

PRELIMINARY FEEDBACK ON QC STUDY

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SEPTEMBER 1982

INTRODUCTION

We have been doing research on programs of participative management for several years. In connection with this ongoing effort, we began discussions last year with the productivity group at Westinghouse about doing a study of the quality circle program. After discussions with several sites, it was decided to perform the study in the Transportation Division. The focus of the study was jointly decided upon by the site and the research team. The agreement was to provide feedback on our findings to the site, in return for providing us with a place to do the study. The purpose of this report is to provide you with some of the information we have gathered in this study. We will try to give an overall picture of the program, focus on some specific problem areas, and outline some recommendations for improvements in these areas.

Our study was conducted in the following manner. In order to become more familiar with the operations of circles, we attended meetings of 5 different circles between February and May. At these meetings, we took extensive notes on the circles' activities. Outside these meetings, we engaged in frequent discussions with the members, leaders, and facilitators of the circles. In May and June, we conducted approximately 150 interviews with circle members, non-members, leaders, facilitators, and managers. The interviews averaged about 45 minutes in length. They were held at all three sites, with individuals from 24 different departments, with 40 different job titles. About two-thirds of the interviewees were male; they ranged in age from 19 to 64, with an average of 32, and had been at WTD for an average of about 5 years. Two-thirds of our respondents were circle members, representing 20 different circles.

OVERVIEW OF FINDINGS

GENERAL SATISFACTION

To begin this section, we report on the respondents' satisfaction with circles. In general, the findings were positive. About half (54%) of our sample said they were satisfied or very satisfied with their quality circle in general. 35% said they were either slightly satisfied or slightly dissatisfied, and 11% said they were dissatisfied or very dissatisfied.¹

HOW SATISFIED ARE YOU WITH YOUR QUALITY CIRCLE IN GENERAL

| | ALL | LCS | ACAS | CS |
|-----------------------|-----|-----|------|----|
| VERY SATISFIED | 13 | 13 | 17 | 10 |
| SATISFIED | 41 | 47 | 35 | 38 |
| SLIGHTLY SATISFIED | 18 | 10 | 22 | 24 |
| SLIGHTLY DISSATISFIED | 17 | 10 | 22 | 21 |
| DISSATISFIED | 9 | 13 | 4 | 7 |
| VERY DISSATISFIED | 2 | 5 | * | * |

¹The figures provided in this section are the percentages for each response for all respondents, as well as for each site. In some cases, the numbers will sum to greater than one hundred, because more than one answer was possible. For others, rounding will make sum slightly different than one hundred. The "ALL" column will not usually be the average of the the sites, due to unequal numbers of interviews done at each site. The symbol "*" indicates a percentage which is negligible or zero.

CIRCLE TRAINING

Most members (68%) were satisfied or very satisfied with the training they received once they joined their circle. Three-fourths (76%) said they have learned new skills in circles, specifically working together with others in a group (49%), communication skills (30%), and problem-solving (27%). Professionals, and particularly engineers, were slightly less likely to say that they had learned new skills in quality circles; they mentioned that problem-solving is part of their day-to-day responsibilities.

SATISFACTION WITH CIRCLE TRAINING

| | ALL | LCS | ACAS | CS |
|-----------------------|-----|-----|------|----|
| VERY SATISFIED | 26 | 43 | 21 | 9 |
| SATISFIED | 42 | 33 | 63 | 35 |
| SLIGHTLY SATISFIED | 15 | 7 | 16 | 26 |
| SLIGHTLY DISSATISFIED | 10 | 3 | * | 26 |
| DISSATISFIED | 6 | 10 | * | 4 |
| VERY DISSATISFIED | * | 3 | * | * |

HAVE YOU LEARNED NEW SKILLS IN QUALITY CIRCLES

| | ALL | LCS | ACAS | CS |
|-----|-----|-----|------|----|
| YES | 76 | 81 | 83 | 64 |
| NO | 24 | 19 | 17 | 36 |

WHAT SKILLS HAVE YOU LEARNED IN QUALITY CIRCLES?

| | ALL | LCS | ACAS | CS |
|--|-----|-----|------|----|
| HOW TO WORK WITH OTHERS IN A GROUP | 49 | 33 | 68 | 55 |
| COMMUNICATION SKILLS | 30 | 33 | 26 | 28 |
| PROBLEM-SOLVING | 27 | 30 | 21 | 28 |
| SPECIFIC SKILL (E.G. READING DRAWINGS) | 15 | 20 | 10 | 17 |
| LISTENING | 10 | 13 | 10 | 6 |
| DATA COLLECTION | 6 | 7 | 5 | 6 |
| DEALING WITH MANAGEMENT | 6 | 10 | 5 | * |
| IMPROVED ON SKILLS ALREADY HAD | 6 | 7 | 5 | 6 |

FACILITATORS

Circle members were generally positive about the facilitator's contributions to the circle. Three-fourths (75%) rated their facilitator's ability to help the circle as above or well above average. Circle members noted that the facilitators have been particularly helpful in serving as a liaison with other work groups and managers (29%), as well as keeping the circle's meetings on track (25%). Others (15%) mentioned that the facilitators were willing to do whatever was necessary to help the circle. A few (8%) of our respondents felt that the facilitators could be more effective if they had fewer circles:

Because circles caught on pretty quickly, the facilitators are spread pretty thin...

RATINGS OF FACILITATOR'S ABILITY TO HELP THE CIRCLE

| | ALL | LCS | ACAS | CS |
|--------------------|-----|-----|------|----|
| WELL ABOVE AVERAGE | 22 | 17 | 40 | 12 |
| ABOVE AVERAGE | 53 | 51 | 50 | 58 |
| AVERAGE | 19 | 20 | 10 | 25 |
| BELOW AVERAGE | 6 | 11 | * | 4 |
| WELL BELOW AVERAGE | * | * | * | * |

WHAT THE FACILITATOR DOES TO HELP THE CIRCLE

| | ALL | LCS | ACAS | CS |
|--------------------------------|-----|-----|------|----|
| LIAISON WITH OTHER DEPARTMENTS | 29 | 33 | 28 | 22 |
| KEEPS CIRCLE ON TRACK | 25 | 19 | 24 | 33 |
| GENERALLY HELPFUL | 15 | * | 38 | 15 |
| TRAINING | 8 | 11 | 5 | 7 |
| ADMINISTRATIVE HELP | 6 | 6 | * | 11 |
| MOTIVATION | 4 | * | * | 7 |

HOW CAN THE FACILITATOR DO A BETTER JOB

| | ALL | LCS | ACAS | CS |
|---------------------------------------|-----|-----|------|----|
| MORE ACTIVE PARTICIPATION IN MEETINGS | 12 | 15 | * | 18 |
| TOO MANY CIRCLES | 8 | 15 | 10 | * |
| PUSH FOR MORE CIRCLE MEETINGS | 6 | 9 | 5 | 4 |
| BETTER TRAINING | 6 | * | * | 15 |
| CAN'T THINK OF ANY WAYS | 52 | 41 | 76 | 48 |

CIRCLE MEETINGS

Feelings about the actual circle meetings were mixed. About 40% of those interviewed agreed or strongly agreed that their circles usually get a lot accomplished in their meetings. Some of the circle members feel that their circle meetings are productive and enjoyable: As one member said:

We're making a good effort in QC, doing a good job...our meetings have been productive.

Others were less complimentary:

It's a pretty good circle, but not enough guys are interested; we waste time at meetings.

A worker in Operations told us :

The dullness is because of skipping meetings; there's no rhythm, two weeks is a long time between meetings.

Non-members were again fairly negative about what happens in meetings:

A lot of people go, and just blow the hour off.

WE ACCOMPLISH A LOT IN OUR CIRCLE MEETINGS

| | ALL | LCS | ACAS | CS |
|-------------------|-----|-----|------|----|
| STRONGLY AGREE | 16 | 18 | 29 | 4 |
| AGREE | 24 | 18 | 29 | 28 |
| SLIGHTLY AGREE | 17 | 21 | 6 | 20 |
| SLIGHTLY DISAGREE | 13 | 6 | 6 | 28 |
| DISAGREE | 24 | 24 | 29 | 20 |
| STRONGLY DISAGREE | 7 | 15 | * | * |

CIRCLE LEADERS

The reactions of circle members to their leaders were mixed, but generally positive: 48% rated their leader as above or well above average, and 33% rated their leader as average. Some of the negative aspect of the reaction to leaders is due to a belief on the part of some circle members that management should not be involved in the actual circle meetings. As one person told us:

There should be no supervisors as leaders. QC is supposed to use the knowledge of people on the floor; it does not use people if the supervisor is dictating

It is our impression, however, that this type of behavior is the exception, rather than the rule, at WTD.

RATINGS OF LEADER'S ABILITY

| | ALL | LCS | ACAS | CS |
|--------------------|-----|-----|------|----|
| WELL ABOVE AVERAGE | 15 | 12 | 16 | 17 |
| ABOVE AVERAGE | 33 | 25 | 37 | 39 |
| AVERAGE | 33 | 42 | 32 | 22 |
| BELOW AVERAGE | 13 | 8 | 10 | 22 |
| WELL BELOW AVERAGE | 7 | 12 | 5 | * |

MANAGEMENT SUPPORT

One of the crucial factors in any QC program, or indeed in any program, is the support of management. About two-thirds (65%) of the people we interviewed said that their circle had needed some type of support from management at one time or another. Of these, 36% were satisfied or very satisfied with the support they had gotten, while 33% were dissatisfied or very dissatisfied. Those members who had needed support from middle management were slightly less satisfied with the support they had received than were those who had needed support from their immediate supervisor. Here are some of the things that circle members had to say about the management support they had received:

We have had only one presentation [in our circle], and [management] gave us their approval right on the spot. I feel good that we have implemented a [good idea].

Another member told us:

I'm disappointed with management support; they say they support [QC], but the bottom line is, they didn't...it's not just management, you need engineering support. management needs to give direction for engineering support...

Another thread that runs through these responses is that many members believe that middle management only participates in circles due to pressure from above:

Middle management feels like they have to do it, because Geikler wants it, so they do not like it.

or:

QC is not needed. [management] only does it to please Gateway

While there is probably some element of truth in these statements, our interviews with middle managers indicate that the reality is much more complex. We will provide more detail on this point below.

HAS YOUR CIRCLE NEEDED ANY SUPPORT FROM MANAGEMENT

| | ALL | LCS | ACAS | CS |
|-----|-----|-----|------|----|
| YES | 65 | 63 | 67 | 66 |
| NO | 35 | 37 | 33 | 34 |

HOW SATISFIED ARE YOU WITH MANAGEMENT SUPPORT

| | ALL | LCS | ACAS | CS |
|-----------------------|-----|-----|------|----|
| VERY SATISFIED | 9 | 13 | 7 | 6 |
| SATISFIED | 27 | 26 | 33 | 24 |
| SLIGHTLY SATISFIED | 22 | 35 | 13 | 12 |
| SLIGHTLY DISSATISFIED | 9 | * | 20 | 12 |
| DISSATISFIED | 22 | 17 | 27 | 24 |
| VERY DISSATISFIED | 11 | 9 | * | 24 |

LEVEL OF MANAGEMENT SUPPORT NEEDED

| | ALL | LCS | ACAS | CS |
|------------------------|-----|-----|------|----|
| SUPERVISOR | 45 | 46 | 58 | 31 |
| UNIT MANAGER | 21 | 23 | 17 | 23 |
| ENGINEERING MANAGEMENT | 15 | 9 | * | 38 |
| DIVISION MANAGER | 8 | * | 25 | * |

CHANGE CAUSED BY CIRCLES

An important aspect of a quality circles program is the amount of change that the circles are able to create in the workplace. About half (48%) of those interviewed said that their circle had caused some amount of change in their department. Of those who said that their circle had not caused any change, almost two-thirds (62%) felt that their circle should have caused some change by now. About one-fifth (20%) of the circle members were satisfied or very satisfied with the amount of change their circle had caused, while more (30%) were dissatisfied or very dissatisfied; 50% of the members were slightly satisfied or slightly dissatisfied with the amount of change. Among non-members, 50% said that the quality circle in their area had had no effect at all, 39% said that it had had a positive effect, and 11% said that it had had a negative effect.

HAS YOUR CIRCLE CAUSED ANY CHANGE IN YOUR DEPARTMENT

| | ALL | LCS | ACAS | CS |
|-----|-----|-----|------|----|
| YES | 48 | 57 | 41 | 41 |
| NO | 52 | 43 | 59 | 59 |

SHOULD YOUR CIRCLE HAVE CAUSED CHANGE IN YOUR DEPARTMENT BY NOW

| | ALL | LCS | ACAS | CS |
|-----|-----|-----|------|----|
| YES | 62 | 55 | 71 | 62 |
| NO | 38 | 45 | 29 | 38 |

 SATISFACTION WITH AMOUNT OF CHANGE IN DEPARTMENT CAUSED BY CIRCLE

| | ALL | LCS | ACAS | CS |
|-----------------------|-----|-----|------|----|
| VERY SATISFIED | 3 | 7 | * | * |
| SATISFIED | 17 | 21 | 25 | 6 |
| SLIGHTLY SATISFIED | 40 | 46 | 25 | 39 |
| SLIGHTLY DISSATISFIED | 10 | 7 | 8 | 17 |
| DISSATISFIED | 21 | 14 | 25 | 28 |
| VERY DISSATISFIED | 9 | 4 | 17 | 11 |

WHAT EFFECT HAS THE QUALITY CIRCLE IN YOUR DEPARTMENT HAD (NON-MEMBERS)

| | ALL | LCS | ACAS | CS |
|-----------|-----|-----|------|----|
| POSITIVE | 39 | 36 | 25 | 67 |
| NEGATIVE | 11 | 18 | * | * |
| NO EFFECT | 50 | 46 | 75 | 33 |

TYPES OF PROBLEMS CIRCLE MEMBERS WANT TO WORK ON

We had circle members rank four types of problems in order of how important they are for circles to address. Problems which hurt productivity and increase costs were ranked as most important by 35% of the interviewees, problems which hurt product quality were ranked as most important by 25%, problems that cause aggravation or frustration by 24%, and problems which make the work area unsafe or unpleasant by 15%. While we were somewhat surprised that those interviewed ranked productivity/cost problems as more important than quality problems, there was some evidence that the 'quality philosophy' was held by a number of respondents. For example, one person told us:

Quality helps get orders for new business, and all else follows from this...
another told us:

It don't do no good to make 500 parts if they're no good, it's better to make 250 good parts...

and another:

If we can't put out a quality product, then everything else is not important.
Other employees were just as certain of the importance of productivity:

Productivity and efficiency is the main thing I think is number one, because if you get productivity and efficiency up, it will be better for employees, better job security, better jobs in-house.

Finally, there was some evidence that employees feel that when push comes to shove, quality is not seen as most important by management:

They want it out the door, but they are not too picky about how it's built; the supervisor's main job is to get the product out the door...

and :

Management emphasizes quality verbally, but I think it's a farce; they want a workable part, not a quality part; I get flack for going too slow, to get quality

TYPES OF PROBLEMS RATED MOST IMPORTANT BY CIRCLE MEMBERS

| | ALL | LCS | ACAS | CS |
|-------------------------|-----|-----|------|----|
| PRODUCTIVITY/COST | 35 | 46 | 17 | 32 |
| QUALITY | 25 | 19 | 17 | 43 |
| AGGRAVATION/FRUSTRATION | 24 | 15 | 44 | 25 |
| WORK AREA/SAFETY | 15 | 21 | 22 | * |

SPECIFIC PROBLEMS CIRCLE MEMBERS WANT TO WORK ON

We also asked our respondents to tell us some specific problems that they would like their circle to work on. The most often-mentioned problem was the poor quality of tools, equipment, and material which was identified by 42% of our sample. Other problems mentioned were computer problems (35%), the lack of or poor accessibility of tools and equipment (25%), poor training (20%), the EOCA/drawing system (18%), and the lack of adequate information to perform the job (14%).

PROBLEMS CIRCLE MEMBERS WOULD LIKE TO WORK ON

| | ALL | LCS | ACAS | CS |
|---|-----|-----|------|----|
| POOR QUALITY TOOLS/EQUIPMENT | 42 | 70 | 21 | * |
| COMPUTER PROBLEMS | 35 | 35 | 32 | 39 |
| LACK OF AND/OR LACK OF ACCESSIBILITY OF TOOLS OR EQUIPMENT | 25 | 26 | 42 | 9 |
| POOR TRAINING | 20 | 17 | 42 | 9 |
| EOCA/DRAWING SYSTEM | 18 | 9 | 21 | 35 |
| PROBLEMS WITH WORK AREA | 18 | 22 | 32 | * |
| LACK OF INFORMATION | 14 | 13 | 14 | 13 |
| COMMUNICATION BETWEEN DEPARTMENTS | 7 | * | 21 | 17 |
| SOFTWARE DOCUMENTATION | 6 | * | * | 22 |
| ENGINEERING LIBRARY | 4 | * | * | 17 |

CURRENT STATUS OF PROGRAM

There is ample evidence above to suggest that the circles program in the Transportation Division has enjoyed a certain amount of success. Circle members are generally satisfied with their circles, and would recommend them to their friends. Most members say they have learned new skills in their circle, and many feel that circle membership is a part of their job. We do, however, see a certain amount of disenchantment with quality circles among managers, non-members, and even circle members themselves. While it has been expressed to us in a variety of ways, it centers around the impression *that there has been very little in the way of tangible accomplishments by the circles*. It is apparent from our experiences at WTD that the circle participants themselves, as well as those around them, are becoming increasingly disillusioned with the large amount of time spent in circles, with relatively little to show for it. This feeling is illustrated in these quotes, from a QC member:

Results are the only thing that'll show you that QC is effective; anybody can meet for an hour a week...

and from a non-member:

Nothing apparent has come out of the circle in our area.

It has been our observation in the past that programs which consistently fail to meet the expectations of the participants usually encounter severe difficulties within a few years of their institution.

REASONS FOR THE LACK OF TANGIBLE OUTPUT

It is our impression that there are two principal reasons for the lack of tangible output by the circles: *(1)circles often have chosen simple and/or inappropriate problems, and (2)they have taken a very long time to solve them*. These twin problems appear to be the crux of the dissatisfaction with circles. As one former circle member told us:

I was in a circle but I left; it was a waste of time, it did not have priority; we were working on minor things, not the real problems.

Another non-member said:

I do not know why they chose [the current problem]; they spent six months on this? It's an insignificant problem; they may say it's a learning problem, but because of the rate of turnover, the learning is wasted.

A circle member complained:

It's taken ten months for an insignificant, minor problem to be solved; I'd hate to see it if we tried to do something important...I'm dropping out; it's too slow

And finally, from a manager:

We've been tackling problems like lights, and the phone, that wouldn't be on a list of the five thousand most important problems...

WHY DO CIRCLES CHOOSE SIMPLE AND/OR INAPPROPRIATE PROBLEMS?

By "simple" problems, we mean problems to which the solutions are fairly obvious, and which do not utilize the unique skills and abilities of employees in a particular work area. By "inappropriate" problems, we mean problems in areas about which the circle has little knowledge, and over which they exercise no control. This type of problem is often rightfully the problem of another work area, or of management. Why do circles choose these types of problems?

INEXPERIENCE AND QC POLICY

The circle program has undergone a period of rapid growth during the last year or so, to the point where the majority of circles are still working on their first problem. It has been the policy of the QC facilitators (though this policy is now changing) to encourage new circles to select "easy" problems. This, in conjunction with the proportion of new circles, has resulted in a situation where most circles have been working on problems which are generally seen as not very important. While it is probably unfair to look for quick results in a program as complex as quality circles, this is apparently what people at WTD have been doing.

MOBILITY

Although we might expect that the experience level of circle members could be increased over time merely by slowing the growth of circles, this may not be the case. As was pointed out in one of the quotes cited above, most circles do not remain intact long enough to profit from the experience they have gained. While this is partially due to frustration from taking a long time to solve problems (see below), it has more to do with the extremely high degree of mobility within the division. (In our sample of WTD employees, 47% had worked on their current job for less than a year, and 72% had worked on their current job for less than two years.) Unless the amount of mobility decreases significantly in the future, inexperience is likely to remain a problem.

FOCUS OF ATTENTION AND FRUSTRATION

In other programs which are similar to quality circles (e.g. Scanlon Plan), it is often found that employees generally focus their attention on problems which make their own job unpleasant to perform, rather than problems which have any significant impact on department or division objectives. This appears to be true in circles as well. It is even more likely to happen when circle members are frustrated from unsuccessfully trying to resolve simple problems via other means. Thus, instead of the expected process where workers inform management of problems of which they are unaware, some circles have used QC as a means of increasing their power by either bypassing or forcing the hand of supervisors whom they do not see as reacting to their problems. What essentially happens

here is that the QC is trying to reorder management's priorities. Whatever the merit of the QC's request, holding several months of circle meetings appears to be an inefficient way to have it granted. A related problem is the relatively small amount of management participation in problem selection. Without this participation, circles are much more likely to choose problems for which they lack sufficient information to solve, or management is already working on. In one circle we observed, where no manager was involved, the members worked for over six months on a problem for which they accidentally discovered that management had already devised a solution. The reorganization which is currently in process makes management involvement in problem selection even more crucial. In the current context of change, what is a relevant and crucial problem today may be reorganized out of existence tomorrow.

WHY DO CIRCLES TAKE SO LONG TO SOLVE PROBLEMS?

The second major factor in the lack of results from QC is the length of time it has taken circles to complete work on a problem. Two of the causes for this are the same as we have noted above: *inexperience* and *mobility*. Circles take a long time to finish because, for many of them, it's their first time through the process and members regularly move in and out of the circles. Members leaving the circles may be particularly costly when the circle is in the latter stages of a problem, and is relying on an individual to make part of a presentation. In one circle which was preparing for a presentation, one of the members changed shifts, but continued to make a special trip into work, to come to circle meetings. We do not know how commonplace this sort of commitment is.

CANCELLATION OF MEETINGS

Another reason for the slow progress of circles on problems is the cancellation of circle meetings. Probably the most common reason for meetings being cancelled is the "end of the month crunch", or other busy times when either the supervisor or the members themselves feel that they can not spare the time away from work to meet. While this is relatively rare in some circles, it has become such a problem in others that members feel that they are not able to make any consistent progress.

QC PROCESS ITSELF

The final reason for the large amount of time spent on problem-solving is the process itself. Each quality circle has traditionally gone through essentially the same steps en route to solving a problem. This process is taught during training, and reinforced by the facilitator. It involves, among other things, brainstorming, Pareto diagrams, cause and effect analysis, data collection, and management presentations. Our purpose here is not to criticize the QC problem-solving process, as it appears to be a highly structured method by which even individuals with limited problem-solving experience may solve complex

problems. Our only point is that it is extremely time-consuming, taking several months, and in some cases over a year, to solve a problem, and to present the solution to management.

We may summarize this section of our report as follows: while the QC program has obviously been fairly successful, there is increasing disenchantment with the program among both workers and management, due to the lack of productivity and quality improvements coming from circles. It is our impression that this lack of results stems from two main factors: selection of simple and/or inappropriate problems, and inordinate amounts of time spent on problems. We have outlined a number of causes of these factors, including inexperience, mobility, frustration, cancelled meetings, and the complexity of the QC process.

RECOMMENDATIONS

Our recommendations for change are based on the results and problems discussed above. They fall into four areas: QC process, the role of management, the development of new circles, and maintaining long-term viability of circles.

QC PROCESS

While we believe that the QC process as practiced contains many good features, it could be improved by making it more flexible in several ways.

1. EXPEDITE TRAINING

Training is currently performed during the first eight or so circle meetings. Thus, even if there are no delays, it is two months before the circle begins to work on a problem. This may be shortened by having one day-long training session, or two half-day sessions, soon after the circle is formed. Alternatively, training could be staggered so that it is given only as the circle members need it. One circle has already used this approach, with no apparent problems. This would get rid of unnecessary training, as well as eliminate the two month delay in starting to work on a problem.

2. SHORTEN BRAINSTORMING

In the problem selection process, several changes are possible. One is to modify the current practice of developing exhaustive brainstorming lists, some of which are as long as one hundred problems. No circle could address all of these problems in five years, so it seems pointless to spend hours developing them. It appears that most of the problems which are actually worked on by the circle are brought up within the first thirty to sixty minutes. In any case, if a circle actually ran out of problems, they could always brainstorm again. Another alternative in this area, which was suggested by a member of an engineering circle, is to develop a pool of problems which have been previously identified by other circles. This would save the duplication of effort involved in different circles

coming up with many of the same problems; it would be particularly helpful for circles which are in the same general type of work area as a previous circle.

3. CATEGORIZE PROBLEMS

A second change in the problem selection process would be to assign problems to one of several categories, with different action plans for each category. This is quite different from the current practice of focussing on only one problem, with a predetermined process for dealing with it. Examples of such categories would be "problems which one circle member could solve", "problems to refer to the supervisor", "problems we can work on together", etc. In this way, circle members could select several problems to work on simultaneously. They might also be able to see some progress on the "simple" problems, without devoting six months of effort to solving them. As we pointed out above, often a "solution" is not what is needed.

4. WORK ON MORE THAN ONE PROBLEM AT A TIME

Several of the changes we recommend in the problem-solving stage are outgrowths of those noted above. The first is to encourage the division of labor in working on problems. While it probably builds camaraderie for all the circle members to work on all the steps of the same problem together, it is extremely inefficient. Perhaps groups of two or three members could be assigned to some of the smaller problems, or could choose to work on those which interested them most. Meanwhile, the entire circle would work on a major problem of mutual concern. This may involve occasional work outside of the circle meeting, in order to coordinate and do background work on the various problems. While this may currently be disliked by supervisors, if other changes outlined below are made to increase problem relevancy and managerial participation, supervisors may be less hesitant to grant members time to work on circle problems.

5. USE THE QC PROCESS SELECTIVELY

The final change we recommend in the problem-solving process is to utilize only the steps in the process which are relevant for the current problem. The QC tools (Pareto, etc.) should be viewed as a portfolio from which to select, rather than as an iron-clad procedure. It might also be helpful to try to add new tools and techniques to the problem-solving repertoire of circles. This will require a certain amount of judgment on the part of the facilitators, as well as the circle members. It will also place a greater premium on joint planning between the facilitator and the circle leader, since there will be greater ambiguity as to what step comes next.

ROLE OF MANAGEMENT

Currently, the role of management in quality circles consists of coming to presentations, congratulating the participants, and deciding whether or not to implement the circle's ideas. There are a number of specific ways in which we believe this role should be augmented.

6. HAVE MANAGERS CLEAR UP SIMPLE PROBLEMS

Managers should try to clear up as many of the "simple" problems as they can, as soon as possible after the circle identifies them. One non-member told us:

I do not believe that there's anything a QC can do that a manager couldn't do within an hour.

In our opinion, statements like this are more of a reflection of the track record of circles so far than an accurate appraisal of their potential. If indeed there are simple problems which can be solved quickly by management, it will save the circle from spending a great deal of time on these problems, and free them to work on more important problems. It will also show the circle members that management is acting in good faith. While it may be tempting to legislate the types of problems circles can choose, it makes more sense to us to remove the frustrating problems, so that the circle members will *want* to work on more significant problems. We realize, of course, that all the problems which frustrate QC members will not be so easily solved. It should in this case be the responsibility of management to explain, as candidly as possible, why this is so. Our experience has been that circle members will be satisfied by this, especially if the supervisor is able to solve some of the other problems.

7. GET MANAGERS INVOLVED IN PROBLEM SELECTION

Our second recommendation for broadening the managerial role in circles is to increase the amount of managerial participation in selecting problems. This could take several forms. The supervisor could brainstorm with the circle, and add his or her own problems to the list². Alternatively, the supervisor could review the list with the circle, and try to provide them with any relevant information about these problems. For example, the supervisor might know that a certain problem has already been solved, or may soon become irrelevant. The supervisor could also take this opportunity to "skim off" some of the simple problems to take care of himself, as mentioned above. Some supervisors have already begun to adopt some of these techniques, and they appear to be more satisfied with the problem selection and progress of their circles. Of course, some supervisors may use this as an opportunity to force their priorities for problems on the circles. They would have to be warned of the negative reaction in which this is likely to result.

² If the circle members are reluctant to brainstorm in the presence of their supervisor, as some are, part of the brainstorming session could be done without managerial participation.

8. MANAGEMENT SHOULD PROVIDE INFORMATION TO CIRCLES

An additional recommendation for change in this area is that managements providing relevant information to circles should not be confined to the problem selection stage. The supervisor and unit manager should be available to the circle as resources, since the manager is aware of cost data, constraints, and so on of which the circle members are not aware. Sharing as much of this information as possible on a regular basis will prevent the circle from spending time on a problem for which the cost of a solution is prohibitive, other solutions have already been devised, etc. It will also tend to align the circle program more closely with the strategic direction of the business units, and of the division as a whole.

9. FORM A MANAGEMENT STEERING COMMITTEE

Another potentially important role for a few managers is that of a steering committee. This committee would have several functions. First, it would serve to show other managers, as well as employees, that QC is not just a staff program that they have to endure, but something that can help them. Second, the committee could periodically evaluate the programs progress, and suggest ways in which it could be adapted to changing conditions. Thus, the steering committee could help the program evolve, by finding new forms for the QC program. This is consistent with our above statements that the QC process should not be considered untouchable; changes and adjustments should be made as necessary, so that the program does not become stagnant.

DEVELOPMENT OF NEW CIRCLES

The recommendations we have given so far have applied to circles which are already formed. Those in this section are concerned with the institution of new circles.

10. QUALITY NOT QUANTITY

We feel that the division should pay more attention to the quality of the circles than to their quantity. We believe that the number of circles cannot continue to rapidly grow without further spreading resources which are already spread dangerously thin. Instead, this should be a time for consolidation and strengthening of the current circles, and bolstering the reputation of the program in the division through concrete achievement. When the number of circles is again increased, several criteria should be used to select target areas. Work groups which are experienced, and which have relatively stable membership and good relations with their supervisor should be considered first. It would also be advantageous if the department were made up of individuals who were respected by their fellow employees outside the department, and if their department were similar to other departments in the division. Obviously, no work group will possess *all* of these characteristics; this is meant merely as a guide. The institution of new circles in areas such

as these would increase the chances that the circle would be successful, and that others would observe this success, and consider circle membership a positive experience.

11. FORM INTERDEPARTMENTAL CIRCLES

While most of the existing circles have been confined to one department or work group, there have been some which have had members from several departments. Circles which fit this description are currently made up of engineers working on software problems, and clerical workers, who recently made a presentation on office procedures. We believe that interdepartmental circles should be encouraged, for a number of reasons. First, few problems pertain to only one work group. This is especially true in light of the reorganization/decentralization ongoing in the division. Second, combining members from various work groups gives the circle a greater reservoir of knowledge and skill from which to draw. Third, circles which are formed from multiple work groups will be less likely to select a problem which will be rightfully the claim of another group, or to attribute the entire problem to the attitude/lack of skill/stupidity of some other group or department, which is obviously not represented in the circle. Finally, circles such as these will be more likely to choose fairly important problems, since they do not share the same parochial concerns of a single work group.

12. FORM TEMPORARY CIRCLES

While it is often assumed that once a circle is formed, it should last forever, we recommend considering the formation of circles which are explicitly temporary. These circles could be formed to work on a specific problem, and disbanded when the problem is solved. Certain employees would be attracted to this kind of circle because of its focus on a specific problem in which they are interested, while others would be attracted to the opportunity to participate without making a long-term commitment.

MAINTAINING LONG-RUN VIABILITY

A problem which quality circles share with other similar programs is that many circles do not survive long beyond their first year. There may be various reasons for this, some of which we have indicated above. In this section, we outline some specific ways in which the long-run viability of circles could be improved.

13. RETRAINING

While members generally approach a new circle with a great deal of enthusiasm, this often wears off over a period of time. One way to renew interest in the circle program is to do periodic retraining of members. This involves not only providing them with new skills and ideas, but reviewing the basic philosophy behind circles. It is easy to lose sight of the reason for circles when members work for months on a problem. This retraining should serve to rekindle, at least to some extent, the initial enthusiasm exhibited by most circle members.

14. ANNUAL CIRCLE EVALUATIONS

Each circle should be given the opportunity to evaluate themselves annually. This evaluation should include looking at the circle's accomplishments over the previous year, comparing this to their goals, and considering what problems lie ahead for the circle. This would provide an opportunity to rotate the membership in the circle, if there are others who are interested in joining. It would also be a way for members to recommit themselves to being in the circle. Finally, the circle could decide at this time if they wish to continue to meet. Perhaps they could make this decision on their own, or present it as a recommendation to management.

CONCLUSIONS AND PLANS

We have presented here a preliminary report of our findings on quality circles. It has been our objective to study the program in an objective manner, and to present recommendations for change to management. Our next step is to present feedback on the results of our study to the individuals we interviewed. We hope that the feedback we provide will be a catalyst for reevaluation and change on the part of both workers and management at WTD. We will be happy to be a part of any group working to improve the quality circle program, or to serve in any other capacity to accomplish this objective.