

# ASQ Statistics Division Newsletter

Volume 5, Number 2, February 1984

## Contents

- [Chairman's Message](#)
- ['84 Quality Congress Rescheduled](#)
- [Statistics Division Minipaper: 'Stop Light' Control](#)
- [Editors Corner: 'Wanted Minipapers' or 'The All New Volunteer Army?'](#)
- [Call for Papers - 1985 AQC in Baltimore](#)
- ['Quality Renaissance' Theme at Akron-Canton Conference](#)
- [Division Sponsors Tutorial at Minnesota Conference](#)
- [1984-85 Officer Nominees](#)
- [Statistics Division Speakers At 1984 Annual Quality Congress](#)
- [Councilor Spotlight](#)
- [SQC Questions, Queries and Quandries](#)

# Chairman's Message

By John Ramberg

I am delighted with the resurgence of statistical quality control activities in universities, government and particularly U.S. industry. These activities and interest have created tremendous needs in training, continuing education and consulting for statistical quality control professionals. Membership in the Statistics Division of ASQC can assist you in meeting these needs and evaluating potential programs through short courses, conferences and communications with members. In this issue, in addition to reporting the ongoing activities of the Division, I would like to stress membership advancement.



## Membership Advancement

Please review your membership status. Are you eligible for advancement to a new grade? Upgrades to senior membership are often over-looked. The essential requirements are: age (30 years or over) and active quality experience (10 years or more, 4 of which could be education). I would guess that we have at least one hundred members who are qualified to be senior members, but have not processed the paperwork. Let's put our examining committee to work. Send your application (available from ASQC headquarters or me) or direct your questions to me.

We have submitted our first candidate for Fellow of ASQC and participated in the preparation of nominations of other candidates. This procedure is complex. If you have any suggestions for next year, now is the time to begin. Final paperwork must be completed by October.

## Conference Sponsorship

We reached an agreement in principle on the joint sponsorship of the Annual Fall Technical Conference, beginning Fall 1985, with the Chemical and Process Industries Division of ASQC and the Section on Physical and Engineering Science of ASA. Our first task is to develop "something new" for the conference. What are your needs or interests? Pete Jacobs is taking the lead on this major division activity.

## Education

Our "How-To Series" under the direction of Sam Shapiro and John Cornell is proceeding nicely. Suggestions on topics would be appreciated. Bill Mead is leading the short course development area. Write or call Bill concerning your needs in this area.

## Miscellaneous

A councilor is needed for Region 4 (Canada). The election of officers and appointment of activity chairmen is imminent. Give Bill Mead your input. Ron Askin is completing his manuscript reviews for the 1984 annual meeting in Chicago now scheduled for May 14 through 16. Bill Mead represented the

Division at the General Technical Council meeting held at QUALTEST 83 in Dallas. Finally, I received many positive comments about the newsletter. Thanks, Ed, for the great job.

# '84 Quality Congress Rescheduled

The 1984 Annual Quality Congress, originally scheduled to be held at the Denver Hilton has been relocated to the Palmer House Hotel in Chicago, Illinois on May 14, 15, and 16. Persons planning to attend the AQC should note that this is one week earlier than previously announced. The move was precipitated by the potential sale of the hotel in Denver.

A list of the papers to be presented at Statistics Division sessions can be found on [below](#).

# Statistics Division Speakers At 1984 Annual Quality Congress

"Efficiencies of CSP Plans in Quality Control"

-Maurice C. Bryson and Thomas R. Bement, Los Alamos National Laboratory

"An Updated Look at NLG for Process Control"

-Shawn S. Yu and Kenneth E. Case, Oklahoma State University

"Process Control Management"

-Basile A. Denissoff, Corning Glass Works

"Quality Control at the Bureau of Labor Statistics"

-Eric D. Dmytrow, Bureau of Labor Statistics

"The Road to Hell"

-John Bolcar and Michael F. Flynn, Adolph Coors Company

"Graphical Display of Mixture Response"

-Lynne B. Hare, Thomas J. Lipton, Inc

"Bayesian Sampling Plans: Controversial Tools in QC"

-Edward F. Mykytka, Auburn University

"S.P.C. Implementation in Centerless Grinding"

-Stan T. Rzeszotarski, Eaton Corporation

"Controlling Means of Stationary Processes"

-Rainer Franzkowski, Deutsche Gesellschaft fur Qualitat e.V

"Bayesian Acceptance Sampling-How and When"

-Thomas W. Calvin, IBM Corporation

# Statistics Division Minipaper

## 'Stop Light' Control

by Maureen S. Heaphy and Gregory' F. Gruska

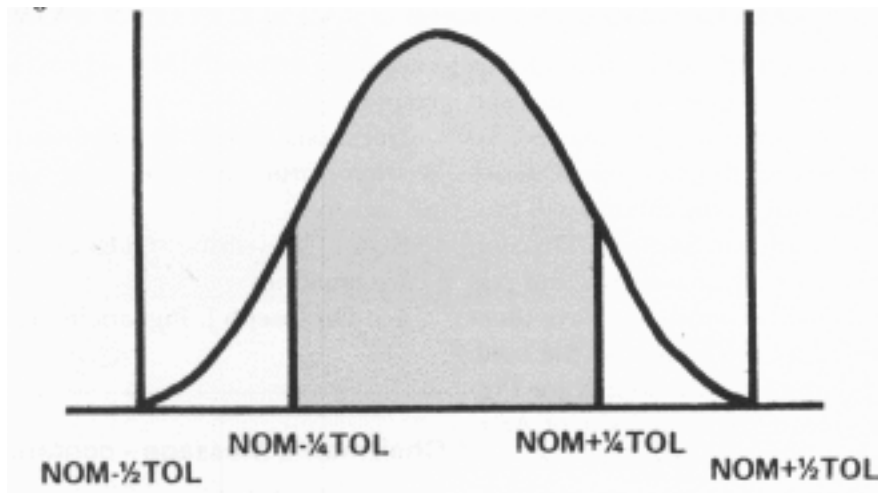
With emphasis on "build it right first time" and "you can't inspect quality into a product," many traditional and new quality techniques are being implemented. One simple but effective procedure is stop light control which is a precontrol technique. The underlying philosophy is to detect the significant changes in the process. Stop light control requires no computations and no plotting, thereby making it easier to implement than control charts. A sample as small as two pieces with an occasional three additional pieces for a marginal process is all that may be required. Although the development of this technique is thoroughly founded in statistical theory, a program can be implemented and taught at the plant level without involving statistics.

The assumptions in stop light control are twofold:

- the system is in statistical control,
- process performance (including gage variability) is less than or equal to blue print tolerance.

The first assumption means that all controllable sources of variation in the process are being controlled. The second assumption states that 99.73% of the pieces being produced are within specification without sorting.

If the foregoing assumptions are satisfied, the tolerance can be divided so that Nominal  $\pm 1/4$  Tolerance is labeled as the green area and the rest of the area within the blue print specification is yellow. Any area outside the specifications is labeled red. Statistically, 87% of the pieces are in the green area, 13% are in the yellow area and 0.3% are in the red area. These calculations assume the distribution of parts is normal, and the process capability is between 50% and 80% of the tolerance. Similar calculations could be done if the distribution was found to be non-normal or highly capable.



The steps for stop light control can be outlined as follows:

1. Check 2 pieces; if both pieces are in the green area, continue to run.
2. If one or both are in the red, notify designated person for corrective action and sort material. When

setup or other corrections are made, repeat step 1.

- a. If one or both are in the yellow, check three more pieces. If any pieces are in the red, notify designated person for corrective action and sort material. When setup or other corrections are made, repeat step 1.
- b. If none are red, but three or more (out of five pieces) are yellow notify designated person for corrective action. When setup or other corrections are made, repeat step 1.
- c. If three are green and the remainder are yellow, continue to run.

Measurements can be made with variable as well as attribute gauging. Certain variable gaugings such as dial indicators or air columns are better suited for this type of program since the indicator background can be color coded. No charts or graphs are required.

Maureen S. Heaphy is manager of Corporate Quality and Reliability, General Motors Corporation, 3044 West Grand Blvd., Detroit, MI, 48202. Gregory F. Gruska is a consultant with The Third Generation, Inc., 1157 Shallowdale Road, Troy, MI. 48098.

## FOR FURTHER READING

A decision rule that is similar to, and perhaps even simpler than, stop light control was developed at the Jones & Lamson Machine Company in 1954. A discussion of this rule, called PRE control, can be found in the third edition of Juran's *Quality Control Handbook* (on page 23-30), An updated version of this procedure is a possible subject for a future minipaper.

An interesting discussion of control charts and decisions rules is also given by j. E. Jackson in an article entitled "Evaluate Control Procedures by Examining Errors in Process Adjustment" which appeared in the April 1977 issue of the *Journal of Quality Technology*.

# Editor's Corner

## Wanted: 'Minipapers' or 'The All New Volunteer Army?'

**Ed Myktyka**

One of the drudgeries of editing a newsletter such as this is the constant search for new material. Your humble editor is finding this to be also true in his quest for minipapers.

Many editors resort to making a broad appeal for submissions but, unfortunately, the response to such appeals is usually poor and often nonexistent. This is particularly distressing since it leads the editor to wonder if anyone is actually reading his publication.

Your humble editor thus has decided NOT to ask you for your submissions (although your ideas and contributions are, as always quite welcome). Rather, an appeal is made for you to put someone else on the spot! Volunteer a friend or colleague whom you feel has some good ideas to share.

It is often much easier to spot a good idea or worthwhile thought in someone else's work. We are often either too modest or lack enough self-confidence to believe in our own ideas. Thus, if you spot something that you think other members of the division would enjoy or find worthwhile, just let me know and I will take care of appealing to the person you recommend to "volunteer."

### **Free Publicity**

As I have mentioned before, I would like to encourage you to use this newsletter to publicize events that you feel would be of interest to members of the Division. In this issue, for example, there are announcements for conferences sponsored by the Minnesota and Akron-Canton sections. In fact, because this issue is appearing a little later than originally scheduled, we will be mailing it first class to members in the geographic region that would be most likely to attend the Minnesota conference.

# Call for Papers - 1985 AQC in Baltimore

In an attempt to coordinate its efforts for the program at the 39<sup>th</sup> Annual Quality Congress, the Statistics Division is issuing an advance call for papers to be presented at division sponsored sessions. Papers must be new contributions relevant to the application of statistics in the quality control field.

Contributors should prepare a 250 word abstract that summarizes the objectives of the paper and the conclusions that will be made. Contributions should be addressed to

William M Mead  
Manager, Statistical Analysis  
Babcock&Wilcox  
P. O. Box 785  
Lynchburg, VA 24505

Deadline for submissions is May 11, 1984. The division will assist authors with the submission of abstracts to the national technical program committee.

The congress will be held in Baltimore, MD, on May 6-8, 1985 and will have "Quality - The Result of Teamwork" as its theme.

# 'Quality Renaissance' Theme at Akron-Canton Conference

A slate of three speakers representing the Statistics Division will be included as part of the 26<sup>th</sup> Spring Conference hosted by the Akron-Canton Section of ASQC. The conference is to be held on March 16 and 17 at the Akron Cascade Holiday Inn in Akron, OH.

Speaking on Saturday, March 17 will be Alonzo Church from the General Tire and Rubber Company, Frank Wehrfritz of General Electric (retired), and Michael Mazu of the B. F. Goodrich Company. Church's presentation is entitled "Software for Use in the Design of Experiments." Mazu will speak on a topic entitled "Measuring Process Capability." Wehrfritz's topic was not available at press time.

The conference will feature other presentations, including the keynote speakers Len Seder and H. J. Bajaria, on Friday, March 16. These talks will focus on the general theme "Quality/Productivity Renaissance 1984." Further details regarding the conference may be obtained by phoning Ed Long at (216) 796-1278.

# Division Sponsors Tutorial at Minnesota Conference

The Statistics Division will be sponsoring a full day tutorial entitled "Simple and Powerful Tools for Understanding Variability" at the 1984 Minnesota Quality Conference. Presenting the tutorial will be Andrew Kirsch and Rosann Klutzke, both of whom are senior statisticians with 3M in St. Paul.

The conference will be held on Wednesday, February 22, 1984 at the Radisson South Hotel in Bloomington, MN. Hosted by the Minnesota section of ASQC, this year's conference has a theme which concentrates on the individual's responsibility for quality: "Quality ... it's up to me!" Five series of sessions which focus on this theme will run concurrently with the tutorial.

In addition, the conference will be highlighted by addresses from Roger Hale, president of the Tennant Company in Minneapolis, and John L. Hansel, president-elect of ASQC. Their addresses are entitled, respectively, "Quality Growth Through Sharing" and "Role of the Quality Manager as an Integrator."

Registration fees for the conference at the door will be \$75 all day, %50 half day, and \$35 for students. Further information may be obtained by phoning Doris Martinson at (612) 735-3170.

# 1984-85 Officer Nominees

The following have been announced as the Statistics Division's nominees for officers for 1984-85.

Chairman:

William M. Mead

Chairman-elect:

Peter J. Jacobs

Secretary:

Ronald G. Askin

Treasurer:

Edward F. Mykytka

Three of these candidates are current officers of the division: Bill Mead is chairman-elect, Pete Jacobs serves as secretary, and Ed Mykytka is treasurer. Ron Askin is a regional councillor and is the division's program coordinator for the 1984 AQC.

# COUNCILOR SPOTLIGHT

## Michael J. Mazu -Region 8

Michael J. Mazu is a senior quality development engineer for the Tire Group of the B.F. Goodrich Company. His responsibilities in this capacity relate primarily to the design of statistical studies and data analysis, including the design and implementation of computer programs to assist in data acquisition and analysis, the design of efficient sampling programs to monitor production processes, and the design, conduct and review of process capability studies. He also serves to develop and instruct training programs on statistical techniques.

Mike is a senior member of ASQC and is a past president of the Akron-Canton section. He also holds membership in the American Statistical Association, the Mathematical Association of America, and the Akron Rubber Group. Mike has presented various papers in the field of statistical quality control including such topics as the detection of outlying observations, graphical data analysis, process improvement through feedback, process capability, and the use of personal computers in quality assurance.



# SQC QUESTIONS, QUERIES AND QUANDRIES

Starting in the next issue of this newsletter a new question and answer column will be unveiled. To be entitled "SQC Questions, Queries and Quandries," the column will provide a forum for Statistics Division members to ask questions about statistical quality control and have them answered by the leaders in the field. The column will be edited by Joe Pignatiello from the University of Arizona who will field the questions and relay them to the appropriate persons for a response.

This new column is inspired, in part, by the success of Carlos Moreno's "Ask Carlos" column which appeared in previous issues. Its purpose is to enable Statistics Division members to exploit the talent and expertise that reside within the division. If a questioner would like to have a query answered by a certain individual, the editor will endeavor to encourage that individual to provide a response.

Questions should be submitted in written form (no telephone calls, please) to: SQC Questions, Queries and Quandries, c/o Dr. Joseph J. Pignatiello, Jr., Systems & Industrial Eng. Dept, University of Arizona, Tucson, AZ 85721. A name, address and telephone number should accompany each question, query or quandry in case some point needs to be clarified. Anonymity will be preserved upon request.