetings usually last approximately an hour and are held on company time.

Credit for the development of the quality-circle concept is attributed to Dr. Kaoru Ishikawa at Tokyo University. Under the sponsorship of the Union of Japanese Scientists and Engineers (JUSE), Dr. Ishikawa tied the theories of Maslow, Herzberg, and McGregor together with the quality sciences introduced by Deming and Juran. The first quality circles were registered with JUSE in 1962.<sup>2</sup> Although first used extensively in Japan, the origins of

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QC's are Western. The quality-control circle, as it was originally called, was actually an educational tool. This runs counter to the myth that it primarily developed as a participative management tool or that it is unique to the Japanese culture.<sup>3</sup>

There are some important differences between quality circles and other programs such as quality of work life, participative management, and organizational development. Unlike most other programs, QC's are narrow in focus. QC's do not involve an interdepartmental effort. Their emphasis is on training within a single department. Circle members select the problems to be solved from their own work site and analyze those specific problems. When appropriate solutions have been developed, circle members present an implementation plan to middle management.<sup>3</sup>

Some of the objectives of quality circles are: to reduce errors and enhance work quality; to inspire more effective teamwork; to improve communication among workers and between workers and management; to promote job involvement; to increase employee motivation; to build a problem-solving attitude among workers; to promote personal and leadership development; to reduce absenteeism; and to develop safety awareness.<sup>5</sup>

#### OPERATION OF A QUALITY CIRCLE

There are four basic components to a quality circle program.

*QC Member*—an employee who volunteers to participate in a QC by attending weekly meetings and doing his/her share of the work involved in solving the problems chosen.

*QC Leader*—A first-line supervisor who coordinates, convenes, and conducts the quality circle. Leaders undergo intensive training in QC's and in running meetings.

*QC Facilitator*—an employee who assists the leader in the operation of the QC. The facilitator acts as a back-up leader, helps train QC members, observes meetings, acts as liaison to labor and management, obtains technical resources needed for problem solving, and serves a liaison to the QC steering committee. The facilitator should

report to a high-level company position and ideally should be a full-time facilitator.

*QC Steering Committee*—a committee that sets goals and objectives for the QC. The committee sets operational guidelines and controls the rate of circle expansion. Members should come from the major departments of the company and from the unions involved. The steering committee acts as a policy-making mechanism to handle concerns that arise during the implementation of quality circles.<sup>6</sup>

After the circle has been formed by volunteer members and a trained leader, the first step is problem identification. Usually several problems are identified. Circle members, managers, staff, or technical experts may suggest problems, and QC members then select a problem to analyze. At the weekly meetings the QC members, under the leader's guidance, analyze the chosen problem through various problem-solving techniques such as brainstorming, cause-and-effect analysis, Pareto analysis, and other methods. These analyses often result in a solution to the problem. Circle members formally present their recommendations to management for review, and management decides on the course of action to follow (Figure 1). Approximately 80 percent of the solutions presented by quality circles have been implemented.<sup>7</sup>

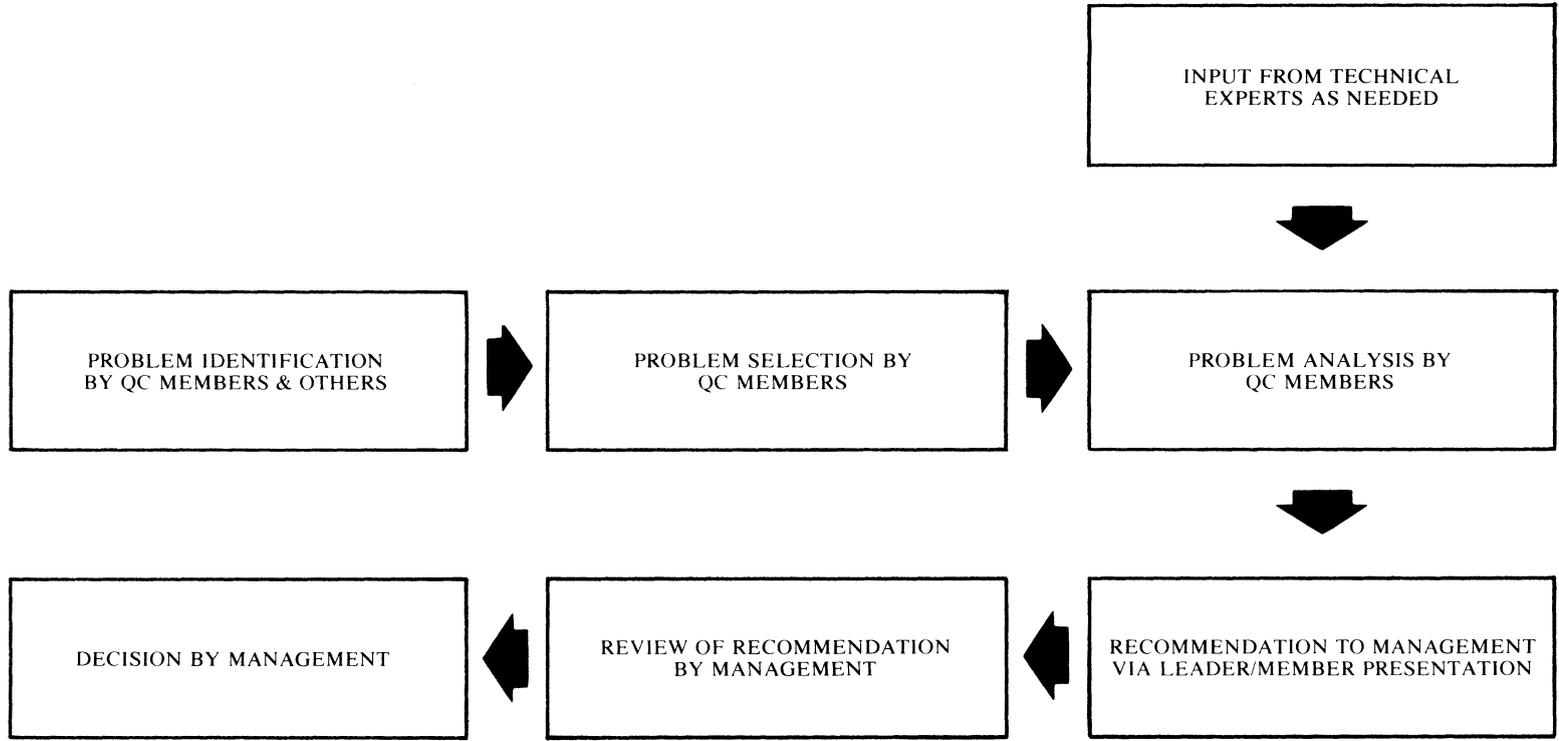
Many different characteristics are indicative of successful quality circles. Among the most important are:

1. Approval and support of upper management is needed for an atmosphere of trust and communication to develop.

2. Participation in quality circles must be strictly voluntary; members should not feel coerced to join a circle or to stay in one.

3. Quality circles must have clear goals and objectives, and meeting time must be used effectively so that members do not feel that meetings are a waste of time—theirs or the company's.

4. Training is an integral part of the program. Members should be similarly qualified and trained. Leaders must be trained in running effective meetings and encouraging member participation. Everyone must be prepared for meetings in advance.



**Figure 1**  
**The Operation of a Quality Circle**  
Source: The Milwaukee Road

5. There is a need for self-assessment of the circle. Measurement of results is important. Accurate minutes and results of meetings must be recorded.

6. There must be a commitment to problem-solving. Members must analyze problems, not simply identify them. Results should be applied to real business solutions.

7. A "people-building" philosophy is of paramount importance. Management should express concern for the well-being of employees and encourage them to participate in quality circles not simply to increase productivity or save the company some money, but to develop the employees' capabilities and enrich their work experience.<sup>8</sup>

#### QUALITY CIRCLES AT THE MILWAUKEE ROAD

In 1981 the then bankrupt Milwaukee Road became the first railroad to undertake a quality-circles project. Included in the Interstate Commerce Commission's 1980 mandate for the reorganization plan was the stipulation that the railroad use a proven strategy to improve labor productivity. The Labor-Management Action Group (LMAG)<sup>9</sup> of the Milwaukee Road appointed an oversight committee in March 1981 to investigate the alternatives available in the area of labor-management cooperation. With the help of ECR Associates, a consulting group, the LMAG oversight committee conducted a feasibility study of alternatives and ultimately chose the present quality-circles project.

Some of the reasons for choosing the program were: the system-wide nature of the project; a recorded return on investment for other QC projects of between 3 to 1 and 6 to 1; a distinct set of policies and procedures for the program as well as a specified evaluation format;<sup>10</sup> and the true joint governance of the project, with labor and management participating equally at all levels. (Labor representatives are involved in the facilitation function and are also responsible along with management for evaluating all aspects of the project.) The LMAG oversight committee guides the project's development.

Once the decision to implement quality circles was made, two local steering committees were established in Chicago and Milwaukee to develop and carry out the QC's. Equal numbers of management and labor representatives were appointed to the steering committees according to their positions in the areas where QC's were targeted for introduction. The main duties of the steering committees are to recognize QC achievements, listen to appeals, engage in future planning for QC's, publicize the program within the organization, act as trouble-shooters and provide assistance where necessary, and evaluate the circles' progress.

Extensive training differentiates QC's from other more general forms of labor-management cooperation. Before the quality circles were initiated, a careful system of briefing employees and managers about the program was undertaken. In addition to training members, leaders, and facilitators, the MRQC project provided orientation sessions for nonparticipants and training for steering committees, including evaluation and monitoring training.

Certain locations were targeted for the first quality circles. However, circles were begun only if the following conditions were met: (1) the first-line supervisor volunteered to be a QC leader after successful completion of leader training; (2) a volunteer leader was chosen from a random name drawing if there were more leader volunteers than QC's slated for a particular location, and (3) five or more members in each targeted location volunteered to participate in a QC. All criteria were met and the first eight QC's began as planned. In September 1981, four circles formed in the Finance and Accounting Department in Chicago, followed in December 1981 by four additional circles in Milwaukee: one in Regional Finance and Accounting, one in the Muskego Yard, and two in the equipment shops.

The Chicago circles addressed problems of overpayments to new employees, backlog of demurrage records, insufficient training of employees, and excessive office clutter resulting in inefficiency. Some of the issues analyzed in Milwaukee were cars

moving without waybills, insufficient time to collect overdue bills, and excessive axle damage while transferring locomotives into work pits.<sup>11</sup> Solutions for these problems were proposed to management from April to November, 1982. Projected direct savings from the circles' proposed solutions have been estimated at \$997,103.<sup>12</sup> Management is currently implementing all of the circles' recommended solutions.

ECR Associates, the consulting group which helped establish the quality circles program on the Milwaukee Road, submitted a formal evaluation report to the LMAG in September 1982. The report summarized the project's first several months and identified three major problems in implementation and development of quality circles.

The first problem involved the Chicago Finance and Accounting Department's high supervisor-to-employee ratio. Because of the high ratio it was difficult to define the QC work site and the employee population from which to draw members. The suggested solution was for the steering committee to suggest logical groupings after reviewing organizational charts of the department.

The second problem which arose in the Milwaukee shops concerned the procedure to follow when leaders or members were bumped from the location of their QC as a result of seniority considerations. The recommended solution was for the original members to stay with the QC until the first management presentation in order to preserve continuity.

The final problem involved a lack of effective pacing of the circles' progress from member training through their first projects. This was the most difficult problem to solve because there were no precedents in the railroad industry to use for guidance. Ultimately it was suggested that the leader and facilitator of each QC be responsible for mapping the first few meetings in advance to ensure efficient use of meeting time.

### RESULTS OF THE MRQC PROJECT

The consultants' evaluation report of September 1982 concluded that the quality circle program at the Milwaukee Road had

been successful. In addition to the direct dollar savings noted above, there were also significant results in the areas of labor-management cooperation, quality of working life, and other business and organizational considerations.

Labor-management cooperation formed a cornerstone of the MRQC project, as a guiding principle and basic design concept. In this area the impact was positive despite difficult economic conditions. Eighty percent of the QC members felt that labor-management relationships had improved because of quality circles. All leaders, facilitators, LMAG staff, and education and training staff member concurred. All levels of participants felt that dialogue between labor and management was better because the QC project had produced a greater commonality of goals. A reduction in the number of grievances brought by the union since the advent of the project is further evidence of improved labor relations.

The majority of members, leaders, and LMAG members noted a positive impact on working conditions within the company as a result of quality circles. Among the areas cited as showing positive results were new training, greater safety consciousness, increased communications, and cleaner work areas. As examples of a more general impact on the quality of their working lives, a majority of QC members cited improved efficiency, a better image for the Milwaukee Road, increased recognition within the company for QC members and leaders, a positive impact on the relationships among coworkers, increased job satisfaction, and a better work environment.

The quality circles project showed results in other areas that could not be grouped into a single category. Some of the results noted in the evaluation report were the development of future supervisory personnel through QC member participation, the use of QC problem-solving techniques for other purposes within the railroad and the unions, and mitigation of interdepartmental barriers through QC project development. The report also projected positive impacts on employment, vendors, and customers, but there was not enough data to confirm these projections.<sup>13</sup>

In April 1983, Barry Cornwell, Director of Human Resource Development at the Milwaukee Road, made some additional observations on the results of the quality circle program. The primary points noted were:

(a) Middle managers should be brought into the process in departments where QC's are planned. Too often this level of management was not involved until the circle made its project presentation. If a middle manager is brought into the process earlier, he or she may be able to help the group avoid some problems in its analysis.

(b) Management must avoid implementing circles in areas of projected labor cuts—this creates a negative impression among workers about the real motivation behind quality circles.

(c) Often managers felt isolated from the circles because too much emphasis was placed on employee initiation of suggested problems for discussion in circle meetings. While circle members choose the problems to be analyzed and solved, anyone in the organization should be encouraged to suggest potential problems.

(d) The facilitator and leader must carefully plan what each week's meeting should accomplish. This encourages goal achievement. Currently the active quality circles at the Milwaukee Road have their first thirty-two sessions charted in advance.

(e) If possible, facilitators should not come exclusively from the personnel department. This creates the impression that QC's are simply a "personnel program."

(f) Some reward system should be established for managers with operating QC's in their departments. This gives them a stake in the circles' success.

The generally favorable experience with quality circles at the Milwaukee Road resulted in the establishment of nine new circles in June 1983. (Eight facilitators were outside the personnel department.) Other railroads have expressed interest in obtaining information about the MRQC project, and Conrail recently began a project modeled on the MRQC project, using the same design principles and the same consulting group.<sup>14</sup>

### CAVEATS FOR USING QUALITY CIRCLES

Failure to observe some of the potential hazards may undermine the successful outcome of the program. The following are some difficult areas to be aware of when instituting a quality circle program:

1. Training must be ongoing at all levels. This keeps current participants up to date in problem-solving skills and prepares new participants.

2. Quality circle members may begin to lose interest in the project when they do not see fast results. Early optimistic enthusiasm may flag. Part of the leader's role should be to stress that QC's do not seek "quick fix" solutions and to caution members not to expect too much too soon.

3. Collective bargaining issues must not be discussed in circle meetings. One of the fastest ways to undermine QC's is to allow them to become forums for manipulating contract issues.

4. Participation in QC's does not indicate management permissiveness. Management retains the authority to accept or reject solutions to QC projects and to oversee their implementation.

5. Lack of specificity leads to disillusionment and frustration. Meetings must be well organized and goal oriented so that circle members never feel that meetings waste their time or the company's.

6. Membership stability is necessary. Members need a sense of continuity and "teamwork" when pursuing problems.

7. Membership in the program must be voluntary. At no time should potential circle members or leaders feel pressure to participate.

8. The QC program must be based on trust and open communication. It should not be used in an attempt to undermine labor unions. Positive reinforcement and middle-management participation should be encouraged.

Questions have been raised concerning union response to quality circles. Response from the various unions involved thus far has been mixed and inconclusive. The key lies in the manner in which the QC program is presented to the unions and the degree of

joint decision-making in the execution of the program. If a union has reason to believe that a QC program has been implemented to circumvent the union's effectiveness, then its response will be extremely hostile.<sup>15</sup> If, instead, the union plays an equal role at every policy-making level, as in the case of the Milwaukee Road, then the union response will be supportive, and often will make local union leaders more popular with the workers.

#### POTENTIAL USE IN TRANSPORTATION INDUSTRIES

When instituted wisely the quality circle can be a valuable technique for improving labor-management relations in the transportation industries. The idea is not as revolutionary as it may first appear; since the 1920s joint labor-management programs have been used for problem-solving in the railroads.

The Milwaukee Road's favorable experience to date exemplifies some of the gains to be achieved through a well-planned, well-monitored, jointly managed QC program. These gains can take the form of direct dollar savings, improved labor relations, better working environment, and company image-building. Many variations are possible apart from the program outlined here. Undoubtedly each of the airline companies involved in quality circles has focused its program differently to achieve its desired goals. Flexibility is one of the advantages to quality circles. Programs can and should be designed to meet a company's individual needs.

Quality circles are not without their shortcomings. Some of the cautions discussed above only hint at what can go wrong if careful attention is not given to the planning, design, training, implementation, and monitoring of a QC project. Neverthe-

less, the increasingly competitive transportation environment and the changing nature of labor relations within the transportation industries to one which stresses improved productivity and more cooperation between labor and management may make the quality circle an attractive alternative for the future.

#### ENDNOTES

<sup>1</sup> Among those airlines using quality circles are American, Eastern, Pan Am, Continental, and Federal Express.

<sup>2</sup> Donald L. Dewar, "Quality Circles: Answers to 100 Frequently Asked Questions" (Red Bluff, Calif.: Quality Circle Institute, 1979).

<sup>3</sup> Edwin G. Yager, "The Quality Control Circle Explosion," *Training and Development Journal*, April 1981, p. 98.

<sup>4</sup> Yager, p. 102.

<sup>5</sup> Dewar.

<sup>6</sup> Information packet distributed to Milwaukee Road employees to familiarize them with QC concepts.

<sup>7</sup> Elaine Rendall, "Quality Circles: A Third Wave Intervention," *Training and Development Journal*, March 1981, p. 29.

<sup>8</sup> "Editor to Reader: Quality Circles," *Personnel Journal*, June 1981, pp. 424-425.

<sup>9</sup> The LMAG is a joint decision-making body consisting of the railroad's president, four vice-presidents, and the general chairmen of the thirteen railroad unions representing the company's workers.

<sup>10</sup> Interviews with Cynthia Burton, Vice President ECR Associates, March 9, 1982, and Barry M. Cornwell, Director of Human Resource Development, The Milwaukee Road, March 18, 1982.

<sup>11</sup> Milwaukee Road Quality Circles Project: Project Evaluation Report. Submitted by ECR Associates, Laytonsville, Maryland to Labor-Management Action Group, the Milwaukee Road, September 1982.

<sup>12</sup> Data compiled by the Milwaukee Road, Spring 1983.

<sup>13</sup> MRQC Project Evaluation Report.

<sup>14</sup> Interview with Barry M. Cornwell, April 21, 1983.

<sup>15</sup> See, for example, *Training and Development Journal*, April 1981, p. 104, *Fortune*, August 24, 1981, p. 90, *Business Week*, January 11, 1982, p. 108, for discussions of union responses to quality circles.