QUALITY CIRCLES AT WILFORD HALL U.S.A.F. MEDICAL CENTER, LACKLAND AIR FORCE BASE, TEXAS: SOME PRELIMINARY FINDINGS

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The study investigates the impact of quality circles on job performance, which include job satisfaction and work performance variables, and also researches where quality circles would optimally apply in a military medical center. The study compiled raw data from an implemented quality circle program and in cooperation with the Air Force Institute of Technology, presented preliminary information for a wider-ranging Department of Defense study. In conjunction with the group testing, direct observation and questioning determined what organizational benefits were derived from quality circle groups. The study concluded that quality circles appeared to enhance the effectiveness of the work group. The group pulled together to provide solutions to management problems. It increased the individual's pride and developed a positive working environment. Though only preliminary findings, the writer feels that the evolution of quality circles would benefit and improve the quality of health care being delivered. Keywords:

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CHAPTER I

INTRODUCTION

Background Information

Increasing evidence indicates that management in both public and private sectors is becoming extremely interested in quality circle (QC) programs as a means to enhance productivity and boost employee morale. The fact that quality circles have spread to approximately 1,000 firms since they were first introduced by Lockheed in 1974 certainly suggests that significant amounts of time and resources are being expended in the participatory management philosophy embodied in quality circles.[1]

While the literature and the body of knowledge are growing with respect to QCs, there remains very little empirical evidence to demonstrate the effectiveness of the movement upon such factors as job satisfaction and productivity. The literature, as noted elsewhere in this paper, is very subjective in its assessment of the effectiveness of quality circles.

QCs have spread rapidly throughout industry as a new alternative in participatory management. In the main, QCs have been reported to be very effective in direct production-line settings such as in the electronics and the automotive industries. Much less has been reported, however, on the effect of quality circles in service industries, particularly those involved in health care.

In 1981, at the Third Annual International Association of Quality Circles Conference held in Louisville, Kentucky, six persons met to discuss QCs in a health care setting. In St. Louis, Missouri, in March, 1982,

over 100 attended a dedicated health care day designed to present various "unique" aspects of practicing QCs in hospitals. This indicates growing awareness in the health care sectors, and an application of the QC process to quality assurance and unit nursing has even been addressed. What is needed now is investigation into the effectiveness of this new participative management philosophy using a standard and accepted research methodology.

Conditions Which Prompted the Study

In any military health care institution, one of the items that consumes an extraordinary amount of personnel resources is the monitoring of the quality of care. This is particularly important in light of the fact that patient well-being is of the utmost concern in a hospital. Additionally, the Air Force Inspector General (IG) and the Joint Commission on the Accreditation of Hospitals (JCAH) insures compliance with established quality assurance regulations by regular accreditation surveys and inspection visits. Because of this vital interest in the quality of health care, it follows naturally that hospitals would be interested, if not more than interested, in new innovative techniques to improve management of health care resources and patient care. QCs present an opportunity to supplement an existing system with an effective way to improve morale and increase productivity and quality at the same time. Wilford Hall U.S.A.F. Medical Center, with its many divisions and its specialized practice of medicine, provides an excellent medium for the testing and the implementation of a program such as that of quality circles.

The administrator of Wilford Hall has been interested in the participative management philosophy of quality circles for a number of years,

and the need for a graduate research topic on the part of this writer provided a potential for the establishment of the program. Additionally, the Air Force Institute of Technology (AFIT) School of Systems and Logistics has been named as the central point within the Department of Defense to teach, consult, and carry out research on quality circles. (A list of QC resource people and institutions/organizations is provided in Appendix A.) Wilford Hall and AFIT have entered into a mutual research effort to provide some empirical data relative to the effectiveness of QCs in a health care environment.

Statement of the Applied Research Question

The purpose of this paper is to present some preliminary results of an investigation into the impact of quality circles in a health care setting, particularly in the largest U.S.A.F. medical center, Wilford Hall. More specifically:

> What effect does the implementation of quality circles have upon such variables as job satisfaction, work group performance, self-performance, and productivity of personnel in a large military medical center?

Further, in the organizational framework:

> Do quality circles work in a health care institution such as Wilford Hall, and, if so, in what areas do they work best?

The research into quality circles at Wilford Hall U.S.A.F. Medical Center is being conducted jointly by Wilford Hall and the School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio. While AFIT is providing teaching, consultation, and guidance to Wilford Hall for its quality circle program, Wilford Hall is providing to AFIT all raw information gleaned from the implementation of quality

circles. AFIT, in turn, is using the information to conduct wider ranging research within the Department of Defense. The results presented in this paper are preliminary at best. The full research effort is estimated to encompass eighteen months from start to finish. Since, at this point in time, Wilford Hall has just six QCs (two of which are in training), the experience with them represents a starting point only. Many more months of study and practice must be concluded before a definitive decision can be made. Hence, this research will provide only preliminary estimates as to the effectiveness of the QC process.

Limitations

There are definite limitations which must be taken into account in a study of this type. Campbell and Stanley refer to the internal and the external challenges to validity.[2] Internal validity refers to what effect, if any, the experimental treatments (quality circles) have upon the study. External validity refers to generalizations made from the study to the health care sector: Are they valid? To what populations do the practice effects of quality circles apply? The following items must be considered when referring to internal validity:

1. Environmental factors--Some events which happen between the observation points (other than the implementation of quality circles) may lead one to draw erroneous conclusions. Such items as increased workloads, staffing and mission changes, and the like must be taken into consideration.
2. Passage of time--The maturation of the groups may affect assumptions drawn about the groups in the research. The passage of time becomes a medium for changes in ideas, philosophy, and attitude.

3. Testing--The effects of the testing itself may cause erroneous conclusions to be drawn. It is well established that taking the same survey or test a second time has some effect upon the responses on the second test.
4. Instrumentation--If the measurements (surveys) are changed between the pretests and the posttests or the persons doing the measuring become more experienced, an effect upon validity may be produced.
5. Statistical regression--When groups are selected for experimentation based upon pretest scores (e.g., high and low admission scores for college), in many cases, the posttest scores may be higher for the low pretest group and lower for the high pretest group. In other words, the scores regress to the mean. This particular phenomenon does not apply to this study since the groups evolved voluntarily; they were not selected based upon their extreme test scores.
6. Selection--A threat to internal validity may be effected by an innate difference between groups that would account for the difference measured on the posttest. For example, one group might be brighter than the other, or one group might grow bored with the experimental effort (similar to maturation).
7. Mortality--A threat to internal validity may be effected by persons who drop out of a group before the posttests are administered. This would result in different persons taking the posttests.[3]

External validity refers to the causal relationships which can be identified from one sample population and generalized to cause and effect in different persons, settings, and times. Specifically, it refers to the ability to make those generalizations.[4] Can the effectiveness of quality

circles at Wilford Hall be generalized to other military and nonmilitary health care settings? Tests of the extent to which one can generalize across populations, settings, etc., are actually statistical interactions, of which there are three types:

1. Interactions of selection and treatment--This threat to external validity refers to groups of persons. About which categories of persons can one generalize from quality circles? Will the fact that most persons in this research project are military affect the cause-and-effect relationship which one can draw with a civilian group? Will it be possible to generalize about other groups within Wilford Hall? Does the fact that quality circles work well with volunteers indicate that they will work well with nonvolunteers? Does the effect of using volunteers skew the treatment results?
2. Interactions of setting and treatment--This threat to external validity concerns settings. Can a causal relationship about quality circles obtained in a military health care facility be generalized to a civilian one? Can a causal relationship about quality circles obtained in an administrative setting be generalized to a nursing setting? The solution here is to vary the settings as much as possible in the treatment.
3. Interactions of history and treatment--If a test is given on the same day that the military have a mobility exercise, the researcher may wonder if his results are from the test only or if the test was influenced by the mobility exercise. What effect does history have upon the causal relationships drawn? Since one cannot logically extrapolate findings from the past to the future, Cook and Campbell suggest using

common sense. Replicating the experiment or researching the literature for other examples of causal effects may be appropriate.[5]

The primary limitation for this paper involves the time limit imposed by academic program requirements. Basically, the limitation is that not enough practice effects of quality circles have been observed to draw anything but the most tentative conclusions about the treatment. Such limitations will be noted throughout the paper and taken into consideration. There will be more regarding this limitation in the discussion section of this paper.

Research Methodology

As mentioned previously, this research will attempt to discern what effects quality circles have upon the behavior and the attitudes of work groups involved in the program at Wilford Hall. The problem with any research design revolves around the generalizations which can be drawn from the observations made. Controls for internal validity (those factors that directly affect the observations) and external validity (those factors involving the ability to generalize to other populations) must be designed into the methodology. Therefore, the design which most successfully takes into account the internal and the external validity threats, as reported by Campbell and Stanley, for use in the social sciences is called a Nonequivalent Control Group Design with pretests and posttests.[6] The design takes the form depicted in Figure 1.

The design is called "nonequivalent" because the groups are not selected at random. This is due to the voluntary requirement of the QC process; i.e., groups cannot be selected at random but rather must evolve spontaneously. The Os in Figure 1 represent the observations (pretests,

Fig. 1. Nonequivalent Control Group Design

SOURCE: Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally College Publishing Co., 1963), p. 13.

posttests) over time. The pretest survey (O_1) was conducted on 284 people in the first week of December, 1981. (See Appendix B for a copy of the survey administered and Appendix C for a list of the work groups tested.) It was anticipated that the first posttest would be administered in April or May, 1982, but other problems involving the maturity of the circles (see Limitations) will result in delaying the posttest for most of the groups until November, 1982. One wave of data (posttest) was collected from the experimental and the control groups in one area (the most mature group chronologically), and the results from that analysis are presented in this paper.

The dotted line in Figure 1 indicates that the two groups were not randomly assigned (a single solid line would indicate equivalent groups). Observations O_3 and O_4 represent pretests and posttests given to the control group. A time continuum operates from left to right. During Time 1, the survey (O_1 and O_3) collects the initial wave of data regarding experimental and control groups. At a later time, the experimental group is trained in quality circles while the control group is not. After time has elapsed to observe the effects, a second (and perhaps a third) measurement

is taken, and the outcomes are compared with the results from the pretest. After adjusting for any preexisting group differences, the findings should indicate differences between the control group and the experimental group which can be explained by the implementation of QC training.[7]

Measures other than the experimental design will be used to evaluate the program. In those areas where possible, "hard" productivity data will be used when already collected. For instance, in the laboratory, the number of procedures are being measured, and, when other factors are considered (such as any external stimuli), some conclusions may be drawn if done carefully. Additionally, performance appraisals given to the supervisors will elicit supervisory input into the measurement process. (See Appendix D for a copy of the performance appraisal administered.)

Finally, direct observation and questioning will be used to determine the organizational benefits which may accrue through the implementation of QCs. It has been widely reported in the literature that better communication (up and down the line), increased morale, fewer grievances, reduced costs, and higher productivity may result from the implementation of QCs. In order to obtain a good history of the project and to account for any external stimuli, detailed logs are being kept by the experimental groups to minimize erroneously generalizing the effect of quality circles when the effect has actually been caused by some other event.

Footnotes

[1]Edward Wakin, "Quality Circles: Management Magic?" Today's Office 16 (January 1982): 46.

[2]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally College Publishing Co., 1963), p. 13.

[3]Ibid., p. 14.

[4]Thomas D. Cook and Donald T. Campbell, Quasi-Experimentation: Design and Analysis Issues for Field Settings (Chicago: Rand McNally College Publishing Co., 1979), p. 71.

[5]Ibid., pp. 73-74.

[6]Campbell and Stanley, p. 13.

[7]Robert P. Steel, Lloyd F. Russell, Nestor K. Ovalle, and William H. Hendrix, "Designing Quality Circle Research," The Quality Circles Journal 5 (1 February 1982): 42.

CHAPTER II

LITERATURE REVIEW

The literature about quality circles prior to 1978 is rather sketchy. Most of the writings result from reports in annual transactions of various organizations. A review of the Bibliography attached to this paper reveals a scant thirteen articles about quality circles, and the writer was unable to find any books on the subject dated earlier than 1978. Since the QC phenomenon really did not exist in its present form until Professor Ishikawa embodied the process as a national productivity goal in 1962, it follows that not much reporting of the process would start to appear in writing before 1965.

This literature review will serve two purposes. First, it will introduce the history, the philosophy, and the tools and techniques of the QC process. This is necessary for an understanding of the treatment in this paper. Second, it will inform the reader of the information accrued on quality circles and introduce him to the concerns and discussions regarding the participatory management techniques used in quality circles.

Definition

According to Rubenstein, one of the first to write on the quality circle phenomenon, a quality circle is "a problem-solving group composed of the workers in a particular department, meeting with their foreman or supervisor, to solve work-related problems of quality, productivity, safety, morale, and so on."[1] Rieker calls QCs a process or a style of managing

which involves the workers participating in solving their own problems.[2] Rieker, formerly of Lockheed and now president of Quality Control Circles, Inc., was one of the first in the United States actually to implement QCs after he brought them from Japan. Yager, writing in 1979, quotes Rieker's definition:

> A small group of employees doing similar work voluntarily meeting for an hour each week to discuss their quality problems, investigate causes, recommend solutions and take corrective action.[3]

Professor Virgil Rehg of the Air Force Institute of Technology School of Systems and Logistics, in a research report, defines QCs most succinctly:

> A QC Circle is a small group of employees usually from the same work area who meet voluntarily on a regular basis to discuss problems related to their work area. They investigate causes of the problems, recommend solutions and implement these solutions where it is possible.[4]

Rehg further states that the main point of the QC effort must be its people-building philosophy. The effort, therefore, is a growing process and involves all members of the circle as a team effort while they go through training, encouragement, and recognition.[5]

History

Although widely regarded as Japanese, quality circles are actually an American idea. Two Americans, W. Edwards Deming and Dr. J. Juran, brought to Japan after the war a unique statistical quality control concept. According to Mititaka Yamamoto, "after World War II, the Japanese government wanted to promote trade. There was, however, nothing to export . . . and the image of Japanese products was 'cheap and poor quality.'"[6] To be fair, however, the Japanese management style forming the backbone of QCs goes

back to seventeenth-century Japan, when the interest in consensus management, people development, lifetime job security, and reward systems was used by the Mitsui family, according to Patchin.[7] In 1950 and 1954, doctors Deming and Juran were invited to Japan to teach their concepts for statistical quality control and, according to Moore and Stevens, these concepts were combined with some of the ancient Japanese thoughts about the worth of the individual. The Japanese Standards Association published two periodicals on statistical quality control from the teachings of Dr. Juran. Moore and Stevens further relate that Dr. Deming's concepts so impressed the Japanese that, even today, the annual "Deming Award" is presented to the firm or the individual highest in productivity achievement.[8]

In 1962, Dr. Kaoru Ishikawa, a professor of engineering at Tokyo University, developed the concept of quality circles and, with the help of the Japanese Union of Scientists and Engineers (JUSE), the first three quality circles were registered. Today, one in every eight workers in Japan belongs to the quality circle movement.[9]

In 1973, even with the visitation of Japanese management to the United States and the outright ownership by the Japanese of American firms, QCs had not made a distinct impression. However, one individual, Wayne S. Rieker, from Lockheed's Missile Systems Division, was concerned about holding down costs, according to Schleicher. While looking for a way to motivate employees on the work force, Rieker learned about QCs from a group of visiting Japanese. Greatly enthusiastic about the possibilities for improvement of quality and productivity, he took a team to Japan to study QCs firsthand. With him was Don Dewar, an industrial engineer. As a result of their findings, a QC program was instituted at Lockheed. Lockheed has

reported savings in excess of $3 million as a result of the implementation of the program.[10]

The story of Lockheed's success with QCs spread throughout the United States. The Japanese were largely successful in their efforts to implement QCs, and Moore and Stevens report that the JUSE was primarily responsible as a focal point of leadership. There were no organizations in the United States interested or willing to do that until J. F. Beardsley and D. L. Dewar started the International Association of Quality Circles (IAQC) in 1977.[11] Today, according to Lynch, there are an estimated 2,000 to 3,000 circles operating in the United States.[12]

Philosophy

Cicco compares Japanese management to that of the United States. He states that, while big American companies are rushing to emulate the "Japanese management model," many do not realize how different American management styles are. He further states that the Japanese' overriding concern is growth while the American model is concerned with profit. Figure 2 summarizes the basic differences in the two management philosophies. Cicco also declares that the Japanese decision-making process is slower than the American one. In America, the decision-making authority is normally held by an executive at the top, but, in Japan, the decision is virtually diffused throughout the organization. While the American decision is changed many times afterward, the Japanese decision is well thought-out and immediately implemented.[13]

Ouchi contrasts the American model and the Japanese model with some of the same results. He states that employment is usually short term in the United States. This results in rapid promotions which often create

FACTOR	JAPANESE MODEL	AMERICAN MODEL
Primary Financial Objective	Sales Growth	Profit Maintenance
Decision-Making:		
Process	Decentralized, Informal	Centralized, Formal
Responsibility	Highly Centralized	Somewhat Diffused
Employee Relations	Close, Harmonious	Detached, Often Confrontation
Commitment by Employees	Lifetime	"For Now"
Commitment by Management	Lifetime	"For Now"
Career Orientation	Generalist	Specialist
Community Involvement	High	Low, Often Reluctant
Management Style	Personal, Subjective	Impersonal, Objective

Fig. 2. American and Japanese Management Contrasted

SOURCE: John A. Cicco, "Japanese Management: Made in the USA?" INC. 4 (July 1981): 12.

hysteria among managers, who feel that, if they have been with a firm for three years without a significant promotion, they have perhaps failed.[14]

These management models point to the need for some revitalization of the American management philosophy. Numerous academicians have claimed that the Japanese philosophy is not exportable as anything but a fad. Frequently mentioned is the difference between the two cultures. However, Dewar feels that the Japanese model should be followed as closely as possible. This is based upon his contention that people are people and the QC process is basically related to the human process, not culturally defined.[15]

According to Pavord and Luczak, the concepts of QCs can be applied in any situation where "men and women are involved in a common activity characterized by problems that need solutions."[16] Basically, the question of whether or not quality circles will work in the United States is resolved. They are working and have been working for some time. As early as 1977, Industry Week reported that QCs in the Lockheed plant pleasantly surprised management when the members were asked to assess their experience:

> 1. 90% of the members felt the experience improved communications within the work team and increased the willingness to share and pool ideas.
> 2. Over 80% said the program made a positive impact on the quality of workmanship within their work team. Only one individual gave a definite "No" answer.
> 3. 95% felt that the program should be continued and also extended to others in Lockheed.
> 4. Over 75% felt that the program made their jobs more enjoyable.
> 5. 70% felt that the quality of their individual work improved.
> 6. Four out of five members felt that the cost of the program was justified by improvements in the quality of products turned out by their organizations.
> 7. About 25% gave of their own time--lunches, breaks, or after hours--to the program.[17]

The philosophy of quality circles is people-building. According to Moore and Stevens, it must be understood that the real aim of QCs is to train and develop the QC members. In this way, they can apply what they learn to improving quality and productivity in the workplace.[18] This basic premise stems from the recognized possibilities of participative management. According to Lederer, "participatory management is a process by which workers are brought into their organizations' decision-making processes to varying degrees, but primarily on matters that directly affect them."[19] Appelbaum describes the root of the participatory problem by stating that most of today's senior managers received their education from traditional management theorists; therefore, there is a need for reeducation.[20]

Quality circles, according to Nelson, represent an eclectic approach to management. QC philosophy is based upon integration and combination of multiple ideas and concepts. Quality circles relate back to the human relations approach in that each method looks at the total worker. Both approach the employee by encouraging him to use both his hands and his mind. However, QCs rise above human relations in that they do not use the manipulative and controlling agenda found in the human relations movement. Nelson also states that the QC and the human resources model each assume that people do have potential and are capable of making decisions in their work areas. She goes on to draw analogies between Quality circles and work simplification, job enrichment, participative management, organizational development, the Scanlon plan, autonomous work groups, and management by objectives. In each case, the analogies point to the fact that the motives responsible for implementing quality circles in an organization all say the same thing: Let the employee have a say in his work group.[21]

Participation is not the only element of QC philosophy. The program, if implemented properly, must be voluntary. Rehg believes that the circle must be voluntary on the part of the circle members. "You cannot get cooperation by forcing workers to join."[22] It is felt that workers will take more pride in their circle if they feel that they own it. They will not feel that way if management shoves quality circles down their throat.

Moore and Stevens equate a nonvoluntary program to failure. Their research shows that this one factor basically sets quality circles off from other types of organizational intervention. This voluntarism becomes difficult in many cases because this is not the normal way to do business.

However, without it, the authors state, the process might be perceived as "just another management imposed program."[23]

Management support is probably one of the most important aspects of the QC movement. If management is not fully supportive, the circle may be doomed to failure. Studies have shown, however, that initial management support may not be totally necessary, even though it eventually becomes paramount to legalizing the process. At Honeywell, where over five hundred active circles exist worldwide, middle management initiated the program, but it was not until two years later that the division managers became aware of quality circles.[24] Moore and Stevens summarize the above statement by saying that quality circles must earn management support. "The facilitators must realize that it is a critical part of their job to build management support as part of the implementation plan and make this support part of the change process."[25]

Tools and Techniques of the Quality Circle Process

Most of the literature in relation to tools and techniques of the QC process now exists in manuals and textbooks designed to provide member and facilitator training. According to Wakin, there is no mystery about how the QC concept works. "It taps the know-how of employees and their desire to be heard. It is shop talk that works."[26]

Quality circles depend upon five basic levels of people in the organization to make them function. Rehg mentions management first because it takes management support to be effective. Another important element which Rehg believes is important is the facilitator. This is the individual who trains the QC leaders in the QC process, provides guidance, and

generally furnishes a link from the circle to management. Rehg states that facilitators must "be people minded, be able to get along with all types of people, know statistics, have workshop experience, be creative and know how to teach." Circle leaders are taught the QC process and lead and direct the group. Finally, there are the circle members themselves. This is the working level. These individuals provide ideas, collect data, implement solutions, and make management presentations.[27]

Boon, in an article on the QC process, states that it is extremely flexible and must be molded to fit the objectives, the style of management, and the procedures of a company. The QC process is a problem-solving process, as Figure 3 shows. According to Boon, the start-up of a quality circle follows four basic steps: (1) opportunity, (2) training, (3) results, and (4) recognition. During the opportunity phase, a small trial circle program is started by management commitment. Potential leaders are trained in circle methods. During the training process, which takes from four to eight weeks, the members learn the tools of quality circles: brainstorming, Pareto analysis, cause-and-effect analysis, check sheets, histograms, and charts and graphs.[28]

Boon stresses that the QC leader must teach these processes to the members and give meaningful examples as to how the circle will use them to identify, analyze, and solve problems. During the results phase, Boon says, by using the techniques taught, the QC members become a task- and objective-oriented group. It is during the results phase that the group does the problem-solving. After the process is finished, which may take from three minutes to six months, the circle may need management's approval. Boon states that, if the manager is part of the circle, that may not be

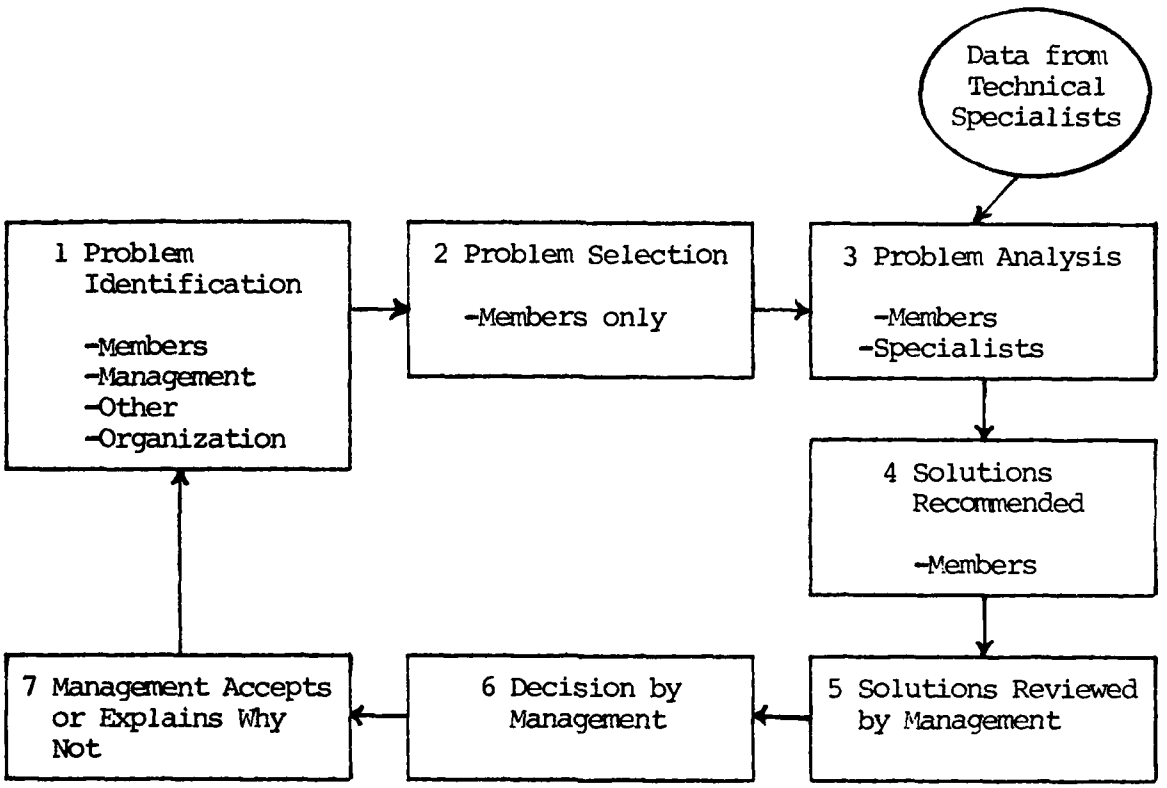

Fig. 3. Problem-Solving Process

SOURCE: Air Force Institute of Technology training material handout, undated, unpublished, 1981.

necessary. If the implementation requires the approval of someone further up the line, the circle develops a management presentation to "sell" its idea. At this time, the manager says either Yes or No. If the manager says No, the circle has the following options:

1. Decide on a different solution and present that to the manager.
2. Ask the manager for an alternate solution.
3. Include the manager and take the solution up the next step in the chain of command.
4. Turn the problem over to the experts and go on to the next problem.[29]

Rehg discusses the definitions of the tools used in the process.

Brainstorming, he indicates, is a technique used to generate ideas from circles. It is a method to get the members to use their creative imagination and to solicit ideas or themes for them to work on. During the process, each member is encouraged to contribute his or her idea to the topic being disucssed. No criticism is allowed during this process. This is continued until no more new ideas come out of the group.[30]

The Crawford slip method is an interesting variation of the brainstorming technique. According to Demidovich, ideas are written down on slips of paper, one idea per slip. After a statement of the problem is addressed, members then write down their ideas. This serves two purposes. One, it allows members to quietly and reflectively write down their ideas. Two, members will write more honestly because others are not judging their verbal expressions.[31]

Another technique which Rehg disucsses is cause-and-effect analysis. Basically a line diagram that is used to collect and organize possible causes of a problem, shown in Figure 4, cause-and-effect analysis is a systematic, logical way to organize a problem statement into possible cause categories. These categories are then brainstormed for possible causes.[32]

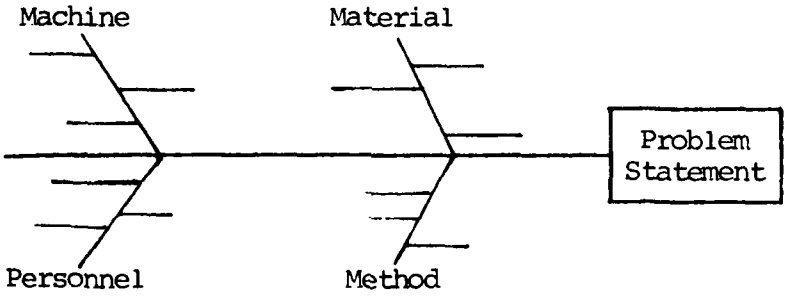

Fig. 4. Cause-and-Effect Analysis

SOURCE: Virgil Rehg, "Want to Motivate the People in Your Organization? Try Q.C." (unpublished research report, School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, 1979), p. 6.

Somestmes called a "fishbone" diagram because of its similarity to a fish skeleton, the cause categories depicted in Figure 4 represent only possible categories. Any others in any amount can be used.

Amsden and Bauchman define another technique, Pareto analysis, as "a tool to aid the Circles in choosing an important problem." This technique basically separates the significant few from the trivial many. Stated another way, on an average, about 20 percent of the problems represent 80 percent of the cost impact. In other words, 20 percent of the problems deserve about 80 percent of the effort.[33] This procedure, when properly used, saves a great deal of time deciding what to evaluate.

Data collection is required for the analysis of any problem. Rehg defines data collection as the process of gathering information. It may begin when circle members choose a cause to investigate from the cause-and-effect analysis. It includes sampling, observing the process, making measurements, experimenting, and accomplishing whatever is necessary to solve the problem or isolate the cause.[34]

Also according to Rehg, check sheets are used to gather the data collected, tally sampling results, and keep track of the progress made. Historgrams and graphs present the information in a meaningful way so that members present their data-collecting efforts pictorially to the group for easier understanding. Scatter diagrams, control charts, and multi-vari charts are simply variations of histograms and graphs and are used to compare and to investigate.[35]

The result, according to Amsden and Bauchman, is that study themes, or the problems to be solved, are usually chosen by the circle leader. Anyone can suggest a problem, but the circle decides on which one they want to

work. Amsdens and Bauchman go on to say that "the choice of a problem is not taken lightly. Indeed, a key aspect of the problem solving process is that of setting priorities; the Pareto analysis serves as a tool to aid the circles in choosing an important problem."[36]

Recognition, the fourth part mentioned by Boon, comes into being when the circle is recognized for the results it has obtained through the management presentation. This is all-important. "If not recognized, the circle will know the good work they do to help themselves and the company is not appreciated. If what they have done is not recognized and appreciated, they will quit doing it."[37] Amsden and Bauchman mention intra-company rewards and recognition. Some companies send their circles on vacations for ideas submitted. While monetary rewards are nice, the satisfaction which a group may obtain following a management presentation is more important than all of the other "extrinsic" items. "Notable accomplishments may be published or may be presented at outside conferences or seminars." In addition, outstanding members may be sponsored to presentations of QC teams such as those presented at the International Association of Quality Circles meetings.[38]

Current Issues

There are many issues in the literature regarding quality circles and effectiveness. One of the first arguments raised about the operation of QCs was whether they would work in the Western world. Dewar says Yes based upon his experiences with Lockheed and as past president of the International Association of Quality Circles. He summarized in a 1979 article the following:

> Have Quality Circles been successful in the Western world? The companies operating Quality Circle programs respond with an enthusiastic, "Yes." Perhaps a more pertinent question would be, "Will the concept continue to grow until it represents a formidable, enduring, and permanent presence in the Western World?"[39]

Robert E. Cole, Director, Center for Japanese Studies, The University of Michigan, takes a more skeptical view. He seemingly responds to Dewar's last statement above by wondering, "Are QC circles just another fad, or will they have a lasting impact?" He goes on to say that QCs can work if management changes a few things about its approach to business. For instance, he reports that about 15 percent to as much as 40 percent of productive capacity may be used for "rework." Rework is that personnel and equipment which exist to rework unsatisfactory parts. The Japanese, he notes, see rework lines as a sign of failure. The philosophy about rework needs to be turned around.[40]

J. M. Juran, the famous quality control expert, puts it this way: "In the case of the color TV set, the evidence is overwhelming that the Japanese do more complete scrubdown than their Western competitors. This difference is mainly due to upper management policy."[41] "Scrubdown" is that process whereby quality problems are solved prior to marketing rather than after, as is the Western custom. This involves investment and a good dea time on the part of management, the engineers, and the work force.

Cole also mentions union involvement. In the United States, union activity is adversarial rather than harmonious all too often. The danger, according to Cole, is that unions and workers will see the circles exclusively as a management program. Union members must be convinced otherwise. Recognition again is mentioned as an intrinsic satisfier. The point is that United States management often underestimates recognition as a motivational

tool. Cole's final conclusion is that QCs can work in the United States if American management comes to recognize that quality is not a trade-off. When that happens, management will have the credibility among the workers it wants.[42]

Yager, in talking about problems and potential problems,[43] quotes J. F. Beardsley and mentions the following difficulties which must be resolved:

1. Inability to involve the peripheral organization.
2. Failure to emphasize technical aspects.
3. Not keeping management informed.
4. Lack of publicity.
5. Program growing too fast (or too slow).
6. In adequate leader preparation.
7. Absence of visible management support.
8. Perception of management manipulation.
9. Failure to keep members informed of progress.
10. Starting to work on problems too soon.
11. Interruption/takeover by other groups.
12. Overemphasis on quick financial return or productivity increase.

Additionally, potential problems include:

1. Working out details with existing suggestion or quality control program.
2. Labor/union relationships.
3. Failure of previous programs.

These problem potentials can make or break a quality circle.

In addition to the problems mentioned by Cole, there are other issues which are brought forth from time to time. One interesting criticism

(often related to comments about QCs becoming fads) concerns the Hawthorne Effect. According to Amsden and Amsden, research has found this question to be very relevant. In a paper that explores the relationships between the results of the Hawthorne Effect and quality circles, the Amsdens note that the Hawthorne experiment was originally designed to measure the relation of quality and quantity of illumination to efficiency in industry. When it was found that productivity bore little relationship to the amount of illumination, the researchers concluded that the employees' reaction could not be explained just as "a simple physiological reaction." The researchers needed to know more about the human factor. The interesting item, however, was the result, which has since become known as the "Hawthorne Effect":

> Amongst the members of the various experimental groups such as the Relay Assembly Test Room and the Second Relay Assembly Group, there developed a social cohesion as they learned to work together. Members of the test groups were no longer . . .

and here the Amsdens quote Rothlesberger and Dickson (Management and the Worker [Boston: Harvard University Press,1966], p. 86) directly:

> . . . isolated individuals, working together only in the sense of actual physical proximity. They had become participating members of a working group . . . a growing amount of social activity developed . . . outside of working hours and outside of the plant. . . . [They] began to help one another out for the common good of the group. They had become bound together by common sentiments and feelings of loyalty.[44]

The Amsdens note that they have found the same type of "social development among the members of QC Circles." Here the workers perceive a positive interest in their problems by management. When this attention is placed upon a circle, the members tend to work toward company goals and develop a concern for quality, according to the Amsdens.[45]

There can be no complete discussion of the literature involved with the QC movement without comment about the behavioral science concepts behind the process. Perhaps the best known theory of motivation has as its author Abraham Maslow, who hypothesizes a hierarchy of five needs which exist in everyone: (1) physiological, (2) safety, (3) love, (4) esteem, and (5) self-actualization needs. If any one of these needs is satisfied, another one emerges to dominate the organism. Maslow states that, in actuality, most members of society who are normal are partially satisfied in all their basic needs and partially unsatisfied in all their basic needs at the same time. He believes that satisfaction of the self-esteem need leads to feelings of self-confidence, worth, strength, capability, and adequacy; of being useful and necessary in the world. Thwarting of these needs, however, produces feelings of inferiority or weakness and of helplessness. These feelings, in turn, give rise to either basic discouragement or compensatory or neurotic trends.[46]

Frederick Herzberg's motivation-hygiene theory is another basic of the human relations process involved in quality circles. In a study designed to test the concept that man has two sets of needs: (1) his need as an animal to avoid pain and (2) his need as a human to grow psychologically, Herzberg concluded that certain characteristics tend to be related to job satisfaction and others to job dissatisfaction. Job satisfaction (the intrinsic factors) involves such factors as achievement, recognition, work itself, responsibility, and advancement. Job dissatisfaction (the extrinsic factors) encompasses such factors as company policy and administration, supervision, salary, interpersonal relations, and working conditions. Herzberg proposes the existence of a dual continuum: the

opposite of satisfaction being no satisfaction; the opposite of dissatisfaction being no dissatisfaction. He suggests further that hygiene, or maintenance, events lead to job dissatisfaction because of a need to avoid unpleasantness and that motivator events lead to job satisfaction because of a need for growth, or self-actualization. At the psychological level, the two dimensions of job attitudes reflect a two-dimensional need structure: one need system for the avoidance of unpleasantness and a parallel need system for personal growth. Herzberg states that the factors involved in producing job satisfaction are separate and distinct from the factors that lead to job dissatisfaction. The opposite of job satisfaction would not be job dissatisfaction but rather no job satisfaction; similarly the opposite of job dissatisfaction would be no job dissatisfaction.[47]

The third and perhaps most often quoted behavioral science basic is that of Douglas McGregor and his two distinct views of man. One, which is basically negative, he labeled Theory X, and the other, which is basically positive, he labeled Theory Y. These theories were developed after McGregor studied the way managers deal with employees. Under Theory X, the manager sees the average human being as having an inherent dislike for work. The manager beleives that people will avoid work and must be coerced, controlled, directed, and threatened with punishment to get them to put forth adequate effort toward the achievement of organizational objectives and that they have no ambition. The manager under Theory Y perceives employees as expending physical and mental effort in work as naturally as they do at rest or play. He views workers as self-directed and self-controlled as well as committed to objectives. They are imaginative and creative. McGregor's hypothesis implies that, in Theory X, the lower needs

of Maslow dominate individuals while, in Theory Y, the higher needs dominate them.[48]

Quality circles, according to Moore and Stevens, draw upon four theories to improve the specific quality of work life which is determined by the workers and approved by management: (1) participative management, (2) team building, (3) job enrichment, and (4) goal setting. Participative management has been discussed previously. Job enrichment is defined as an effort to increase satisfaction by giving the employee more challenging and more responsible work to provide a change for personal achievement, recognition, and advancement. Goal setting holds that specific goals result in vaster output than greater goals do. Additionally, difficult goals result in greater output than easy goals do. Goals also serve to motivate performance, but only if they are accepted. Team building is group related and allows the members of a group to examine their own behaviors and develop courses of action which will improve task accomplishment. In team building, the influence of the group (team) can profoundly affect thoughts, feelings, and acts.[49]

The literature about the effectiveness of quality circles is inconclusive. There are many subjective reports that they do work. One of the earliest types of participative management ideas was tried at the Herman Miller Furniture Company and was called the Scanlon Plan. According to Donnelly, everyone was to be involved in a single, simply calculated, monthly productivity bonus. All persons in the plant were to form committees to solicit ideas for meeting company goals. This simple Scanlon Plan (it has been tried elsewhere) involved the furniture company in an ongoing experiment in trying to improve productivity by involving people in their total job.[50]

Lee claims that QCs set up at AMP, Inc., provided results quickly. He states that circle projects resulted in savings of approximately $1,000 to almost $9,000 when a training manual and a reference manual for tools were redesigned. He summarizes it this way: "Do Q.C. Circles really work? You bet THEY DO!"[51]

Burk, in an article in Fortune, notes that such firms as General Motors, Polaroid, Dana, Herman Miller, TRW, and Procter and Gamble are involved with quality circles. He concludes:

> Companies that have had time to weigh the consequences of participative management are finding that it informs the entire corporate culture. When the system is used to the full advantage of both partners, blue-collar workers are no longer just workers: they become the lowest level of management. Because the company needs fewer administrators to supervise them, it can fashion a leaner and more responsive organization, with clearer and faster communication up and down the chain. Those who have glimpsed the full possibilities--and their number is growing--see employee participation as a form of managerial risk capital whose long term payoff is a more effective organization.[52]

At Lockheed, a group of employees in the plastic shop developed a method to mold a plastic part assembly in two steps instead of five. Savings of $160,000 resulted over the life of the contract. Another group of electronic assemblers producing circuit boards with a high defect rate recommended a solution that resulted in a savings of $19,000 per missile. These are some of the benefits mentioned by William F. Schleicher, Senior Vice President, Lockheed Missiles and Space Company, Inc.[53] Frank D. Deromedi, writing about quality circles in the pharmaceutical industry, cites the following examples of improved productivity which pharmaceutical QCs have presented to management:

> -Documentation and Labeling Circle: (1) Work flow in the department that improved efficiency and made earlier scheduled cutbacks easy to accommodate. (2) Solution to a longstanding problem on the control of label changes.

-Printing Services Circle: (1) A promotional brochure on department capabilities. (2) Scheduling system to maintain quality production under rush conditions.
-Material Management Matrix Circle: Coordination of new products to the marketplace.
-Fractionation Circle I: Improved GMP [good manufacturing practice] by logical work flow in plant layout.
-Fractionation Circle II: Improved GMP and Quality by a structured operator training program.
-Finishing Department Circle: A program that effectively communicates critical product related data to operators.[54]

Within the health care industry, there are numerous examples of QCs at work. At Henry Ford Hospital in Detroit, Michigan, Kenneth Buback and Jaroslav Dutkewych relate that their research and investigation indicated that the issues which are faced by industry are like those of the hospital: "improved quality of goods and services, reduction of operating expenses, and improvement in the quality of work life for employees." In their assessment, a survey of management revealed that 80 percent thought the QC program was either a somewhat or a very effective program. Over half thought that the supervisors' performance had improved as a result of participation in the program. Members and leaders felt communication had been improved in the work area, and over half believed quality had been enhanced. Sixty percent said that they enjoyed their job more as a result of QCs.[55]

QCs are also working at Barnes Hospital in St. Louis, where Rusti Moore, the then director of Education and Training, set up quality circles in housekeeping, cardiothoracic operating room (called "heart to heart"), surgical nursing unit, and plant management. Many benefits have been noted. Greater satisfaction with scheduling, workloads, and communication was listed because the groups feel a part of the decision-making process now.[56]

As mentioned earlier, there is very little empirical evidence of

the effectiveness of quality circles. This writer is aware of only a few articles and a thesis published in this vein. An exceptional source document and one referenced throughout this paper is a thesis presented to the faculty of the School of Systems and Logistics of the Air Force Institute of Technology by Robert L. Moore and Robert E. Stevens. This thesis presents an exceptional overview of the complete quality circle process and even develops a suggested implementation plan.

A paper presented at the Fourth Annual IAQC Conference in St. Louis outlines an effective evaluation of existing quality circle programs. Steel, et al., of AFIT, have published an article in the March, 1982, Quality Circle Journal entitled "Designing Quality Circles Research."[57] This article is the basis for this research.

Footnotes

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[4]Virgil Rehg, "Want to Motivate the People in Your Organization" Try Q.C." (unpublished research report, School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, 1979), p. 2.

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[25]Moore and Stevens, p. 74.

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[39]Don L. Dewar, "Can Quality Circles Make It in the Western World?" in 1979 ASQC Technical Conference Transactions (Sacramento, Calif.: ASQC, 1979), p. 684.

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CHAPTER III

IMPLEMENTATION OF QUALITY CIRCLES

This chapter will present a general discussion and a description of the quality circle program implementation at Wilford Hall U.S.A.F. Medical Center. Following that will be a subjective evaluation of the operation and the experience with the QC groups. The methodology for the first posttest will be developed to show how conclusions about quality circles may be drawn.

Initial Activities

The decision to start the program was made on October 19, 1981, after this writer and the administrator attended a course on the principles and techniques of quality circle management offered by the AFIT School of Systems and Logistics earlier in October. (A copy of the letter initiating this intent is presented in Appendix E.) The course provided a basic background on the history, the philosophy, and the tools of the QC movement. Additionally, the program provided for some discussion and cross-feed on the pros and cons of establishing a QC program in the respective facilities represented at the course.

Personnel briefings

Armed with this knowledge and the teaching materials (written and slides) provided by AFIT, the program was started by a series of management presentations to top, middle, and supervisory levels. Additionally, a variation of the same briefing was eventually presented to all enlisted

personnel through Commander's Call and senior enlisted advisory councils. The briefings emphasized the organizational philosophy of quality circles and provided a method for all to understand the background, the structure, the objectives, and the training requirements necessary to implement the program.

Precautions

In the efforts to establish the program, there were several precautions which the program managers endeavored to observe. Most of these are taken from the literature and from the experience of others.

Voluntary program. First, a QC program must be voluntary from the top down. No effort was made to enforce participation from anyone. This presented problems in the establishment of the program, mentioned later in this discussion. The reason for this is simple. People respond better to a program they feel is their own. With a volunteer group, there can develop a sense of identity because the decision to be involved comes from the individuals in the group, not from management. Voluntary participation in the QC program at Wiflord Hall involves everyone from top management to the circle member.

Management support. Management support is another basic element which must be present for a QC effort to exist. Management support provides a conducive atmosphere for a program. Circles should never be established where management is not at least lukewarm to the concept. This writer realizes that absolute management support is hard to obtain. Normally, through the QC process, management's confidence in the system will increase when it is realized that quality circles are in actuality management support groups, not adversarial opponents.

Training. The importance of training cannot be overemphasized. The literature reveals that one of the biggest problems with the implementation of quality circles in industry has been the lack of proper training. Therefore, a QC leader and facilitator course was designed to provide forty hours of quality circle techniques and group dynamics to potential participants. Training within the quality circle itself has been emphasized, and the members have received at least eight hours of training from the trained circle leader.

Recognition. The basic philosophy of the QC movement involves recognition of achievements made through the problem-solving effort. Feedback and recognition are provided to members through management presentations which are occasionally made to the Steering Committee or other management levels. Additionally, achievements are published in available hospital newsletters and base papers. It is the responsibility of the facilitator to insure that adequate recognition is provided to the respective groups, and the Air Force Suggestion Program has established procedures by which ideas developed by such groups can be recognized and receive awards. (See the Air Force policy letter presented in Appendix F.)

Charter

The charter for quality circles at Wilford Hall was drafted and approved by the Steering Committee in December, 1981. It was published in February, 1982, as Medical Center Regulation 168-11 (see Appendix G). Among other things, this regulation provides for the formal structure of the quality circle program by describing the Steering Committee and its purposes. The functions of the Steering Committee are listed as:

(a) Declare specific objectives for Quality Circles, such as quality improvement, cost reduction, improved communications, etc.
(b) Develop operational guidelines.
(c) Determine funding arrangements, if any.
(d) Control the rate of expansion of the Quality Circle Program.
(e) Select the coordinator.
(f) Determine the frequency and duration of Circle meetings.
(g) Establish broad base and encourage growth of Quality Circle activities to encompass all relevant areas of the organization.
(h) Provide guidelines for the measurement of the Quality Circle activities and monitor the cost effectiveness and progress at least every six months.
(i) Listen to and evaluate Quality Circle management presentation briefings.[1]

While these guidelines seem rather specific, the actual function of the Steering Committee will be to support the quality circle effort, not to direct it. It will be necessary, however, to monitor the use of resources consumed in the QC process during the course of this pilot study to determine if the program appears to be cost effective. This cost effectiveness does not have to be measured in "hard dollars" but rather may be measured in terms of morale improvement and people-building.

Training Program

A twenty-hour training program was developed to train facilitators and leaders. To date, there have been five training sessions, and thirty-four potential circle leaders and facilitators have been trained in the quality circle concepts. The sessions include contact time in definition, history, philosophy, and objectives of quality circles. Two days are spent on QC tools and techniques and the problem-solving method. Management philosophies from Frederick Taylor to Theory Z are presented, and one day is spent on group dynamics, leadership, communication and listening, and advice on starting circles. Finally, the last day includes a practicum involving an actual "problem" for the students to solve. (See appendices H

and I for a copy of the training schedule and an example of the training practicum, respectively.)

Training for the circle members can be accomplished by the trained circle leader or the facilitator. Additionally, the hospital has the eight module training slide presentations developed by the IAQC. The circle leader may have his choice as to which way to present the training to the circle members. However, the training to the circle cannot be shorted. Oftentimes, the circles have gone through brainstorming and cause-and-effect analysis and then paused for a week or so to select the first problem for analysis. Then, the training resumes in the other tools used in quality circles.

Whenever the circle feels uncertain about a technique or procedure, the members are encouraged to go back and review that particular module or slide to insure that a full understanding of the process is obtained. Each circle member is given a copy of the QC guide attached to this paper as Appendix J. This course material was developed by the AFIT School of Systems and Logistics and local reproduction has been authorized.

Quality Circle Start-Up

The first quality circle started immediately after leader training on the December 15, 1981, in a dental laboratory that processes dental plates, bridges, and crowns. Therefore, the first application at Wilford Hall is essentially an industrial-type application. It was not until the end of February, 1982, that another circle was started in the Psychiatric Nursing Unit, C-4. Wilford Hall now has eight quality circles in various stages of training, with only the one in the dental area that has completed a project to the management presentation. The QC work areas are listed in

Appendix K.

There may be a May start of another circle in the Patient Affairs areas of Admissions and Dispositions and Inpatient Clinical Records. For the time being, however, it is not anticipated that any more circles will be started as it has been stated from the outset that ten circles would comprise the initial pilot program. More may be added later, perhaps, at the discretion of the Steering Committee.

Exordial Observations

Orson Wells, in a contemporary television commercial, tells the viewers that "No wine is ready before its time." The same can be said of quality circles. Perhaps one of the most difficult lessons in the establishment of the quality circle program at Wilford Hall has been to learn patience. There are two factors which have made this difficult. One was the enthusiasm which this writer had after finishing the QC training program at Wright-Patterson Air Force Base. The other was the necessity to get the pilot program going to provide enough experience and data so that some conclusions and observations could be drawn for this research paper. Still, despite the pressure of time and the short duration of the QCs, certain observations are worth noting.

Selling the philosophy

Many hours were spent by this writer in selling the QC philosophy at Wilford Hall. It was received well in some areas and not so well in others. When the philosophy and the concepts of the program were presented to the heads of the major divisions in the medical center (Medical, Surgical, Maternal and Child Care, Support, and Nursing), it would not be an

understatement to say that the reception of the idea was lukewarm at best. In the nursing area, the support was much better, but this division is plagued with nursing staff shortages and workload problems. Additionally, the Air Force IG was due to arrive at Wilford Hall in February, 1982, and the JCAH was to arrive right on the heels of the IG. Needless to say, there were a few things on everyone's mind. To complicate matters even further, Medical Red Flag 4N, a field-oriented nursing simulated wartime exercise, was utilizing an inordinate amount of nursing personnel for its execution and planning. Consequently, QCs did not get off the ground until December, 1981, when enough enthusiasm was obtained to start a QC class of nine people.

High expectations

It was originally anticipated that nine or ten circles would be functioning by December, 1981, and that the first posttest could be administered in April, 1982, in order to provide data for this research. This turned out to be far too optimistic. At the current time, only one circle, the Quality Management Team in the Area Dental Lab, has had enough experience to give even a thought to making some comments as to its (the QC program) effectiveness. The remaining circles are in a training status and will not be making any presentations to management for several weeks. Therefore, with the exception of some preliminary conclusions drawn from one circle, most of the observations cited in this paper will necessarily be directed to the experience gained in the implementation of the QC program at Wilford Hall.

Nursing circles

In this particular pilot program, one of the items in which the

program managers will be most interested is where in a medical establishment the QC philosophy will work. For instance, one of the most interesting items will be to observe the QCs develop in nursing. This area has some very different problems that may pose threats to the effectiveness of the program. In the psychiatric nursing units, there is a mortality threat to the validation of the QC process. Simply put, personnel shift from one schedule to another. In one unit, twelve individuals originally volunteered to be on the circle. Three weeks later, eight of the twelve were on different shifts. How is one to overcome this transient nature of the nursing work experience?

Timing for QC meetings

Another problem involves finding a time for the quality circle to meet. If some members have been transferred to other shifts, these individuals may have to come in on their off-duty time to meet with the circle. This would require a great deal of motivation, but the literature reports that this phenomenon has occurred at other hospitals. Nevertheless, this item does present a problem to the integrity of the group. This particular circle is continuing its training with only four of the original members, but it took some redirection on the part of the facilitator and the circle leader to regenerate enough interest. The training seems to be going quite well now, and others have become interested in joining the group as a result of the exuberance of the remaining members.

Atmosphere for meetings

It was observed during the initial training sessions that it was difficult to get the group away from the work area in order to have the

circle meeting in a relaxed and quiet atmosphere. Occasionally, technicians had to leave to take vital signs or receive calls. The facilitator advised the circle leader to limit this irritant to the minimum necessary to keep the ward properly staffed and the circle meeting uninterrupted.

Composition of nursing circles

The nursing QCs include at the present time only medical technicians and nurses. There has been some thought to asking physicians to sit in on the meetings, particularly if the discussion of the problem involves the totality of patient care. If the physician were interested enough, there is even a possibility of including the doctor as a regular member of the health care circle. Some drawbacks to this idea may be caused by the fact that Wilford Hall is a teaching hospital and most of the physicians are transient through the particular services in their rotating residencies.

On one particular psychiatric nursing ward, the medium for patient care is the community concept, wherein staff and patients are both actively involved in the treatment regimen. In order to improve this very important concept, it is possible that even patients may become temporary or even permanent members of the circle. This particular phenomenon would require more study before anything definitive could be concluded about the idea.

Meeting rooms

Another observation involves the type of room in which the circle meetings are conducted. Because of the nature of the QC process, it is almost a prerequisite that the meetings be conducted in some area away from the work area where blackboards and student desks or tables are available. One nursing group originally met in the staff lounge, but the facilitator

suggested a halt to this practice because of the lack of adequate facilities for displaying written ideas. It would appear that it is very important to provide proper facilities for the meeting of the circles. Wilford Hall is fortunate in that these type areas are provided on just about every ward.

Management acceptance

There have been some obvious problems with management at this stage of the implementation of the circles. There was some concern in one area about the "brown shoe" attitude[2] of one of the supervisors, and the actual experience proved this perception to be true (this is mentioned later). It was important enough to some members to cause them to drop out of the circle. On the whole, management has selectively been receptive of the QC process. Where management acceptance is good, credit must be given to the voluntary nature of the program and this is one of the reasons why QCs must be voluntary for the managers as well as for the members. A circle could not fail faster than by being established under the leadership of a threatened supervisor. There definitely are situations where circles should not be established, and this is one of them.

Preliminary Findings

It is definitely too early to make any comments about the success of the program at this date. Certainly, from all reports, the philosophy seems to be working where the circles have been established. Hopefully, the experience gained from the implementation of the QC effort at Wilford Hall will be applicable to other populations in military and civilian health care. Conclusions drawn about the generalization of the results in this study will not be made until after the testing and evaluation period in

about one year.

Subjectively, one can offer some advice to anyone contemplating the establishment of a program in any other area whether or not it is in health care. The following basically summarize the lessons learned from the experience gained at Wilford Hall U.S.A.F. Medical Center:

1. Prior to actually starting the implementation of any program, the management attitude in the organization should be assessed. A Theory X environment is adversarial (or opposite) to the quality circle philosophy.
2. An initial awareness of the QC process should be developed by attending a facilitator training program or being instructed by a consultant on the site.
3. A course of seminars, briefings, and orientations should be established to seek management acceptance of the QC process. One should not expect or even anticipate immediate acceptance from management. In many cases, a skeptical response will be forthcoming. This is not the first "new" management program to come along in the last few years, and it will not be the last. If MBO (management by objectives) was not implemented as designed in an organization, many of the personnel will have a bad taste in their mouths from this program. One should at least obtain "endorsement from top management. In many cases, it is top management that "gets the bug" first. In all probability, if QCs are established correctly, management support will occur, if not sooner, then later.
4. The selection of a coordinator is of paramount importance. The individual filling this position must be able to deal with people effectively. This job should not be given to an individual who is not interested in and not enthusiastic about the quality circle program.

5. A steering committee should be organized to help write and direct an implementation plan. This body should be composed of some of the "heavies" in the organization and should be representative. For example, the president of a government employees union local was invited to be a standing member of the Wilford Hall QC Steering Committee (see Appendix L). Further, this group should not be allowed to become directive in nature; rather, its purpose should be guidance and policy. One should not try to make the quality circles justify themselves by submitting reports to the committee for review.
6. A facilitator must be selected. The facilitator works for the coordinator and helps the circle maintain its equilibrium. This individual is the link between management and the circle members. This individual must know the organization and be able to relate to people. This person must also be a good speaker and able to bring ideas across to other people since the facilitator is responsible for training the circle leaders.
7. An implementation plan must be developed. This plan must be realistic and factual. Plenty of time for training and development of the training materials should be allowed. Space to evolve the plan is needed. Quality circles cannot be rushed. There is plenty of time, and management should not be permitted to think otherwise. There are no quick fixes for QCs. This is a long-term project.
8. The plan and the briefings should be presented to selected groups. Volunteers should be solicited from whom to choose circle leaders. It is best to use natural supervisors if possible; if not, the potential circles should select their own leaders.

9. The training should not be shortened. It must be complete. On the list of causes of circle failure, the lack of training is near the top.
10. One must be patient. Quality circles must be nurtured if they are to grow. This requires the constant attention of the facilitator, the leader, and the coordinator.
11. Recognition of quality circle efforts should be provided through local media, bulletin boards, and any other method available. Quality circles must have recognition to exist and thrive.

Pretest and Posttest Results

The instrument which is being administered to the groups is an AFIT-designed organizational assessment survey. It contains twelve major variables or factors which are to be measured over the life of the research design. (See Appendix M for a list of survey factors.) For the posttest administered during late April, 1982, only job satisfaction, perceived work group performance, perceived self-performance, and work role attitudes were used. These variables measure the factors which are considered in this paper.

Only one group could be measured; it was considered the only group mature enough to have had some experience with the treatment variable. This circle was established in December, 1981, and had progressed through four and one-half months of the QC participative management philosophy by the time of the testing. The biggest limitation of administering the survey at this time and to this particular group was the fact that the sample would be extremely small and, therefore, the statistics would be weaker than if a larger group were used. Utilizing only one group reduced the sample size

available for analysis, limiting the power of statistical tests to detect group differences and the capability to generalize findings.

Twenty-four participants took the pretest. Only nineteen took the posttest. There is good reason to suspect that employees transferred in and out of the experimental conditions. This further reduced the number included for statistical analysis. Both groups (experimental and control) were defined. Out of a total of nineteen taking the posttest, seven were in the experimental group and twelve were in the control group.

The results of the mean difference tests between the QC group and the control group are displayed in Table 1. These findings indicate that these groups were not appreciably different on the study's criterion

TABLE 1

QUALITY CIRCLE AND CONTROL GROUP MEANS FOR PRETEST AND POSTTEST

Factor	Pretest			Posttest		
	QC	Control	t	QC	Control	t
	$\bar{X}$	$\bar{X}$		$\bar{X}$	$\bar{X}$	
Job Satisfaction	3.44	3.52	.045	3.33	3.64	.170
Perceived Group Performance	4.94	4.80	.058	4.89	4.88	.004
Perceived Self-Performance	5.63	5.75	.043	5.63	5.73	.034
Work Attitudes	4.08	4.28	.090	3.72	4.83	.500

Note: A t statistic of 2.110 was needed to be significant at the .05 level of significance; d.f. = 17.

$$t = \frac{M_1 - M_2}{\sqrt{\left(\frac{\sum X_1^2 + \sum X_2^2}{N_1 + N_2 - 2}\right)\left(\frac{N_1 + N_2}{N_1 N_2}\right)}}$$

variables (the t criterion was 2.110). Since no significant differences between the QC group and the control group were observed, this would lead one to the conclusion that QCs have had a minimal impact upon job satisfaction, perceived group and self-performance, and work attitudes thus far. A t-test was also calculated over time comparing mean gain scores over all of the variables by the treatment conditions. Again, this result indicated that the QC effort in this group produced little noticeable change in the treatment variables.

It would be naive and premature in the final analysis to conclude that the above statistical measures can be interpreted with any confidence. The statistical number of those in the experimental and the control conditions were just too few. In statistics, the name of the game is "the bigger the better." Even if this was the most well-designed and carefully conducted of studies, it would not prove conclusively any facts about the intervention of the quality circle treatment. The statistical tests employed are not the most rigorous tests available for data generated by the present design. The long-term analysis of this study will include analysis of co-variance and multivariate procedures using the SPSS package.

The quality circle has not had time to reach full maturity and probably will not do so until the November-December, 1982 time frame. Hard measures of performance were collected by the simple appraisal attached as Appendix D. Later, a second performance appraisal will be taken to further clarify the effects of the QC process.

Impact of the Implementation

The purpose of this paper was to examine whether Quality Circles would work in a large military medical center and, if so, in what areas. Quality Circles were established in nursing, dental, and supply (technical) and administrative areas.

Of the three, the technical and administrative have the most fertile ground for the implementation of the Quality Circle technique at Wilford Hall. There are several reasons for this: The nursing areas are short of personnel and time to have even one hour available for meetings. At the present, management is concerned with nursing burn-out in several of the maxi-care areas. In those nursing areas where there is an interest, there is no time available. Where there is time available, there is no interest. It appears that the nursing units have a problem also in that personnel must continually be pulled in and out of the meetings to provide coverage on the floor.

The administrative and technical areas, on the other hand, have a more stable work force and hours more suitable to the standard application of the Quality Circles process in this institution. That is not to say that the concept will not work in any area of nursing, but at this facility, it appears that because of the nursing personnel shortage and other factors, they work best in the administrative and technical areas where the work routine is normalized. This would include such nursing areas as training, administration, and infection control. This factor is not wholly due to the failure of the Quality Circles concept, but rather to

a misapplication of the concepts. There simply was no support evident in the nursing senior management level to sustain the QC initiative. It has been mentioned previously that a lack of management support will crush the Quality Circles effort eventually. There essentially was no medium in which the idea could grow. This problem existed not only in the nursing areas but in the implementation of this program at Wilford Hall there was no support or commitment from the commander. Therefore, nothing filtered down to the other levels. There was much support from the Administrator who directed the implementation of this program and that, in part, accounted for the enthusiasm for the Circles in administrative sections.

This writer strongly feels that the fact that this environment happens to be military has little to do with the eventual success or failure of the Quality Circles initiative. The same problems mentioned previously certainly exist in civilian hospitals. The basic problem is not so much the military environment but antiquated management styles resistant to and afraid of change. According to the literature, this problem certainly exists outside the military atmosphere.

An example of Theory X thinking is exemplified below: The Real Time Management Quality Circles was initiated by the 40 hour training course developed by AFIT and used at Wilford Hall. The Quality Circles Leader, Sgt Real Sharp, was an enthusiastic young man who had been selected by the group to lead the Circles. The first Quality Circles meeting consisted of nine highly

motivated and interested participants. At this meeting, the Circle leader explained the basic facts concerning the function of Quality Circles.

Also at this meeting, the Crawford Slip Method was presented and the name "Real Time Management Circle" was chosen. One week later, the ground rules were developed and comprehensive training began. At the third meeting, the facilitator met with the QC members to discuss the role of the facilitator and Quality Circle. At this time, it was noted by the facilitator that some members were anxious about the feelings of middle management toward the Quality Circle. The majority of the meetings for the next few weeks were concerned with training.

At the next meeting, problems were presented for possible solution. When one was selected and an intensive analysis was begun using the training established by Quality Circle techniques, the members of the QC volunteered to research the various areas necessary for a solution proposal and all members were highly motivated at this time. At the next meeting, a survey form was developed to solicit inputs for the problem analysis. At this time, the Quality Circle leader expressed some concern regarding the attitudes of management toward the activities of the Circle. The problem was discussed and the decision was to let the Circle Leader handle the problem. During this period of time, the facilitator was invited to several meetings. The management problems were thought to be resolved.

When the group was ready for the management presentation,

all of the supervisors and top management were invited. When the top manager appeared obviously harried, the tension built up. His first comments were, "I hope this thing doesn't last too long, I have too much to do." Needless to say, that set the tone for the rest of the presentation. However, management did say, at the end of the presentation, that it was a good idea and it should be implemented.

Three weeks later, no decision had been made to implement the solution. On several occasions, the Circle Leader talked to management and the proposal was finally implemented the following week. During this period of time, disparaging remarks made by management were overheard by the Circle members. Morale fell to a new low and several members dropped out. The Circle Leader felt that a management presentation about what Quality Circles were and were not was needed but management refused to have the meeting. Comments such as, "I spent 25 years building my management philosophy and I'm not going to change it now," were expressed to the Circle Leader. In later consultation with the facilitator, the Circle Leader felt that any further effort was fruitless and the morale in the duty section was never lower.

This is where the circle now stands. In retrospect, the classic failure to actively involve middle management contributed to the problem. When the idea was first presented, middle management was briefed on the program the same time as the rest of the group. The others volunteered, middle management didn't.

The program at Wilford Hall is withdrawing back to the administrative areas where more opportunities exist for successful Quality Circle implementation. From that point, the program will proceed slowly into the nursing areas where management support is evident. Additionally, Quality Assurance is being explored as a good area for Quality Circles.

The bottom line is that Quality Circles do work in a military medical environment but must have top management support, a factor which is not totally existent at Wilford Hall at this time. Additionally, it would appear that Quality Circles can be more effective in administrative and technical areas at least initially. These areas conform to the more industrial applications where Quality Circles started.

Footnotes

[1]Wilford Hall U.S.A.F. Medical Center, Policies and Procedures for the Wilford Hall Quality Circle Program, Medical Center Regulation 168-11 (Lackland Air Force Base, Tex.: Wilford Hall U.S.A.F. Medical Center, February 1, 1982), p. 2.

[2]For those who are unfamiliar with the term, a "brown shoe" attitude refers to the early days of the Air Force when Air Force personnel still wore Army brown shoes and managers were the old-style hard-nosed Army top sergeant type.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Quality circles enjoy considerable popularity and interest at the present time. Based upon the experience which the implementation of the process has provided so far, it would seem that this technique can be a very effective means of enhancing work group effectiveness. Where there are instances of effective quality circles in health care, there are also instances where they have failed. The reasons for failure have been mentioned previously in this paper. Scientific investigation into the effects of QC participation upon productivity and attitudes of the member is needed. This study has made and is continuing to make a contribution to filling that void.

It is apparent that the philosophy will work in some areas of the hospital. This writer has seen some of the beginnings of the process in nursing, dental, logistics, and administrative areas of the medical center. The answer as to where the circles will work best, if they work at all, is still to be fully defined. It would intuitively appear, however, that any effort that focuses upon valuable human resources would be better than no effort at all in this direction. In the areas where the circles have been established in this medical facility, this writer has seen motivated, interested people. When the first group made its first management presentation (see Appendix N for an outline of the management presentation), the air was full of the pride displayed by the members of the quality circle. When a group pulls together to solve work-related problems and the solution presented to

management is accepted, the biggest reward to the group exists in the acceptance. Extrinsic rewards are not the only type of reward system that will be used in the QC program because the process itself generates its own rewards.

This writer recommends that this study be continued to provide some more solid evidence of the effect of the intervention of the treatment (quality circles) into the workplace and the management scene of this facility. This study has provided only a starting place and the collection of ideas for the overall research design. If anything is to be gained from the preparation of this paper and the experience of the QC effort so far, this writer would say: Have patience and go slow. Management problems are not made in one day, and quality circles, or any other program, for that matter, will not solve them in one day.

APPENDIX A

LISTING OF QUALITY CIRCLE RESOURCE PEOPLE

AND INSTITUTIONS/ORGANIZATIONS

QUALITY CIRCLES (QC)

CONSULTING RESOURCE PERSONNEL

October 1981

1. Dr. Robert Amsden
   5216 Tillbury Road
   Dayton, Ohio 45424
   (513) 236-1605

   University of Dayton
   Management Department
   Dayton, Ohio 45469
   (513) 229-2217
   (513) 229-2021

2. J. F. Beardsley and Associates, International
   93 S. Central Ave., Suite 80
   Campbell, CA 95008
   (408) 866-1306

3. Professor Robert E. Cole
   Director of the Center for Japanese Studies
   108 Lane Hall
   University of Michigan
   Ann Arbor, Michigan 48109
   (313) 763-4301

4. Quality Circle Institute
   Don Dewar, President
   P.O. Box Q
   1425 Vista Way Airport Industrial Park
   Red Bluff, CA 96080
   (916) 527-6907

5. Productivity Development Systems
   Michael Donovan, Ph.D.
   President
   Pierce 100 Building Suite 602
   100 Pierce Street
   Clearwater, Florida 33516
   (813) 596-8457

6. International Association of Quality Circles (IAQC)
   P.O. Box 30635
   Midwest City, OK 73140
   (405) 737-6450

7. Dr. Frank X. Pesuth
   Manager, Human Resource System
   Honeywell
   13350 U.S. Highway 19
   St. Petersburg, Florida 33733
   Mail Station 230-1
   (813) 531-4611

8. Quality Services
   Virgil Rehg, President
   5631 Winterberry Court
   Dayton, Ohio 45431
   (513) 256-9078

9. Quality Control Circles, Inc.
   Wayne Rieker, President
   Higgins & Root Bldg, 2nd Floor
   400 Blossom Hill Road
   Los Gatos, CA 95030
   (408) 867-4121
   (408) 358-2711

10. Sidney P. Rubinstein
    President
    Participative Systems, Inc.
    Princeton, N.J. 08540
    (609) 452-1244

11. AFIT School of Systems and Logistics
    LSA Major Russ Lloyd

QUALITY CIRCLES RESOURCES PEOPLE

OPM/DOD/IAQC

1 SEPTEMBER 1981

		NO. OF CIRCLES	NAME	TELEPHONE
OPM				
1.	Office of Personnel Management (OPM) Chicago Office		Sharon Ramon	(312) 353-0386
DLA				
2.	HQ DLA/C Cameron Station Alexandria VA 22314		William Barclay	AV-284-6366
3.	Defense Logistics Service Ctr Battle Creek MI 49016	30	Mrs. Charlotte Evans	AV-369-6616/6704
AIR FORCE				
4.	Director of Manpower and Organization USAF/		Col Jack P. Bujalski Maj Fred Crawford/MPMZ	AV-227-4815
5.	HQ USAF/ Washington D.C.		Capt Donald A. Anawalt/ MPMR	AV-225-1963
6.	TAC HQs Langley AFB VA		Bob Leckliter/XPMP	AV-432-5174/2722
7.	Det 7 440 MET SQ Homestead AFB FL 33039	6	Capt Bob Pepple	AV-791-8005
8.	McChord AFB WA 98438 Det 9 1600 MES/MOM		2/Lt Linda King Maj Herman Knolle L/C Drayer/MAC/XPME	AV-976-2577 AV-638-5715/3916
9.	USAFE APO New York 09012		Robert Thomson/DCXR	AV-499-6431
10.	PACAF Hickam AFB HI 96853		Maj Rick Ensor/DPHJ	AV-449-1761
11.	AFLC HQ		Butch Kittle/XRP(2)	AV-787-6370
12.	McClellan AFB CA 95652	3	Jerry Leisk/XRS Del Nelson	AV-633-2015/6 AV-633-3615/6430

		NO. OF CIRCLES	NAME	TELEPHONE
13.	Hill AFB UT 84401	15	Gene Briscoe/MASE Don Singleton/XRS	AV-458-2733 AV-458-5851
14.	Tinker AFB OK 73145	75	Wendel Kluge/XRS	AV-735-7006
15.	Kelly AFB TX 78241	4	Bob Castorini/ Larry Trevino/MASE Frank Wing/XRS	AV-945-6612/3/4 AV-945-7591
16.	Robins AFB GA 31098	41	Charles Carver/XRS	AV-468-3866/7
17.	AGMC Newark AFS OH 43055	10	Vern Brentlinger/MAWSE	AV-580-7305/7653
18.	ARPC/MO Denver CO 80280	7	Verna Melarango	AV-926-4606
19.	AFPRO - Hughes P.O. Box 92463 Los Angeles CA		Fred R. Brooks	(213) 648-9010
ARMY				
20.	US Army Organizational Effectiveness Center & School Fort Ord CA 93941		SFC Wayne Reed Maj Mark Olson/Concepts Dev	AV-929-7108 AV-929-7886/7106
21.	USA Depot System Command Chambersburg PA 17201		John Messa/DRSDA-PMA	AV-242-6935/ 6909/7232
22.	Anniston Army Depot Subassembly Branch Bldg 130 Anniston AL 36201		Capt Bill Adams James Hawkins	AV-694-7364/6846
23.	ARRADCOM Dover NJ		Larry Levine	AV-880-3919/2054
24.	Automated Logistics Mgt Systems Activity (ALMSA) P.O. Box 1578 St. Louis MO 63188		Art Staub/DRXAL-Z Betty Godfair	AV-693-5115 (314) 263-5115
NAVY				
25.	HQ Naval Materiel Command MAT - 00K6 Crstal City		Frank Curhan David Francis	AV-222-3201/2 (202) 692-3201/2
26.	Office of Productivity Mgt Naval Material Command Washington D.C.		Dr. S. Aggarwal	(202) 692-1888

		NO. OF CIRCLES	NAME	TELEPHONE
27.	Norfolk Naval Shipyard Portsmouth VA	45	Bob Greiner	AV-961-3510/3523
28.	Avionics Division NARF, Pensacola FL Code 94500, Bldg 3220		Gerald [illegible]sbeck	AV-992-4377
29.	Naval Ordnance Section Louisville KY	3		
30.	Charleston Naval Shipyard Charleston SC	7		
31.	Naval Shipyard		Peter Benti	(707) 646-3341
32.	Navy Personnel Research & Development Center Code P307 San Diego CA 92120		Dr. D. M. Nebeker	AV-933-6935
33.	AU Maxwell AFB AL 36112		Maj Alvin Tootle/EDU	AV-875-2159/5377
34.	AFIT WPAFB OH 45433		Professor Virgil Rehg/LSY Prof John Demidovich/LSB Maj Russ Lloyd/LSB	AV-785-4845/6 AV-785-3375/4529 AV-785-4549/4529
35.	IAQC P.O. Box 30635 Midwest City OK 73140		R. D. Diener, Exec Dir Harvey Davis	(405) 737-6450

APPENDIX B

WILFORD HALL QUALITY CIRCLE

PROGRAM SURVEY

The purpose of this questionnaire is to obtain information about you, your job, your work group and your organization. Specifically, this information is being collected in support of research assessing employee attitudes toward different aspects of their work environment.

Please be assured that all information you provide will be held in the strictest confidence. Your individual responses will NOT be provided to management or to any other agency. Feedback on the study's results will be presented to management only in terms of group averages describing what the "typical" employee would say. In addition, when the results of this study are published, readers will NOT be able to identify specific individuals or work groups.

A primary objective of this study is to track changes in worker attitudes over time. You will be asked to complete another survey at some later date. In order to detect any changes in worker attitudes, some means was needed to connect responses provided by an employee at different times. At the same time, the research team wishes to protect the anonymity of all participants. A procedure was developed to achieve both of these objectives. We ask your indulgence in complying with this procedure.

Questionnaire Tracking Procedure

On the computer scored response form you were provided you will find a five digit survey control number in the box labeled "identification number." Each employee has a different survey control number. An employee of the organization has agreed to serve as an intermediary in this procedure. When you complete your questionnaire this person will ask you for your survey control number and your social security number. That employee will retain this information on a master list. You will then turn your questionnaire in directly to a representative of the research team. This procedure will be followed for future administrations of the survey. The intermediary will have a key by which survey control numbers may be linked via social security numbers. He will not have access to any questionnaire responses. The research team will see completed questionnaires, but will only be told that one arbitrary survey control number should be paired with another. In this way, we feel we have provided for attainment of both aims of the study--employee anonymity and a means of tracking attitude changes.

Thank you for your cooperation in participating in this study. If you have any questions, please contact the researcher at the following address:

Robert P. Steel, PhD
AFIT/LSB
Wright-Patterson AFB OH 45433
Telephone: AUTOVON 785-4435

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and

(3) EO 9397, 22 Nov 43, Numbering System for Federal Accounts Relating to Individual Persons; and

(4) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and

(5) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and DOD.

c. Routine uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in a written master's thesis and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

KEYWORDS

The following are definitions of key words that recur throughout the questionnaire:

1. Supervisor: The person to whom you report directly.

2. Work Group: All persons who report to the same supervisor that you do. (If you are a supervisor, your work group is the group of employees that report directly to you.)

3. Organization: Wilford Hall Medical Center

INSTRUCTIONS

This questionnaire contains 133 items (individual "questions") numbered "1" through "133." All 133 items must be answered by filling in the appropriate spaces on the machine-scored response sheets provided. If for any item you do not find a response that fits your situation exactly, use the one that is the closest to the way you feel.

Please use a "soft-lead" (No. 2) pencil, and observe the following:

1. Make heavy black marks that fill in the space (of the response you select).

2. Erase cleanly any responses you wish to change.

3. Make no stray markings of any kind on the response sheet.

4. Do not staple, fold or tear the response sheet.

5. Do not make any markings on the questionnaire booklet.

You have been provided with two response sheets. Do NOT fill in your name on either sheet so that your responses will be anonymous. Please note that both sheets have a survey control number ending with either "1" or "2." Please use the response sheet with the survey control number ending with the number "1" to respond to the first 80 items and then answer items 81 through 133 on the response sheet with the survey control number ending with the number "2", using the first 66 blocks.

Each response block has 10 spaces (numbered 1 through 10) or a 1-10 scale. The questionnaire items normally require a response from 1-7 only, therefore, you will rarely need to fill in a space numbered 8, 9, or 10. Questionnaire items are responded to by marking the appropriate space on the response sheet as in the following example:

Using the scale (seven descriptive statements which may reflect your opinion) below, evaluate "sample item 1."

SCALE:

1 = Strongly disagree
2 = Moderately disagree
3 = Slightly disagree
4 = Neither agree nor disagree
5 = Slightly agree
6 = Moderately agree
7 = Strongly agree

Sample item 1:

The guidance you receive in your job from your supervisor is frequently unclear.

(If you "moderately agree" with sample item #1, you would "blacken in" the corresponding number of that statement (moderately agree = 6) on the response sheet for item numbered "sample item 1".)

Sample response:

JOB SATISFACTION

How satisfied are you in your present job? Use the following rating scale to indicate your satisfaction.

1. Means you are very dissatisfied with this aspect of your job.
2. Means you are dissatisfied with this aspect.
3. Means you can't decide if you are satisfied or not with this aspect of your job.
4. Means you are satisfied with this aspect.
5. Means you are very satisfied with this aspect of your job.

1. Being able to keep busy all the time.
2. The chance to work alone on the job.
3. The chance to do different things from time to time.
4. The chance to be "somebody" in the community.
5. The way my boss handles his men.
6. The competence of my supervisor when he makes decisions.
7. Being able to do things that didn't go against my conscience.
8. The way my job provides for steady employment.
9. The chance to do things for other people.
10. The chance to tell people what to do.
11. The chance to do something that makes use of my abilities.
12. The way company policies are put into practice.
13. My pay and the amount of work I do.
14. The chances for advancement on the job.
15. The freedom to use my own judgment.
16. The chance to try my own methods of doing the job.
17. The working conditions.
18. The way my co-workers got along with one another.
19. The praise I get for doing a good job.
20. The feeling of accomplishment I got from the job.
21. Enjoying the work itself.

The following statements and questions deal with the performance of your work-group as you view it. Please think carefully of the things you and your work-group members produce by way of services and/or products as you respond to these questions.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree or disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

22. The quantity of output of your work-group members is very high.

23. The quality of output of your work-group members is very high.

24. Your work-group members always get maximum output from the available resources (e.g., money, materiel, personnel).

25. Your work-group members do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

26. When high priority work arises (e.g., "crash projects", and sudden schedule changes) your work-group members do an excellent job in handling and adapting to these situations.

PERCEIVED SELF-PERFORMANCE

The following statements and questions deal with your view of your own performance. Your frame of reference should be your performance over the past six months or so in light of what is expected of you. Please think carefully of the various things you produce (major responsibilities of your assigned job) in the way of services and or products as you respond to these questions or statement.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree or disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

27. The quantity of your output is very high.

28. The quality of your output is very high.

29. You always get maximum output from the available resources (e.g., money, materiel, personnel).

30. You do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

31. When high priority work arises (e.g., "crash projects" and sudden schedule changes) you do an excellent job in handling and adapting to these situations.

Use the following rating scale for the 15 statements to express your own feelings about your present job or work.

1. means you strongly disagree with the statement
2. means you moderately disagree with the statement
3. means you slightly disagree with the statement
4. means you neither disagree nor agree with the statement
5. means you slightly agree with the statement
6. means you moderately agree with the statement
7. means you strongly agree with the statement

32. I often have to use the skills I have learned for my job.

33. I often have a chance to try out my own ideas.

34. I often have a chance to do things my own way.

35. I often have a chance to do the kinds of things that I am best at.

36. I often feel at the end of the day that I've accomplished something.

37. The most important things that happen to me involve my work.

38. The most important things I do involve my work.

39. The major satisfaction in my life comes from my job.

40. The activities which give me the greatest pleasure and personal satisfaction involve my job.

41. I live, eat, and breathe my job.

42. I would rather get a job promotion than be a more important member of my club, church, or lodge.

43. How well I perform on my job is extremely important to me.

44. I feel badly if I don't perform well on my job.

45. I am very personally involved in my work.

46. I avoid taking on extra duties and responsibilities.

JOB CHARACTERISTICS

Section One

This part of the questionnaire asks you to describe your job, as objectively as you can.

Please do NOT use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and as objective as you possibly can.

A sample question is given below.

A. To what extent does your job require you to work with mechanical equipment?

1-------2-------3-------4-------5-------6-------7

Very little; the job requires almost no contact with mechanical equipment of any kind.	Moderately	Very much; the job requires almost constant work with mechanical equipment.

Indicate on the answer sheet the number which is the most accurate description of your job. If, for example, your job requires you to work with mechanical equipment a good deal of the time, but also requires some paperwork, you might choose the number six, so you would blacked "6" in on the answered sheet.

If you do not understand these instructions, please ask for assistance. If you do understand them, turn the page and begin.

47. To what extent does your job require you to work closely with other people (either "clients," or people in related jobs in your own organization)?

1----------2----------3----------4----------5----------6----------7

Very little; dealing with other people is not at all necessary in doing the job.

Moderately; some dealing with others is necessary.

Very much; dealing with other people is an absolutely essential and crucial part of doing the job.

48. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1----------2----------3----------4----------5----------6----------7

Very little; the job gives me almost no personal "say" about how and when the work is done.

Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.

Very much; the job gives almost complete responsibility for deciding how and when the work is done.

49. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1----------2----------3----------4----------5----------6----------7

My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.

My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.

My job involves doing the whole piece of work; from start to finish; the results of my activities are easily seen in the final product or service.

50. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1----------2----------3----------4----------5----------6----------7

Very little; the job requires me to do the same routine things over and over again.

Moderate variety.

Very much; the job requires me to do many different things, using a number or different skills and talents.

51. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1----------2----------3----------4----------5----------6----------7

Not very significant; the outcomes of my work are not likely to have important effects on other people.	Moderately significant.	Highly significant; the outcomes of my work can affect other people in very important ways.

52. To what extent do managers or co-workers let you know how well you are doing on your job?

1----------2----------3----------4----------5----------6----------7

Very little; people almost never let me know how well I am doing.	Moderately; sometimes people may give me "feedback"; other times they may not.	Very much; managers or co-workers provide me with almost constant "feedback" about how well I am doing.

53. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing--*aside from* any "feedback" co-workers or supervisors may provide?

1----------2----------3----------4----------5----------6----------7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides "feedback" to me; sometimes it does not.	Very much; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

Listed below are a number of statements which could be used to describe a job. You are to indicate whether each statement is an accurate or an inaccurate description of your job.

Once again, please try to be as objective as you can in deciding how accurately each statement describes your job--regardless of whether you like or dislike your job.

How accurate is the statement in describing your job?

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

54. The job requires me to use a number of complex or high-level skills.

55. The job requires a lot of cooperative work with other people.

56. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.

57. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

58. The job is quite simple and repetitive.

59. The job can be done adequately by a person working alone--without talking or checking with other people.

60. The supervisors and co-workers on this job almost never give me any "feedback" about how well I am doing in my work.

61. This job is one where a lot of other people can be affected by how well the work gets done.

62. The job denies me any chance to use my personal initiative or judgment in carrying out the work.

63. Supervisors often let me know how well they think I am performing the job.

64. The job provides me the chance to completely finish the pieces or work I begin.

65. The job itself provides very few clues about whether or not I am performing well.

66. The job gives me considerable opportunity for independence and freedom in how I do the work.

67. The job itself is not very significant or important in the broader scheme of things.

WORK ROLE ATTITUDES

This section of the questionnaire contains a number of statements that relate to feelings about your work group, the demands of your job, and the supervision you receive. Use the following rating scale to indicate the extent to which you agree or disagree with the statements shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree nor disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

68. Within my work-group the people most affected by decisions frequently participate in making the decisions.

69. In my work-group there is a great deal of opportunity to be involved in resolving problems which affect the group.

70. My work-group is very effective in making decisions.

71. My work-group is very effective in the process of group problem solving (i.e., clearly defining/specifying the problem(s), developing and evaluating alternative solutions, and, selecting, implementing and evaluating a solution).

72. I don't have enough time to do everything that is expected of me on my job.

73. The amount of work I have to do interferes with how well it gets done.

74. I have work standards that cannot be met given my time constraints.

75. My work (job) causes me a great deal of stress and anxiety.

76. My life away from my work causes me a great deal of stress and anxiety.

77. In general, people tell the truth, even when they know they could benefit by lying.

78. Generally speaking, most people are inclined to look out for themselves rather than helping others.

79. If given the chance, most people will try to take advantage of others rather than trying to be fair.

80. There is a high spirit of teamwork among my co-workers.

81. Members of my work group take a personal interest in one another.

82. If I had a chance to do the same kind of work for the same pay in another work group, I would still stay here in this work group.

83. My supervisor lets me know when I am doing a poor job.

84. My supervisor lets me know when I am doing a good job.

85. I can determine for myself how well I am doing my job without feedback from anyone else.

86. My supervisor represents the group at all times.

87. My supervisor performs well under pressure.

88. My supervisor is a good planner.

89. My organization provides all the necessary information for me to do my job effectively.

90. My work group is usually aware of important events and situations.

91. My supervisor asks members of my work group for our ideas on task improvements.

WORK GOALS

The following three statements deal with your perceptions of the nature of goals and objectives that guide your work. Use the rating scale given below to indicate the extent to which your work goals have the characteristics described.

1 = not at all
2 = to a very little extent
3 = to a little extent
4 = to a moderate extent
5 = to a fairly large extent
6 = to a great extent
7 = to a very great extent

92. To what extent do you know exactly what is expected of you in performing your job?

93. To what extent are your job performance goals difficult to accomplish?

94. To what extent are your job performance goals realistic?

JOB EFFORT RATING

95. As fairly and objectively as you can, rate the typical amount of effort you normally put into doing your job.

1 = very little effort
2 = enough effort to get by
3 = moderate effort
4 = more effort than most
5 = very much effort

FUTURE WORK PLANS

Use the two rating scales given below to indicate your future work plans with respect to the Air Force.

96. Within the coming year, if I have my own way:

1 = I definitely intend to remain with the Air Force.
2 = I probably will remain with the Air Force.
3 = I have not decided whether I will remain with the Air Force.
4 = I probably will not remain with the Air Force.
5 = I definitely intend to separate from the Air Force.

97. All things considered, I really think that I will still be with the Air Force one year from now.

1 = strongly agree
2 = agree
3 = don't agree or disagree
4 = disagree
5 = strongly disagree

ORGANIZATIONAL INFORMATION

Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. Use the following rating scale to indicate your own feelings about the particular organization for which you are now working.

1 = means you strongly disagree with the statement
2 = means you moderately disagree with the statement
3 = means you slightly disagree with the statement
4 = means you neither disagree nor agree with the statement
5 = means you slightly agree with the statement
6 = means you moderately agree with the statement
7 = means you strongly agree with the statement

98. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.

99. I talk up this organization to my friends as a great organization to work for.

100. I feel very little loyalty to this organization.

101. I would accept almost any type job assignment in order to keep working for this organization.

102. I find that my values and the organization's values are very similar.

103. I am proud to tell others that I am part of this organization.

104. I could just as well be working for a different organization as long as the type of work was similar.

105. This organization really inspires the very best in me in the way of job performance.

106. It would take very little change in my present circumstances to cause me to leave this organization.

107. I am extremely glad that I chose this organization to work for, over others I was considering at the time I joined.

108. There's not too much to be gained by sticking with this organization indefinitely.

109. Often, I find it difficult to agree with this organization's policies on important matters relating to its employees.

110. I really care about the fate of this organization.

111. For me this is the best of all possible organizations for which to work.

112. Deciding to work for this organization was a definite mistake on my part.

SUPERVISOR'S ASSESSMENT OF YOUR PERFORMANCE

The following statements deal with feedback you receive from your supervisor concerning your performance. Your frame of reference should be your supervisor's evaluation of your performance in terms of formal feedback (i.e., periodic, written performance appraisals) and informal feedback (i.e., verbal communication on a day-to-day basis). Please think carefully about his/her evaluations of you over the past six months or so.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree or disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

113. Your supervisor considers the quantity of your output to be very high.

114. Your supervisor considers the quality of your output to be very high.

115. Your supervisor believes you get maximum output from the available resources (e.g., money, materiel, personnel).

116. Your supervisor believes you do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

117. Under situations when high priority work occurs (e.g., "crash projects" and sudden schedule changes) your supervisor believes you do an excellent job in handling and adapting to these events.

118. Your supervisor has a very accurate knowledge of your performance.

119. Your supervisor provides you with clear, specific feedback about your performance.

BACKGROUND INFORMATION

This section of the survey contains several items dealing with personal characteristics. This information will be used to obtain a picture of the background of the "typical employee."

120. Your age is:

1. Less than 20.
2. 20 to 25.
3. 26 to 30.
4. 31 to 40.
5. 41 to 50.
6. 51 to 60.
7. More than 60.

121. Your highest educational level obtained was:

1. Non high school graduate.
2. High school graduate or GED.
3. Some college work.
4. Associate degree or LPN.
5. Bachelor's degree or RN.
6. Some graduate work.
7. Master's degree.
8. Doctoral degree.

122. Your sex is:

1. Male.
2. Female.

123. Which of the following "best" describes your marital status?

1. Not married.
2. Married--spouse is a military member.
3. Married--spouse is a civilian.
4. Single parent.

124. Which of the following best describes your present occupation?

1. Nursing service.
2. Managerial/administrative.
3. Clerical/secretarial.
4. Medical support.

125. What is your usual work schedule?

1. Day shift, normally stable hours.
2. Swing shift (about 1500-2300).
3. Night shift (about 2300-0700).
4. Rotating shift schedule.
5. Day or shift work with irregular/unstable hours.

126. Is your job presently:

1. Full-time regular employee.
2. Part-time regular employee.
3. Full-time voluntary worker.
4. Part-time voluntary worker.

127. Total months in this organization is:

1. Less than 1 month.
2. More than 1 month, less than 6 months.
3. More than 6 months, less than 12 months.
4. More than 12 months, less than 18 months.
5. More than 18 months, less than 24 months.
6. More than 24 months, less than 36 months.
7. More than 36 months.

128. Total months in present position:

1. Less than 1 month.
2. More than 1 month, less than 6 months.
3. More than 6 months, less than 12 months.
4. More than 12 months, less than 18 months.
5. More than 18 months, less than 24 months.
6. More than 24 months, less than 36 months.
7. More than 36 months.

129. Total months experience in your present occupation:

1. Less than 1 month.
2. More than 1 month, less than 6 months.
3. More than 6 months, less than 12 months.
4. Between 1 and 2 years.
5. Between 2 and 3 years.
6. Between 3 and 4 years.
7. More than 4 years.

130. How many people do you directly supervise (i.e., those for which you write performance reports)?

1. None.
2. 1 to 2.
3. 3 to 5.
4. 6 to 8.
5. 9 to 12.
6. 13 to 20.
7. 21 or more.

131. You are a (an):

1. Officer.
2. Airman.
3. Civilian (GS).
4. Civilian (Wage Grade Employee).
5. Non-appropriated Fund (NAF) Employee).
6. Other.

132. Your grade level is:

1. 1-2.
2. 3-4.
3. 5-6.
4. 7-8.
5. 9-10.
6. 11-12.
7. 13-14.
8. Senior Executive Service.

133. Please fill in response choice Number 1 for this item.

Thank you for your cooperation.

APPENDIX C

WORK GROUPS INVOLVED IN QUALITY CIRCLE PROGRAM PRETEST

WORK GROUPS INVOLVED IN QUALITY CIRCLE

PROGRAM PRETEST

Work Group	ID No
Nursing Unit T-8	01
Nursing Unit D-6	02
Nursing Unit 4T/4C	03
Nursing Unit D-9	04
Area Dental Lab	05
Dental (Other)	06
Patient Affairs:	
Ward Clerks	07
Amdinistration	08
Cen. Trans.	10
Patient Sqd	11
Outpatient Records	12
Admissions & Dispositions	09
Clinical Records	13
Information Desk	14
Manpower & Budget	15
Med. Photo	16
Centralized Processing & Distribution (CPD):	
Sterile Supply	17
Decontamination	18
Other	23
Volunteer Services	19
Medical Service Corps (MSC)	20
SGX (Assoc. for Planning)	21
Medical Maintenance	22
Logistics (Other than CPD)	24

APPENDIX D

COPY OF PERFORMANCE APPRAISAL

EMPLOYEES NAME _____

SUPERVISOR'S RATING FORM

Employee's Job/Position Title _____

INSTRUCTIONS: Use the rating scales given below to indicate the "typical" job effectiveness of the employee named above. Please complete all the items on this form. Note that each rating scale refers to a different aspect of work effectiveness so there may be some amount of variation between the performance dimensions shown for a single individual. Place a checkmark (✓) on the line that best describes this worker.

1. Quantity of Output. Def: The productivity of an employee in terms of units of work produced or services rendered.

Extremely Ineffective	Very Ineffective	Somewhat Ineffective	Average Effectiveness	Somewhat Effective	Very Effective	Extremely Effective
1	2	3	4	5	6	7

---

2. Quality of Work. Def: The degree to which work products are free from error and/or conform to standards and specifications.

Extremely Ineffective	Very Ineffective	Somewhat Ineffective	Average Effectiveness	Somewhat Effective	Very Effective	Extremely Effective
1	2	3	4	5	6	7

---

3. Efficiency of Work. Def: The degree to which resources (e.g., money, materials, personnel) are used to their maximum capacity and waste is kept to a minimum.

Extremely Ineffective	Very Ineffective	Somewhat Ineffective	Average Effectiveness	Somewhat Effective	Very Effective	Extremely Effective
1	2	3	4	5	6	7

---

4. Problem Solving Capacity. Def: Represents the ability of an employee to anticipate problems that may come up and either prevent them or minimize their effects upon the operations of the work unit.

Extremely Ineffective	Very Ineffective	Somewhat Ineffective	Average Effectiveness	Somewhat Effective	Very Effective	Extremely Effective
1	2	3	4	5	6	7

---

5. Adaptability/Flexibility. Def: Represents the ability of an employee to adjust to special circumstances (e.g., "crash projects" and sudden schedule changes) and perform under less than optimal conditions.

Extremely Ineffective	Very Ineffective	Somewhat Ineffective	Average Effectiveness	Somewhat Effective	Very Effective	Extremely Effective
1	2	3	4	5	6	7

APPENDIX E

COPY OF REQUEST FOR QUALITY CIRCLE RESEARCH CONSULTATION

DEPARTMENT OF THE AIR FORCE
WILFORD HALL USAF MEDICAL CENTER (AFSC)
LACKLAND AIR FORCE BASE TEXAS 78236

REPLY TO ATTN OF SG-3

19 October 1981

SUBJECT Request for Quality Circle Research Consultation

TO AFIT/LSB
Wright Patterson AFB, Ohio 45433

1. In preparation to begin a quality circle effort here at Wilford Hall USAF Medical Center (WHMC), Colonel Jackson and Major Morey recently attended your course, Principles and Techniques of Quality Circles Management (OMT 082A), 5-9 October 1981.

2. We are now planning to implement quality circles and we desire to accurately measure the results of this action. We do realize, however, that a systematic research effort is essential if one is to be confident about results; i.e., if one is to draw conclusions with any degree of certainty.

3. In that regard, we would like your assistance in conducting an evaluation research of our quality circle efforts. Preliminary discussion has already occurred between Colonel Jackson and Major Morey of WHMC and Major Russ Lloyd of your organization. I have asked Major John B. Morey (Autovon 240-7350) to serve as the WHMC project officer in the future.

4. We will provide a fund citation to fund TDY mutually agreed upon as necessary to support this research effort. I do appreciate the expertise your organization can offer organizations such as mine which are interested in conducting rigorous research that is beyond our capability.

K. Vandenbos

K. VANDENBOS
Brigadier General, USAF, MC
Commander

APPENDIX F

COPY OF AIR FORCE POLICY LETTER ON

QUALITY CIRCLES

HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.
20330

87

REPLY TO ATTN OF: MP

30 NOV 1981

SUBJECT: Quality Circles

TO: ALMAJCOM-SOA/CC

1. Quality Circles (QCs) have received a great deal of publicity within recent months primarily because of the very positive effects that evolve from their proper use. QCs are not new to the Air Force, we have had circles operating and providing results for several years Based upon that experience there is ample evidence to suggest that wider use of QCs within the Air Force will help meet the challenges of the 80s by offering one method to improve our productivity.

2. We have established a short course within AFIT to teach our people how to manage QC programs and how to train others to set up and operate QCs. We believe that this course is the best available on QCs and intend to maintain its current high standards.

3. Establishing a course and sending quality students are only prerequisites and do not guarantee success. QCs must be a voluntary program and must be supported by top-level management before results will develop.

4. If you want to use QCs as one part of your productivity enhancement effort, we encourage your review and use of the attached information.

Andrew P. Iosue

ANDREW P. IOSUE
Lieutenant General, USAF
Deputy Chief of Staff, Manpower
and Personnel

1 Atch
Air Force Views on Quality
Circles

AIR FORCE VIEWS ON QUALITY CIRCLES

1. Quality Circles is a People Building, Productivity Enhancing Management Concept. 88

a. Quality Circles (QC) basic premise is: by building people (increasing their capabilities) they in-turn will identify and solve problems which will lead to productivity improvement.

b. QC participants are taught problem solving techniques, communicative skills, analytical techniques, and receive personal leadership/management training.

c. QC members meet on a regularly scheduled basis to receive training, identify problems within their work environment, analyze potential solutions, recommend potential problem solutions to management, and implement the solution after management approval.

2. Top Management Support Required.

a. Top management must endorse and support a participative management environment for QC to operate successfully. QC can be viewed/perceived by intermediate and middle management as a threat because problems are identified and solutions recommended in a non-traditional manner. Top management can remove the perceived threat by demonstrating strong commitment to the QC concept.

b. Top management must recognize that QC involves costs (training, group member time away from the job-normally 1 hour each week). Management must also recognize that benefits from QC take several forms ranging from improved morale to actual dollar savings.

c. By providing an appropriate environment for QC operation, top management will improve communication within the organization, improve personnel development, and improve productivity.

3. QC Participation Must be Voluntary.

a. No organization or employee should be forced to participate in QC. As described above, QC requires participative management and may represent a perceived threat to management at all levels. Employees may perceive QC as a threat if management attempts to force employee involvement.

b. Management should encourage employees and union involvement (as appropriate) by providing the time, facilities, training, and management attitude which will encourage employees to voluntarily participate.

c. QC must represent a mutual trust between employee and management.

4. Systematic Evaluation by Management is a Must.

a. As with any management initiative, a degree of evaluation and measurement must be exercised to determine the "value" of QC. Management should establish criteria to measure the benefits received from QC while recognizing that some of the results (e.g. improved communication and morale) may be difficult to quantify.

b. Top management must determine, based upon its evaluation of QC, whether it will continue to support the concept or specific QC operations.

c. Measurement of results should be accomplished by management as opposed to requiring a QC to track the results of a problem-solution. Management should provide results of the measurement/ evalutions to the QC group.

d. When significant results occur from QC, top management should report the results upward, through appropriate channels.

e. Too much emphasis on measurement can stifle or nullify the benefits that QC can provide.

5. Existing Incentive Programs are Enough.

a. The Air Force has many existing incentive/recognition programs that can be tailored to meet the needs of units or organizations to recognize outstanding QC results.

b. The Air Force Suggestion Program is only one example of an existing program that can be used to recognize QC results. The Suggestion Program will recognize QC suggestions (problem-solutions) with cash awards in accordance with AFR 900-4.

c. Top management should endeavor to use all available incentives to recognize QC efforts that show positive results.

6. Training and Education are Needed.

a. Before problem solutions can be properly developed, some training is required. Group members must be taught problem identification techniques, some analytical methods, communications techniques and receive some training in improving their personal leadership and management skills.

b. Group leaders and QC facilitators must be taught how to teach the various techniques needed by the group members. Facilitators, in particular, must receive formal instruction to insure that the host unit or organization has adequate group member training and education capabilities.

c. The Air Force Institute of Technology (AFIT) offers a short course to train/educate facilitators.

7. Recognize the Requirement for Union Involvement.

The establishment of a quality circle is a responsibility of management. However, management is required by Title VII of the Civil Service Reform Act to provide the local union with prior notification, when civilian employees in their bargaining unit are affected, and afford that union an opportunity to "bargain" on the implementation of the initiatives. Organizations that plan to implement Quality Circles should coordinate the implementation plan with their applicable Director of Personnel to insure that the plan complies with Title VII of the Civil Service Reform Act.

DEFINITIONS

Quality Circle - A group of employees, performing similar work, who meet regularly to learn about basic quality circle techniques. They apply these techniques to identify problems within their jurisdiction, analyze these difficulties, and recommend solutions to management. When possible, they will initiate the necessary action to implement the solution after management approval of the solution. Circles, normally, will consist of 6-12 employees from the same work area.

Quality Circle Objectives

Reduce errors and enhance quality
Inspire more effective teamwork
Promote job involvement
Increase employee motivation
Create a problem-solving capability
Build an attitude of "Problem Prevention"
Improve organization communication
Develop harmonious manager/worker relationships
Promote personal and leadership development
Develop a greater safety awareness

Steering Committees - Should be composed of senior management officials (e.g. unit commander, directors of reporting organizations and as applicable union official). Serves as the "Board of Directors" for all QC activities within the unit.

Coordinator - An Air Force employee designated by the unit commander as the QC focal point for the installation/unit.

Facilitator - An Air Force employee who, in concert with the coordinator, is responsible for QC within an organization. Conducts leader training, monitors progress of circles, and assists the coordinator with evaluation.

Leader - The group leader conducts, with the assistance (as necessary) from the facilitator, group meetings and serves as the focal point for the group.

Group Member - Usually number from 6-12 per group. Group members normally work in the same work center.

RECOMMENDED STEPS IN IMPLEMENTING QUALITY CIRCLES

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* Discovery
* Collect Information
* Test/Build Management and Union Support
* Decision to Start
* Organize the Steering Committee
* Facilitator Selected by Steering Committee
* Finalization of Objectives by Steering Committee
* Development of Implementation Plan by Steering Committee
    - -- Candidate Pilot Areas
    - -- Circle Project Limits
    - -- Suggestion System Tie-In
    - -- Training Approach
    - -- Measurement Strategy
    - -- Overall Guidelines
    - -- Target Dates
* Conduct Briefings for Management and Union (as applicable)
* Collect Pre-implementation Measurement Data
* Select Pilot Program Circle Leaders
* Conduct Training
    - -- Facilitator
    - -- Leader
* Apply Voluntaryism Formula
* Initiate Circles

Steering committee (The Quality Circle "Board of Directors") members are representatives of major organizations. The following is a checklist of functions that should be performed by this group:

* Prepare Objectives
* Prepare Implementation Plan to Achieve Objectives
* Identify Milestones
* Determine Funding Arrangements
* Establish Qualifications for Facilitator
* Select Facilitator
    * Determine Who Facilitator Reports to
    * Determine Office Arrangements for Facilitator
* Schedule Familiarization Presentations to Wide Variety of Organizations
* Determine What Circles Can Work On, e.g. Quality, Cost, Safety, Organization Policy, Union Personnel, Design
* Determine Tie-in With Suggestions Program
* Establish Baseline Measurements
* Determine Publicity Approach
* Identify Organizations for Pilot Program
* Decide How Organization Will Learn About Quality Circles

  For Example:

  Organization newspaper
  Mass gathering in auditorium
  Letters to home
  Numerous small group sessions
  One-on-one

* Determine Start Dates for Pilot Circles
* Identify Leaders for Pilot Program
* Decide on Frequency of Circle Meetings

MEASUREMENT

1. QCs result in several outcomes which defy quantification (e.g. morale) as well as some outcomes which have a dollar value.

2. QC group members may not have the ability to precisely estimate savings.

3. Management/Leadership should be concerned with the cost effectiveness of any management initiative. Therefore, since QC is a management concept, management should assess the value of the QC effort at their level. If a QC is not functioning properly, through management analysis, the circle should be terminated.

4. Overmeasurement, requiring rigorous analysis and verification of estimated or actual savings may

   a. Be more costly than the savings generated by the idea being measured.

   b. Cause QC group members to lose interest in the entire concept.

   c. Represent micro-management to the affected unit commanders and therefore blunt their interest in the entire effort.

5. No command has been given additional dollars or manpower authorizations to perform QC, therefore, the affected command should be given the widest latitude possible to evaluate the benefits derived from their efforts in QC.

6. Some standardization of measurement/evaluation is desirable.

   a. Specific case studies

   b. Management oversight (at lowest level)

7. QC is a people building concept in addition to being a productivity improvement concept. In fact, the people building portion must occur prior to productivity improvement. Therefore, measurement should be treated as only a subcomponent of QC.

8. Quality circles require special consideration with regard to measurement due to their people building premise. Quality Circles represent a cost to the Air Force and that cost can be calculated accurately. The output of a QC may not be calculated as accurately as the costs because some of the benefit values must be estimated (e.g. improved communication, morale). Because of the non-precise measures the data (savings) could receive a negative reaction from various audit agencies.

* Meet Regularly

* Periodically Review Program Milestones 91

* Establish What Rewards and Recognition Will Be Used (in addition to management presentations)

  For Example:

  Quality Circle Newsletter
  Organization Newspaper
  Photos on Bulletin Boards
  Pins, Plaques, Certificates
  Cash Awards

* Tie-in With The Union (as applicable)

9. A commander, who elects to employ QC, should be the one to evaluate/measure the effect of the QC(s). He/she should use the following suggestions as a guide to evaluating QC results:

A. Collect cost data from existing management information channels.

(1) Manpower/personnel - given attendance data at QC meeting (from minutes) can compute personnel costs - (should include facilitator, coordinator and steering committee.)

(2) Personnel can itemize facilitator training costs (TDY, per diem, etc.)

B. Establish, via existing management information sources, base lines from which measurement should start.

(1) Retention rate

(2) Grievances filed

(3) Complaints

(4) Tardiness

(5) Lost days

(6) Safety rates

(7) Error rates

(8) Work backlogs

(9) Delivery schedules

(10) or others, as desired

C. Track QC problem/solutions against the QC projected savings (obtained during the QC management presentation).

(1) Example, if a QC estimates an O&M savings of $1,500 for one year, use existing management sources to determine actual savings.

(2) Savings other than actual dollars or manpower may be reflected by comparing the existing rates with those established during the original base line development.

(3) Some improvements may not be quantifiable (beliefs, feelings should be noted and expressed - written down).

D. The Leadership and Management Development Center (LMDC) can be used to measure pre and post results.

E. The Steering Committee should evaluate various QC suggestions (problem solutions), taking the responsibility for performance measurement off of the QC members. Results should be fed back to the QC, as well as to the commander.

10. Commands (MAJCOM/SOA/DRU) should evaluate QC operation at least annually. The command should review costs and compare them with benefits achieved. The command should establish procedures necessary to evaluate its QC activities.

INCENTIVES

1. The Air Force has numerous incentive programs that can be tailored, at the unit or command level, to provide adequate incentive/reward to QC groups. Although monetary awards may be appropriate in some cases, where specific dollar savings can be identified, monetary awards should not be the primary incentive used. 93

2. Several organizations have established local recognition programs such as QC of the month. Some organizations view management presentations, made by the QC members, as an excellent recognition device. Some view the QC concept, its implementation and use by management as an incentive because the employees perceive that their thoughts and ideas are wanted and used by management.

3. The Air Force Suggestion Program has established procedures by which ideas developed by QC groups can be recognized and receive awards (AFR 900-4). In addition, the Suggestion Program manager has agreed to establish procedures to identify suggestions submitted by QCs. This particular initiative will help the unit commander evaluate QC activities within his/her unit.

QUALITY CIRCLES

Joining together is a beginning,

keeping together is progress,

working together is success.

APPENDIX G

WILFORD HALL U.S.A.F. MEDICAL CENTER

REGULATION 168-11

DEPARTMENT OF THE AIR FORCE
Wilford Hall USAF Medical Center (AFSC)
Lackland Air Force Base, Texas 78236

Medical Center Regulation 168-1

1 February 1983

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Medical Administration

POLICIES AND PROCEDURES FOR THE WILFORD HALL QUALITY CIRCLE PROGRAM

This regulation establishes the organizational structure of the Wilford Hall USAF Medical Center Quality Circle Program.

1. DEFINITION: A Quality Circle is a group of employees, performing similar work who meet regularly to learn about basic Quality Circle techniques. They apply these techniques to identify problems within their jurisdiction, analyze these difficulties, and recommend solutions to management. When possible, they will initiate the necessary action to implement the solution. Normally, Circles will consist of from three to twelve personnel from the same work area.

2. OBJECTIVES OF THE QUALITY CIRCLE PROGRAM ARE TO:

a. Reduce errors and enhance quality.

b. Inspire more effective teamwork.

c. Promote job involvement.

d. Increase individual motivation.

e. Create a problem-solving capability.

f. Build an attitude of "Problem Prevention".

g. Improve organizational communications.

h. Develop harmonious supervisor/subordinate relationships.

i. Promote personal and leadership development.

j Develop a greater safety awareness.

3. PROGRAM FORMAL STRUCTURE:

a. Steering Committee:

(1) A steering Committee will be established to monitor and direct the Medical Center Quality Circle Program. The Steering Committee will consist of (but not necessarily be limited to) the personnel filling the following management positions:

(a) SG-2 Chairman

(b) SG-3 Alternate Chairman

No of Printed Pages: 5
OPR: SG-3
Approved by: Col Jackson
Editor: TSgt Murphy
Distribution: F;X (AMD/DAPE AMD/SG)

(c) SGA 96

(d) SGD

(e) SGH

(f) SGM

(g) SGHN

(h) OC Coordinator

(i) Other persons by invitation

(j) SGX

(2) The Steering Committee is presided over by a chairman and decisions are reached by democratic process--one persone, one vote.

(3) Steering Committee members may not delegate others to attend for them on a permanent basis.

(4) The Steering Committee will meet monthly or at the call of the chairman.

(5) More than half of the Steering Committee members must be present to constitute a quorum.

(6) The primary functions of the Steering Committee will include:

(a) Declare specific objectives for Quality Circles, such as quality improvement, cost reduction, improved communications, etc.

(b) Develop operational guidelines.

(c) Determine funding arrangements, if any.

(d) Control the rate of expansion of the Quality Circle Program.

(e) Select the coordinator.

(f) Determine the frequency and duration of Circle meetings.

(g) Establish broad base and encourage growth of Quality Circle activities to encompass all relevant areas of the organization.

(h) Provide guidelines for the measurement of the Quality Circle activities and monitor the cost effectiveness and progress at least every six months.

(i) Listen to and evaluate Quality Circle management presentation briefings.

b. Coordinator: The Coordinator is the individual responsible for coordinating and directing the Quality Circle activities within the organization. The coordinator:

(1) Is selected by the Steering Committee.

(2) Interfaces between Facilitators, Circles, Staff organizations, and management.

(3) Is a member of the Steering Committee.

(4) Executes Steering Committee policy.

(5) Is responsible for providing training for new facilitators, and monitoring the training program.

c. Facilitator: The facilitator is directly responsible to the Coordinator for the operation of the Quality Circle Progam and the following:

(1) Training of the Circle leaders.

(2) Overall growth, development of Circles assigned to them.

(3) Attend Circle meetings and provide backup coordination and organizational interface.

(4) Maintain records to reflect Circle.

(5) Responsible for promotional activities to provide awareness of the existance of Quality Circle operations both within and outside of the organization.

(6) Assist Quality Circle leaders in problem identification and appropriateness to group capabilities.

(7) Assist Quality Circle leaders and members in preparation of Management Presentations of problem solutions.

(8) Assist Quality Circle leaders and members to channel measurement criteria into quality cost, or attitude improvements that are consistent with the goals of the organization.

d. Quality Circle Leaders: Provides leadership for the Circles, teaches Circle members the Quality Circle techniques, and is responsible for the operation of their respective Circles. The first Circle leader will normally be the supervisor in that area. The leader provides guidance for the Circle activities and assures proper communication with management through such means as minutes of Circle meetings, activity reports, and management presentations by the Circle.

4. POLICIES FOR THE QUALITY CIRCLE PROGRAM:

a. Voluntary Nature of the Quality Circle Program:

(1) Personnel become members of a Quality Circle in their area by volunteering. They are also free to drop out if they wish.

(2) Personnel suggest problems to their Circles as candidates for analysis, and problems to be worked are selected by consensus of majority vote.

b. Management Support:

(1) Management will provide positive support of the Quality Circle Program by:

(a) Allowing Circles to meet during normal duty hours.

(b) Encouraging formation of Circles as a way of life in the organization.

(c) Placing a high priority on and encouraging members to attend Circle meetings.

(d) Allowing members to attend the meetings of another Circle, when invited to work on a joint project.

(e) Authorizing and encouraging Circle leader candidates to attend leader training.

(f) Providing adequate meeting areas, equipment and supplies to assure effective meetings.

(g) Authorizing selective leader/member involvement in outside conferences, funds permitting.

(h) Publicizing Circle activities and accomplishments.

(i) Supporting Circle activities by articles in the Center Newsletter, Daily Bulletin, and other appropriate media along with presentations during Commander's Call and other gatherings.

(j) Including Circle activities as a part of organizational goals.

(k) Including Circle items in organizational activity reports.

(2) Management will be Participative in Circle Activities by:

(a) Respecting the autonomy of Circles.

(b) Encouraging the management presentation by Circles as an activity that provides communication, motivation, and recognition.

(c) Responding expeditiously to Circle requests and recommendations.

(d) Implementing approved Circle recommendations with a minimum of delay.

(3) Management will also:

(a) Have the authority to promote and initiate management level Circles.

(b) Have the right and are encouraged to suggest problems and projects.

(c) Have the right and responsibility to verify the cost effectiveness of Circle recommendations.

c. Circle Responsibilities:

1. Circle will:

(a) Direct their primary attention to problems and projects under their control.

(b) Assure that each member has an equal vote: One person, one vote.

(c) Utilize the Quality Circle techniques as described in their manual.

(d) Set up schedules for meetings and presentations with due considerations of known organizational work loads and commitments.

(e) Select and analyze any problems or project within the scope of the official objectives adopted by the Steering Committee and described in this document.

(2) Circles will not address subjects identified as being outside their charter. These are:

(a) Pay and allowances (or wages).

(b) Disciplinary policies.

(c) Grievances and other items covered in union collective bargaining agreements.

(d) Personalities.

(e) Medical Center Policies beyond the Circles scope of control.

(3) Circles will also:

(a) Have the prerogative to accept or refuse problems or projects regardless of the source.

(b) Identify, analyze, and implement solutions to problems. If management approval is necessary the Circle will not proceed until it has been obtained.

(c) Conduct presentations to management regarding specific recommendations, accomplishments and status.

(d) Attempt to improve communications, harmony, and involvement between all Circle members as well as between other individuals.

FOR THE COMMANDER

DANIEL E. CHAPMAN, CMSGT, USAF
Chief of Administration

APPENDIX H

SAMPLE QUALITY CIRCLE CLASS SCHEDULE

Schedule of Events
Quality Circle Facilitator and Leader
Class
12-16 April 1982

Monday, 12 April 1982 Room T-2

0800-0850

Introduction to Quality Circles (Col Jackson)

- Introductory Remarks
- Definition
- History
- Philosophy
- Hello Bingo

0900-1050

FILM - "IF JAPAN CAN . . . . . WHY CAN'T WE?"

1100-1150

Objectives and Elements of Quality Circles (Major Morey)

Tuesday, 13 April 1982

0800-0850

Quality Circle Tools and Techniques (Major Morey)

- Brainstorming
- Data Collection
- Check Sheets
- Making A Choice
- Pareto Analysis

0900-0950

Quality Circle Tools and Techniques (con't)

- Cause and Effect Analysis
- Histograms
- Graphs
- Management Presentations

1000-1050

Problem Solving Method (Col Jackson)

1100-1150

Problem Solving Method (con't)

Wednesday, 14 April 1982

0800-0850

"Circles in Action" - SSgt Michael Pointer, Circle Leader, WHMC Area Dental Lab

0900-0950

Management Philosophies -"Fredrick W. Taylor to Theory Z" (Col Jackson)

1000-1050

FILM - "You are What You Were When", Dr. Morris Massey

1100-1150

FILM - "You are What You Were When" (con't)

Thursday, 15 April 1982

0800 - 0850

Group Dynamics (Dr Horowitz)

0900-1000

Communicating and Listening (Lt Sauvageau)

1000-1050

Starting a Quality Circle in Your Area (Major Morey)

1100-1150

Quality Circle Leadership Functions (Major Morey)

Friday, 16 April 1982

0800-1150

Simulation Exercise "Cange Cafeteria" (Group Practicuum)

APPENDIX I

EXAMPLE OF QUALITY CIRCLE

TRAINING PRACTICUM

Cange Cafeteria

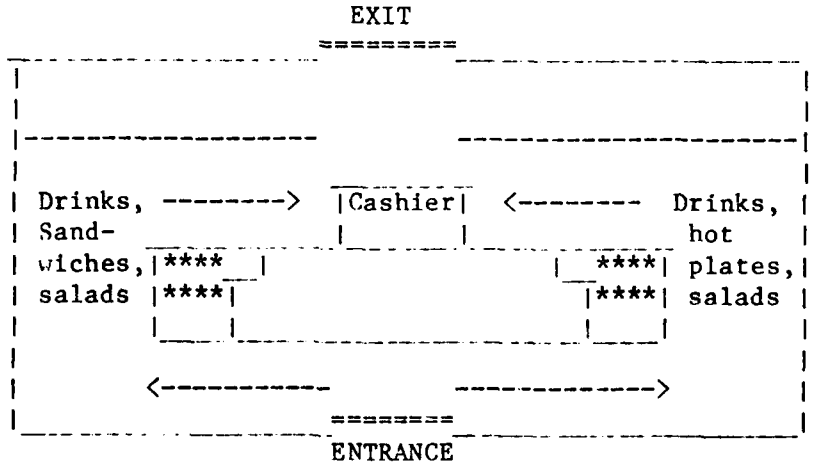
The Cange Corporation manufactures several different parts used by auto assembly plants. The company employs about 2,000 hourly and salaried people and usually has a day shift and an evening shift in full operation during the year.

There are two cafeterias at opposite ends of the plant, the North Cafeteria and the South Cafeteria.

The company has been using Quality Circles for about one year. During the past few weeks the cafeteria workers have been taught how to implement Quality Circles and are ready to begin solving problems.

The layout is the same in both cafeterias.

Staff:
Bus Boys (2)
Cooks (5)
Lines (6)
Cashiers (2)



The sandwich line is open for both shifts but the hot plate line is only open for breakfast and lunch. There are 15 workers in the South Cafeteria, but only [illegible] of them have joined the circle team. The following are the names of the whole staff:

Tom - Bus Boy	Harriet - Line	Jack - Line	Angie - Cook
Elsie - Cashier	Tony - Line	Doris - Line	Susan - Cook
Bob - Cook	Maria - Manager	Virginia - Cook	Barb - Cook
Manuel - Line	Bill - Line	Harriet - Cashier	

Manager

You are one of the circle team members in the South cafeteria. During the past two months you have noticed a gradual drop in the attendance in the cafeteria.

You are really concerned about the drop in attendance since you are the manager. You hope the Quality Circle will solve the problem. You are also concerned about Manuel who you hired the clean up five months ago. He is from your country and you feel a certain responsibility to help him keep his job. Perhaps that is why you moved him to the serving line when old Mac died three months ago. Sometimes he serves drinks and sometimes he works the line. You have also transferred two of your newest workers for two for the North cafeteria to accommodate their car pools; one of the works the day shift and one works the night shift. One of your biggest concerns is the workers who are late for work. You know you will have to talk to them about this soon.

The drop in attendance has grown to over 20% during the two months period since it started. No one knows why it has dropped because there has been no change in the prices for six months.

Since a continued drop in attendance may affect your jobs, the circle team has decided to try and find out the reason for the drop.

Your first task is ti identify the prblem. Begin with steop 1, identify the problem. If you wish to collect data at any time you must design the appropriate check sheets. The course director will supply the data needed if it can be obtained. For any data you collect you must also describe how the data would be collected.

Good Luck!

Bus Boy

You are one of the circle team members in the South Cafeteria. During the past two months you have noticed a gradual drop in the attendance in the cafeteria.

One of your jobs as a day shift employee, in addition to your normal job, is to perform minor maintenance. Two months ago you replaced a valve in the cold water line. It is at this time that you noticed Manuel reading a foreign paper. Your job does not put you in close contact with Manuel or anyone else on the serving lines. However, like the two new employees, he appears to be friendly but is very quiet and shy. In fact, you have never heard him speak English.

The drop in attendance has grown to over 20% during the two month period since it started. No one knows why it has dropped because there has been no change in the prices for six months.

Since a continued drop in attendance may affect your jobs, the circle team has decided to try and find out the reason for the drop.

Your first task is to identify the problem. Begin with Step 1, identify the problem. If you wish to collect data at any time you must design the appropriate check sheets. The course director will supply the data needed if it can be obtained. For any data you collect you must also describe how the data would be collected.

Good Luck!

Cashier

You are one of the circle team members in the South Cafeteria. During the past two months you have noticed a gradual drop in the attendance in the cafeteria.

This was confirmed by your manager Maria at the weekly meeting when she introduced two workers who started working in the North cafeteria two months ago and have just transferred to the South cafeteria. The two transferees switched places with two workers from the South cafeteria who also started working in the cafeteria two months ago. Altogether, three new workers have started working in the South cafeteria during the past six months, the third being Manuel who was hired about five months ago.

The drop in attendance has grown to over 20% during the two months period since it started. No one knows why it has dropped because there has been no change in the prices for six months.

Since a continued drop in attendance may affect your jobs, the circle team has decided to try and find out the reason for the drop.

Your first task is to identify the problem. Begin with Step 1, identify the problem. If you wish to collect data at any time you must design the appropriate check sheets. The course director will supply the data needed if it can be obtained. For any data you collect you must also describe how the data would be collected.

Good Luck!

COOK

You are one of the circle team members in the South cafeteria. During the past two months you have noticed a gradual drop in the attendance in the cafeteria.

One of your jobs in the cafeteria is to unload supplies when they arrive. Most supplies come in bulk quantities. flour, sugar, coffee, etc. The most recent supplies you have unloaded is coffee that was received two weeks age. This was the second batch you recieved from the new supplier; the first batch came in about three months ago.

The drop in attendance has grown to over 20% during the two month period since it started. No one knows why it has dropped becase there has been no change in the prices for six months.

Since a continued drop in attendance may affect your jobs, the circle team has decided to try and find out the reason for the drop.

Your first task is to identify the problem. Begin with step 1, identify the problem. If you wish to collect data at any time you must design the appropriate check sheets. The course director will supply the data needed if it can be obtained. For any data you collect you must also describe how the data would be collected.

Good Luck!

Serving Line

You are one of the circle team members in the South Cafeteria. During the past two months you have noticed a gradual drop in the attendance in the cafeteria.

You have been with Cange for five years and have been working the drink line all that time. You have some concerns about the quality of the food but since the Health Department visited Cange four months ago most of the corrections they recommended have been made.

You are a shy person and do not make friends easily. Therefore you have not spoken to the drink maker on the hot plate line since the day you said "hi" and he said something in a foreign language.

The drop in attendance has grown to over 20% during the two month period since it started. No one knows why it has dropped because there has been no change in the prices for six months.

Since a continued drop in attendance may affect your jobs, the circle team has decided to try and find out the reason for the drop.

Your first task is to identify the problem. Begin with step 1, identify the problem. If you wish to collect data at any time you must design the appropriate check sheets. The course director will supply the data needed if it can be obtained. For any data you collect you must also describe how the data would be collected.

Good Luck!

APPENDIX J

WILFORD HALL U.S.A.F. MEDICAL CENTER

QUALITY CIRCLE MEMBER MANUAL

APPENDIX K

LISTING OF WORK AREAS WITH ACTIVE QUALITY CIRCLES

LISTING OF WORK AREAS WITH ACTIVE

QUALITY CIRCLES

Work Area	Date Started	Status
Area Dental Lab	December 1981	Completed first problem to management presentation
Psychiatric Nursing Unit C-4	February 1982	In training
Psychiatric Nursing Unit T-4	April 1982	In training
Medical Nursing Unit D-6	April 1982	In training
Medical Photography	April 1982	Organizing
Dunn Dental Clinic (Dental Technicians)	March 1982	In training
Manpower and Budget	April 1982	In training
Centralized Processing and Distribution (Sterile Supply)	April 1982	In training

APPENDIX L

COPY OF LETTER TO UNION PRESIDENT

DEPARTMENT OF THE AIR FORCE
WILFORD HALL USAF MEDICAL CENTER (AFSC)
LACKLAND AIR FORCE BASE, TEXAS 78236

115

24 March 1982

Mr. Frank Suarez
President
American Federation of Government Employees, Local 1367
8107 Latigo Plaza
San Antonio, Texas 78227

Dear Mr Suarez

Wilford Hall USAF Medical Center is currently implementing a new participative management philosophy in certain work sections where the creative imagination of our "experts" (workers) in the front line areas is tapped. This philosophy introduces a systematic problem solving process known as Quality Circles .

Quality Circles can best be defined as small groups of workers with a common bond who meet regularly and voluntarily to identify, analyze, solve and implement problems associated with their jobs. Since the potential exists to involve employees that are members of the American Federation of Government Employees, Local 1367, we are vitally concerned about your participation in the effort.

Therefore, you are cordially invited to be a standing member of our Quality Circle Steering Committee. The next meeting will be on the 25th of March 1982 at 1:00 PM in the Commander's Conference Room, Wilford Hall USAF Medical Center. We would be pleased if you or one of your representatives would attend.

In order to provide you with more information about Quality Circles, I have attached a short informative article on the philosophy. Additionally, Major John Morey, our Quality Circle project officer, stands ready to brief you or any of your people on the Quality Circle movement prior to our meeting on the 25th of March. Please let us know if you desire to attend by calling Mrs. Anaya or Major Morey at 670-7353 or 670-5141.

We look forward to your valuable participation in this new and exciting effort in communication and people building through participative management.

Sincerely

T. F. Jackson, Jr., Colonel, USAF, MSC
Administrator

1 Atch
QC Article

APPENDIX M

QUALITY CIRCLE SURVEY FACTORS

QUALITY CIRCLE SURVEY FACTORS

JOB SATISFACTION	Composed of intrinsic and extrinsic factors; measures satisfaction with job
PERCEIVED WORK GROUP PERFORMANCE	Measures performance of work group as the individual gauges it
PERCEIVED SELF-PERFORMANCE	Measures individual's own view of performance
JOB INFORMATION (Job Involvement)	Measures involvement with participation in job, work as central to life identity, and job as part of self-concept
JOB CHARACTERISTICS	Measures perceived task characteristics
WORK ROLE ATTITUDES	Measures amount of decision-making done by individual, job overload (stress), trust and cohesiveness, feedback, supervision, communication, climate
WORK GOALS	Measures work goals
JOB EFFORT	Measures effort put out in accomplishing job
FUTURE WORK PLANS	Measures future plans with respect to Air Force
ORGANIZATIONAL INFORMATION	Measures feelings about organization
SUPERVISOR'S ASSESSMENT	Measures the supervisor's assessment as perceived by the individual
BACKGROUND INFORMATION	Measures demographic information

APPENDIX N

OUTLINE OF QUALITY CIRCLE MANAGEMENT PRESENTATION

QUALITY MANAGEMENT TEAM

PRESENTATION

FLEX TIME

MEMBERS

Micheal Pointer- Introduction & Implementation

Darlene [illegible]- Disadvantages

Javier Garcia-Bautista- Summary

Ralph Montalvo- Advantages

Armando Barajas- Overview

Thomas Taylor- Survey

Janie Klee- Overview

AGENDA

I INTRODUCTION

II OVERVIEW

III SURVEY

IV DISADVANTAGES

V ADVANTAGES

VI IMPLEMENTATION

VII SUMMARY

VIII QUESTIONS

OVERVIEW

I Research References (Data)

a. American Journal of Nursing (Dec. 81)
b. Supervisor and Civilian Employee Newsletter (Nov. 81)
c. Personnel Management (4th ed. 1980)
d. The Kiwanis Management (Mar. 78)

II Interviews

a. Fort Sam Houston
b. USAA
c. Lackland Accounting & Finance
d. Air Force ADL Bases
   -March AFB
   -Lowry AFB
   -Barksdale AFB

DISADVANTAGES

I Increase in Utilities

II Added Work for Supervisors

III Possibility of Low Production Outside of Core Time

IV Interference with Clean-up

V Possibility of abuse of the System

ADVANTAGES

I 50 Hours Production per Week

II Increase in Morale

III Possible added Production

IV Gives Individual Self-responsibility

V Better Prepared to Work

VI Be able to Plan Ahead

VII Classroom Covered 10 Hours a day

VIII Better Hours for Working Parents

IX Be on Time

X More leisure Time in the Evening

XI Better for Personal Appointments

QUALITY CIRCLE SURVEY

1. Would you like to participate in the decision making process with regards to setting work hours? Yes 26 No 6

2. Do you understand what flex time is? Yes 31 No 0

3. Which type of flex time would you prefer?

7 a. None at all.
12 b. 4-day 40-hour week.
2 c. 5-day week working 8 hours Monday, 10 hours Tuesday and Wednesday, 8 hours Thursday, and 4 hours Friday.
4 d. Flex days with a core time of 0800-1500 (come in between 0600-0800).

4. Do you feel flex time would help production? Yes [illegible] No 8

5. Do you feel flex time would help morale? Yes 27 No 3

6. What do you think are the advantages and disadvantages of the type of flex time you chose?

ADVANTAGES	DISADVANTAGES

7. Do you think there should be strict control over flex time?
Yes 21 No 5 No opinion 5

8. If yes, what type of control method or combination of method should be used?

Time Clock 9 Supervisor 13 Other _____
Admin Section 5 Yourself 9

9. Will a change in working hours have an improving effect on your:

a. Arriving at work on time.	Yes 12	No 7	No Opinion 4
b. Attending off duty classes.	Yes 13	No 8	No Opinion 3
c. Morale and work habits.	Yes 20	No 6	No Opinion 2
d. Planning recreational activities.	Yes 21	No 5	No Opinion 2

10. Would you please give any other comments that you may have concerning flex time?

APPENDIX O

GLOSSARY OF TERMS

GLOSSARY OF TERMS

BRAINSTORMING	An intentionally uninhibited technique for generating the greatest number of ideas for later evaluation and development using group dynamics
CAUSE-AND-EFFECT DIAGRAM	A picture composed of lines and symbols designed to represent a meaningful relationship between an effect and its cause(s)
CHECK SHEETS	A form prepared to facilitate the data-collection process
CONTROL CHART	A tool to provide indications of stability in a process by mathematical means, not by visual comparison
HISTOGRAM	A type of graph which shows the distribution of discrete and continuous variables
MULTI-VARI CHART	Graphical control charts showing the dispersion in a process over a short span and a long span of time
PARETO ANALYSIS DIAGRAM	A special form of a histogram in which data classifications are arranged in descending order from left to right to separate the important factors of a study from the trivial factors
SCATTER DIAGRAM	A graph with data points plotted and located according to their values relative to the two axes

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