

# ASQ Statistics Division Newsletter

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# Officers of the Statistics Division, ASQC

New Chairman

Douglas C. Montgomery  
School of Industrial and Systems Engineering  
Georgia Institute of Technology  
Atlanta, Georgia 30332

New Chair-Elect

Frank B. Alt  
Dept. of Management Sciences and Statistics  
University of Maryland  
College Park, Maryland 20742

New Treasurer

Peter J. Jacobs  
3M  
224 - SW 3M Center  
St. Paul, MN 55144

New Secretary

John S. Ramberg  
Dept. of Systems & Industrial Engineering  
University of Arizona  
Tucson, AZ 85721

# Chairman 's Message

## Douglas Montgomery

During its brief existence, the Statistics Division has experienced rapid growth. We presently have over 2,000 members, and are continuing to increase our membership at a rapid rate. I would like to take this opportunity to share with you a number of my thoughts and ideas regarding goals, objectives, and activities for the Division over the next few years.

First of all, I would like to solicit advice and guidance from all Division members concerning their views of the Division and the kind of activities we should be involved in. Your input is really needed.

We're going to begin publishing a newsletter on a regular basis. Our objective is a quarterly newsletter, and we hope to get that project on schedule this year. Hopefully, the newsletter will become an important vehicle for contact and dialogue between Division members. Anyone who has information he wishes to publish in the newsletter, or suggestions for newsletter content, should contact either the newsletter editor (Ron Askin) or myself.

Some of the other possible areas of activities that the Division could become involved in are the following:

### Membership

The Division's goal should be to increase membership at at least the same rate of growth as the overall membership of ASQC. This could be accomplished by increasing the awareness of current ASQC members of the Division's activities, and through appropriate emphasis of conference programs and other activities that the Division is involved in.

### Members' Personal Development

A major undertaking of the Division will be the promotion of wider member involvement in Division activities. This could include encouragement of member contributions to the Division's newsletter, to Quality Progress (and other ASQC publications) to the "How-To" booklet series published by the Division, conference involvement, and in other activities. The regional councilors should provide a direct communications link between the Sections, individual members, and the Division. I am encouraging all of the regional councilors to get involved with Section activities in their region. These individuals may be contacted to serve as speakers at Section meetings, and to participate in other programs.

### Education

The Division long been involved in publishing the "How-To" booklet series, edited by John Cornell and Sam Shapiro. This is an outstanding series of books dealing with basic statistical methods and their application in quality control. The plans are to continue publication of this series, and to expand it as far as possible. There is a brief report about the status of the series elsewhere in this newsletter.

Also in the Education area, we have been conducting one-day short courses at the annual Quality Congress. We plan to continue this activity, and would be delighted to work with any Section that is interested in sponsoring a one-day seminar on a particular topic. Continuing education is an area in which the Division could make a great contribution to the Quality profession.

## **Conferences**

The Division will continue to be involved with the annual Quality Congress, and to organize several sessions dealing with statistical topics in quality control at that meeting. We are also getting involved with the annual Conference on Applied Statistics, and the Fall Technical Conference (jointly sponsored by SPES and the Chemical Division) I think this is a valuable activity and it is another move through which members can become involved in Division activities.

## **Professional Society Liaison**

We need to develop a close relationship with the Chemical Division of ASQC , and with the Section on Physical and Engineering Sciences of the American Statistical Association. Actually the membership of these two groups overlaps with the Statistical Division membership considerably and all three groups could cooperate on a number of joint ventures. Some possible joint activities include educational programs, conference sponsorship, and developing joint speakers lists.

There are a lot of things that we need to do. Your input and advice but most of all your involvement, are needed. I would like to see the Statistics Division become a focal point for statistical activities within ASQC. Let us know what you expect from the Division and we'll do the best we can to assist in meeting your personal and professional objectives. Please contact your regional councilor, me, or one of the Division officers with your ideas and suggestions.

Douglas C. Montgomery  
Chairman, ASQC Statistics Division

# News Release

The newly formed Statistics Division is ready to start serving the [ASQC](#) membership.

One of our services will be to guide people to the source of appropriate quantitative, statistically-oriented solutions to problems. We know, as practitioners of Quality Control, that often we run into problems for which we have difficulties finding the technical solutions. Also we recognize that there are problems still without technical solutions - that is why there is still research.

This is an invitation for you, as [ASQC](#) members, to channel through me descriptions (less than one page long, including name and address) of the problems that constitute roadblocks to the effective performance of your jobs. When possible, we will attempt to indicate where solutions exist. The other unresolved problems will give us insights into what our profession may have to develop further to enhance the effectiveness of our work.

Carlos Wm. Moreno, Ph.D.,  
C.Q.E., Statistics Div.,  
Region 9 Councilor  
35 Oliver Road  
[Cincinnati, OH 45215](#)

# Statistics Division Booklet Series

Progress is being made on the writing of new volumes for the booklet series The ASQC Basic References in Quality Control: Statistical Techniques. Volume 4 "How to Perform Skip-Lot and Chain Sampling" by Kenneth S. Stephens is presently in the production stage. Two other topics are in the final manuscript stage and drafts and manuscripts on nine (9) other topics are presently being written or reviewed.

Co-Editors John A. Cornell and Sam Shapiro are pleased to announce that Professor Alan J. Gross, Professor Saul Blumenthal and Dr. Gerald J. Hahn have agreed to serve on the Editorial Review Board. In addition to these new members, the Editorial Review Board consist also of Professors N.L. Johnson, Harry M. Wadsworth, H. Alan Lasater, Joseph W. Foster and Mr. Edward A. Sylvestre.

John A. Cornell  
Co-Editor for ASQC

# Division Meeting

For those of you attending the Fall Technical Conference in Gatlinburg, [TN](#), there will be a Division Business Meeting in the Howard Johnson's Motor Lodge at 5:30 P.M. on October 29th.

# Ask Carlos

## Question

When designing sampling plans I find that for meaningful LTPD's (that is, a quality that I really do not want to accept, such as five times the AQL):

- a. The MIL STD's have a high Beta error, and still
- b. The MIL STD's plans appear too large for what is necessary.

How do we resolve the problem of what are the correct Alpha and Beta errors? In this respect, I am not bound by military or legal requirements.

## Answer

This is an old problem. Apparently all is a matter of the objective you want to achieve

- whether you want to control the conditional probability of accepting a lot which is at a LTPD quality (regardless of the probability of such lot existing);
- whether you should do this taking into account how probable is to have such a bad quality lot so as to control the total probability to deliver a lot at LTPD or worse;
- whether you wish to control the long-run average quality accepted (delivered);
- whether you wish to arrive at the best cost/benefit combination of sampling and corrective actions.

The correct Alpha and Beta errors are a function of the objective you intend to achieve. Except for the first objective, the optimal errors are highly variable, and furthermore, there are no good rules-of-thumb to follow.

## References

Juran, Gryna, Bingham (1962) Quality Control Handbook, page 12-31.

Technometrics August. 1960 - Articles by Hald and Wetherill.

Wetherill, Chiu (1975) "A Review of Acceptance Sampling Schemes with Emphasis on the Economic Aspect," *International Statistics Review*, Vol. 43, No. 2, pp 191-210.

Montgomery (1980) "The Economic Design of Control Charts: A Review and Literature Survey," *J. of Quality Technology*, Vol. 12, No. 2, April 1980, pp 75 to 87.

Moreno (1980) "Statistically and Economically Valid Attribute Acceptance Sampling Plans for High Quality Requirements," AIE Proceeding, 1980 Annual Convention.

# Statistics Division Program Annual Quality Congress

**May 3-5, 1982  
Detroit Plaza, Detroit**

Moderator Professor Douglas C. Montgomery  
School of Industrial and Systems Engineering  
Georgia Institute of Technology  
Atlanta, Georgia 30332

Speaker #1 Professor Kenneth E. Case  
(Coauthors: Shinya Ozaki and J. Bert Keats)  
School of Industrial Engineering and Management  
Oklahoma State University  
Stillwater, OK 74078

Session 1

Speaker #2 Sampling When the Mean and Variance are Important  
Professor David E. Fyffe  
(Coauthor: Donald Russell)  
School of Industrial and Systems Engineering  
Georgia Institute of Technology  
Atlanta, Georgia 30332

Speaker #3 Markovian Analysis of Sequential Sampling  
Professor Harrison M. Wadsworth  
(Coauthor: Gregory F. Gruska)  
Chevrolet Product Assurance  
General Motors Corporation  
30007 Van Dyke  
Warren, MI 48090

Moderator Statistical Techniques in Quality Control  
Professor Harrison M. Wadsworth  
School of Industrial and Systems Engineering  
Georgia Institute of Technology  
Atlanta, Georgia 30332

Speaker #1 Please Don't Squeeze the Statistics  
Professor Francis J. Cullen  
Loyola College  
4501 N. Charles St  
Baltimore, MD 21210

Session 2

Speaker #2 Training Employees in Statistical Techniques  
Mr. Myron A. Waclawiw  
Product Evaluation Engineer  
Westinghouse Electric Corporation  
P. O. Box 746  
Baltimore, MD 21203

Speaker #3 Multivariate Quality Control: State of the Art  
Professor Frank B. Alt  
Management Science and Statistics  
College of Business and Management  
University of Maryland  
College Park, Maryland 20742

Moderator Statistical Techniques in Sampling - II  
Dr. Lynne B. Hare  
Thomas J. Lipton, Inc.  
800 Sylvan Ave.  
Englewood Cliffs, NJ 07632

Speaker #1 Selecting a Sampling Procedure Can Be Fun  
Mr. John J. Heldt  
(Coauthor: John Breeze)  
Head, Product Assurance Design Support  
Watkins - Johnson Co.  
3333 Hillview Ave.  
Stanford Industrial Park  
Palo Alto, CA 93404

Session 3

Speaker #2 The Risk and Resource Factors in Sampling  
Mr. Charles A. Mills  
Manager, Quality Assurance  
Electronic System - Westinghouse Canada Inc.  
777 Walkers Line  
Burlington, Ont. Canada L7R 4B3

Speaker #3 A Qualification Procedure for Attributes Data  
Ms. Barbara K. Kimball  
Quality Assurance Inspection Manager  
Cutter Laboratories, Inc.  
1630 Industrial Park St.  
Covina, CA 91722

Standby Speaker #1 Optimizing Sampling Plans Using Bimodal Fitting  
Mr. John H. Glaser  
Principal Engineer  
Polaroid Corp.  
868 Winter St.  
Waltham, MA 02154

Statistical Methods for Validating Q.C. Tests

Dr. Martin L. Lee

Staff Associate

Standby Speaker #2

Hyland Therapeutics

444 W. Glenoaks Blvd.

Glendale, CA 91202

# Editor's Corner

I would like to reemphasize and expand upon the Chairman's comments. First and foremost, this is your newsletter. Please contribute whenever you have items of interest and let me know what type of items you would like to see (see list below). Hopefully, "[Ask Carlos](#)" will become a regular feature. For this to be successful, Division members must help transmit questions and solutions to the general [ASQC](#) membership. Other item suggestions are:

1. List of new statistical QC publications.
2. Member news (honors, promotions and moves)
3. Minipapers on successful and novel implementation of statistics in QC.

I am looking forward to serving as Newsletter Editor. With your input, the Newsletter can provide a valuable service. Let me hear from you.

Ron Askin  
Systems Engineering  
[The University of Iowa](#)  
[Iowa City, Iowa 52242](#)