

Contents

- [Chairman's Mesasage](#)
- [The Fallacy of 100% Inspection](#)
- [Statistical Task Group Formed](#)
- [1983-84 Division Officers](#)
- [Call for Papers](#)
- [Conference on Applied Statistics](#)
- [Fall Technical Conference, October 13 & 14](#)
- [EDITOR'S CORNER I: RON STEPS DOWN](#)
- [EDITOR'S CORNER II: ED TAKES THE REINS](#)
- [Nelson, Ramberg ASQC Fellows](#)

Chairman's Message

By John Ramberg

The Statistics Division, founded in 1979, has grown to 3572 members. A statement of our guiding policy was published by founding chairman, Bill Hunter, in the February 1981 issue of *Quality Progress*. I interpret the goal of this policy to be:



PROMOTE THE USE OF STATISTICAL METHODS IN QUALITY CONTROL WHEREVER THESE METHODS ARE APPROPRIATE.

The guiding policy also addresses the accomplishment of this goal. In summary:

1. Stress joint projects with other Divisions, Sections and other parts of ASQC.
2. Select projects judiciously and do a thorough job.
3. Develop harmonious relationships with ASQC Headquarters, all parts at ASQC and groups outside of ASQC.
4. Attract practical statisticians to ASQC.

Each of the four previous chairmen has published a statement of plans, and many of the articles and announcements in this issue concern activities that are a result of these plans. This year we will emphasize statistical education. We will strive to improve the practical statistical knowledge of members of the quality profession by expanding the How-To booklet series (founded by Ed Dudewicz, and now jointly edited by John Cornell and Sam Shapiro), and by seeking joint sponsorship of conferences and educational programs such as the Chemical and Process Division's Fall Technical Conference. This conference is also sponsored by the American Statistical Association's Section on Physical and Engineering Sciences.

I wish to personally thank our outgoing chairman, Frank Alt, for his dedicated service during the past year. I also wish to thank our current officers for their support in taking on additional responsibilities. Ron Askin, our former newsletter editor, is our program chairman for the 38th Annual Congress (1984) and has already reviewed the initial submissions for the program. Chairman-elect Bill Mead will work with Mike Mazu in the development of a Short Course program. Secretary Pete Jacobs is preparing publicity materials describing the division. Our treasurer, Ed Mykytka, will also be the newsletter editor.

I welcome your comments and advice. Your input, and even more importantly, your involvement are necessary in making the Statistics Division the focal point for statistical activities in ASQC. Please contact your regional councillor or Division officers with your ideas, suggestions and needs. I would also greatly appreciate receiving copies of all correspondence relating to our divisional activities so that I can be aware of the activities and discussions within the Division.

The Fallacy of 100% Inspection

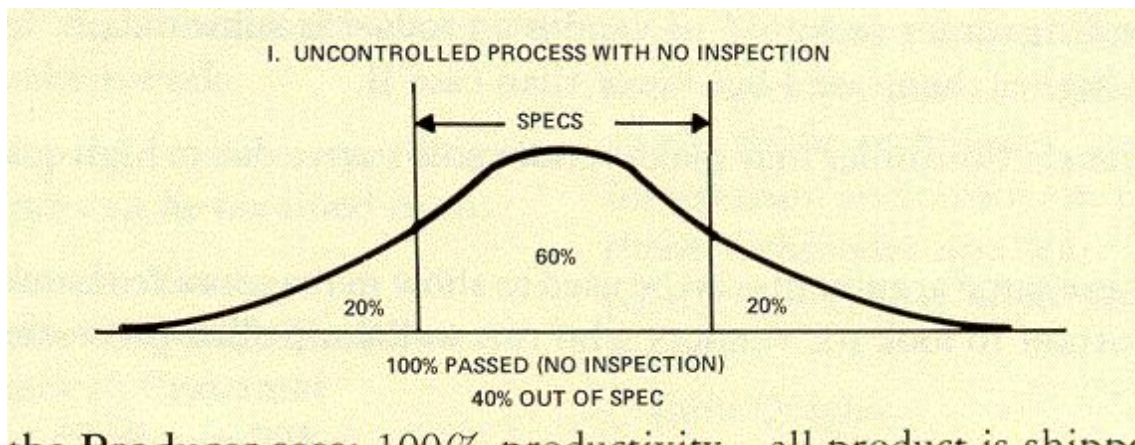
**Bert Gunter,
David Sarnoff Research Center,
RCA Laboratories,
Princeton, N.J. 08540**

The advancement of automation technology and the increasing power of computers is fueling a rebirth of 100% inspection and screening in the belief that it is a cost effective means of assuring product quality. What seems not to be understood is that the reasons for relying on statistical PROCESS control--definition of process capability, identification of process problems and areas for improvement are as valid (or even more so) for automated systems as they are for more labor intensive operations. All the hidden costs associated with the inefficiencies of product screening, scrap and/or rework are still present and still costly.

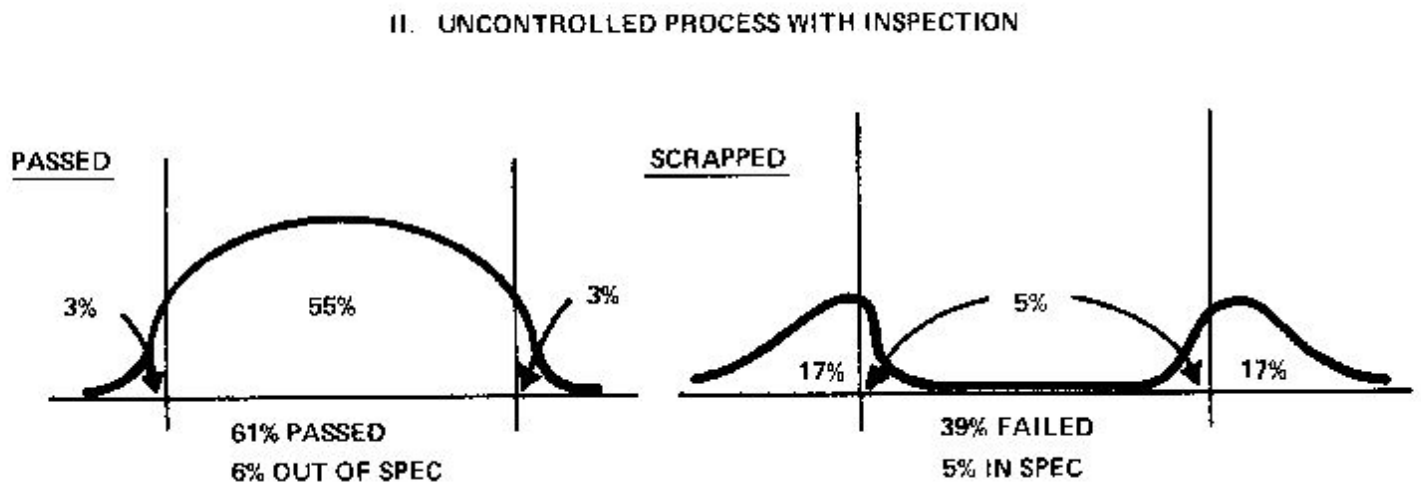
Because of the seeming perfection of, for example, automated inspection with intelligent vision systems, it is difficult to show people the high costs that can be associated with such systems if good process control is not practiced. This is often true despite the recognition that measurement error, equipment setup error, etc. are present. The performance of the automated systems merrily making decisions and shuffling product into "good" and "bad" bins with nary a hand of human intervention is a hard act to critique to cost conscious managers.

We have found that a good way of helping managers understand the real costs of product screening versus process control is to speak to them in the language they understand best--the accounting language of dollars and cents. In particular, we have found that the following little demonstration is effective in bringing out some of the issues involved.

(Note: These ideas are certainly neither new nor sophisticated, but the prevalence of 100% inspection as the preferred method of quality control in American industry indicates that they are not widely understood.)



Consequence: Consumer may use multiple sources and look for a cheaper vendor.

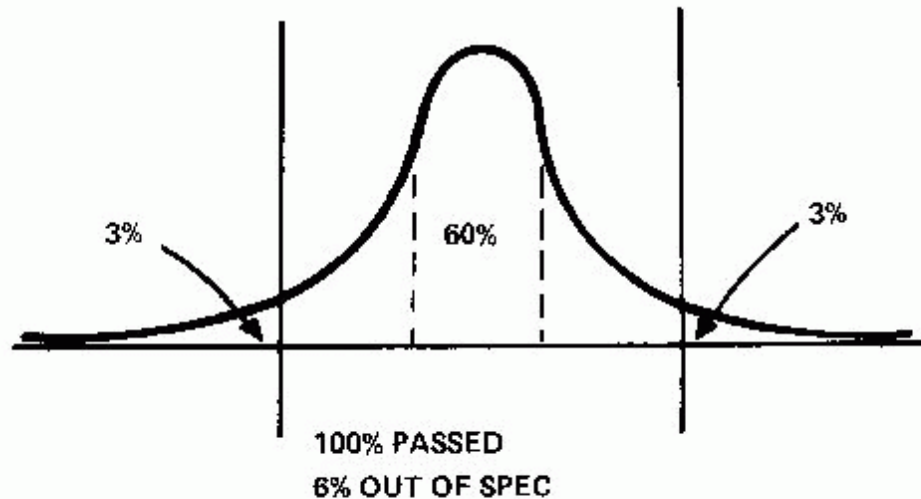


What the Producer sees Two piles of product, "passed" and "scrapped." Most of the passed pile consists of product in spec but, due to inspection error, some out of spec product is also included. Most of the scrap pile consists of out-of-spec product, but a portion-in this case about 13%-of the scrap is actually good. Overall, the Producer ships 61% of what he makes.

What the Consumer sees: About 10% of the vendor's product is substandard. Also costs are higher than in case I because the Producer has passed on the costs of his poorer productivity to the Consumer in order to maintain his profit.

Consequence: Consumer may use multiple sources and look for a cheaper vendor.

III. CONTROLLED PROCESS WITH NO INSPECTION



What the Producer sees: Hard work and some initial expense to bring process into better control. One hundred percent productivity--all product is shipped.

What the Consumer sees: 6% of vendor's product is substandard, Costs are probably higher than case I but lower than case II.

Consequence: Consumer may make vendor sole source due to high quality and low cost.

Note: These same arguments can be used to show managers as consumers why it is important to look for vendors who run well-controlled processes.

Acknowledgement: This presentation owes much to discussions with my colleague, Dave Coleman, of RCA's David Sarnoff Research Center.

STATISTICAL TASK GROUP FORMED

Members of the Santa Clara Valley and San Francisco sections of ASQC have recently formed a Statistical Task Group which includes over 30 active members representing more than 17 companies. The purpose of the Task Group is, according to their charter, to:

1. promote the use of statistics in industry;
2. provide a forum for exchanging statistical methods, applications, and ideas;
3. encourage the professional growth and development of statisticians; and
4. contribute professionally to local and national ASQC programs.

The group plans an ambitious program, coordinated by Dave Sweetman [SEEQ] and Fred Khorasani [Signetics]. Scheduled in the coming months are a program by Michael Lutz on September 21 ("Technical and Sales Presentation Skills") and a program on October 26 featuring Curt Engelhard [Hewlett-Packard] ("Process Control") and Spencer Graves [Hewlett-Packard] ("SQC Success Stories").

Other topics currently being developed by members of the Task Group are in the areas of process control, sampling, design of experiments, and reliability. In addition, the group is also preparing a module for the ASQC California Quality Week.

Further information can be obtained by contacting Dave Sweetman (408) 262-5041, Fred Khorasani (408) 727-3679, or Marilyn Hwan, Raychem Corporation, 300 Constitution Drive, Menlo Park, CA 94025, (415)361-2190.

1983-84 Division Officers

The results of the election for Statistics Division officers for 1983-84 were announced by outgoing chairman Frank Alt at the 37th Annual Quality Congress in Boston. These new officers, as described below, assumed their duties on July 1, 1983.

John Ramberg was elected as chairman of the division and served as chairman-elect last year. John was named as a fellow of ASQC at this year's AQC (and is also a fellow of the American Statistical Association) and has served as editor of the *Journal Of Quality Technology*. He is the head of the Systems and Industrial Engineering Department at the University of Arizona and is currently acting as a consultant to Motorola, Inc.

William M. Mead is the new chairman-elect of the Division. As a member of the Statistics Technical Committee, Bill was instrumental in the creation of the Statistics Division. He served as chairman of the Nominating Committee for the first three years of its existence prior to being elected secretary last year. He is manager of Quality Analysis for the Naval - Nuclear Fuel Division of Babcock and Wilcox in Lynchburg, Virginia.

Peter J. Jacobs has also moved up the officer ladder as he was elected as secretary of the Division after having served as its treasurer for the past two years. Pete is supervisor of the Statistical Consulting Department at the 3M Company in St. Paul, Minnesota. He has worked at 3M since 1979 as a statistician and also serves as an ASQC instructor at St. Paul TVI.

Edward F. Mykytka has been elected as the new treasurer of the Division. Ed is also the new editor of this newsletter and is a former technical assistant for the *Journal of Quality Technology*. He is an assistant professor in the Industrial Engineering Department at Auburn University in Auburn, Alabama.

Call for Papers

The Statistics Division of ASQC is issuing an advance call for papers to be presented at Statistics Divisions sessions at the 39th annual Quality Congress to be held in May 1985. Papers should 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 sent to, or further information may be obtained from:

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

Conference on Applied Statistics

The Statistics Division is a cosponsor of the 39th Annual Conference on Applied Statistics, which will be held from November 30 to December 2, 1983 at the Newark Airport Holiday Inn in Newark, New Jersey. The purpose of the conference is to present new techniques and statistical application in the biological-pharmaceutical and quality control fields. A highlight of the conference will be the presentation of the W. Edwards Deming Awards for Excellence in the Application of Statistics to Professor John Tukey. Dr. Deming will also make a presentation entitled "Obstacles to Improvement in Quality and Productivity."

The conference consists of twelve three-hour tutorials. Professor Sam J. Kutz of the University of Maryland has been designated as the speaker for the Statistics Division's session. His presentation is entitled "Recent Advances in Discrete Distributions."

The conference will be preceded by two simultaneous two-day intensive short courses: (1) "Understanding Robust and Exploratory Data Analysis" by Andrew Siegal and David Hoaglin and (2) "Modern Regression Analysis" by Douglas Montgomery and Elizabeth Peck.

Further information regarding the conference can be obtained from:

Walter R. Young
Medical Research Division
American Cyanamid
Bldg. 60, Room 203
Pearl River, NY 10965
(914)735-5000, ext. 3224

Other tutorials to be presented are:

"The Global Analysis of Independent Clinical Trials",

by John Overall;

"Mantel-Haenszel and Related Methods in Dealing with Concomitant Information in the Analysis of Ordinal Categorical Data,"

by Gary Koch;

"Phase II Clinical Trial: Bioavailability/Pharmokinetics,"

by Karl M. Metzler;

"Forecasting with Univariate Box-Jenkins Models,"

by Alan Pankratz;

"Update on Regression Methods,"

by H. D. Vinod;

"Dose Response, Dose Comparison and Equivalent Clinical Trials,"

by Arthur F. Johnson;

"Overview of Multivariate Methodologies as Applied to Clinical and Preclinical Studies,"

by Neil H. Timm;

"Understanding Robust and Exploratory Data Analysis,"

by David Hoaglin and John Tukey;

"Bernoulli Selection Procedures for Clinical Trials,"

by R. E. Bechhofer;

"Bayesian Reliability Analysis,"

by Harry Martz and Ray Wiler;

"UNIX,"

by Kaare Christain.

Fall Technical Conference, October 13 & 14

One of the major conferences of the Fall that is of special interest to members of the Statistics Division is the 27th Annual Fall Technical Conference to be held in Midland, Michigan on October 13 and 14. Sponsored by the Chemical and Process Industries Division of ASQC along with the Section on Physical and Engineering Sciences of the American Statistical Association, this conference focuses on statistical aspects of quality control and involves many members of the Statistics Division, both as moderators and presenters. A partial summary of the papers to be presented, grouped by topic into the categories of "statistics," "quality control," and "tutorials," follows.

Registration fees are \$75.00 for the complete two-day conference, including luncheons (\$80.00 after October 1). Checks should be mailed and made payable to CPI/ASQC Technical Conference 83 c/o Lawrence Ault, 5202 Dale Street, Midland, Mi 48640, along with name, address, telephone, and company affiliation. Further information can be obtained from Robert Belfit of the Dow Chemical Company at (517) 636-0513 or E. E. (Mike) Merrill of Merrill Management Consultants at (517) 631-0891. Lodging arrangements and information can be obtained by mentioning the conference by name when contacting the Valley Plaza Inn at (517) 496-2770.

The Saginaw Valley Section of ASQC will host a dinner meeting on October 13 that will feature a presentation entitled "Meeting the Quality Challenge of the '80s," by Robert W. Decker, Vice President of Quality and Reliability at General Motors. The dinner requires a separate advance registration, \$13.00, payable to the section.

STATISTICS SESSIONS:

"Software for Use in the Design of Experiments"

-Alonzo Church, Jr.; General Tire & Rubber Co.

"A Practical View of D-Optimal Designs"

-Eugene Brumm; General Mills, Inc.

"Analysis of the Dynamic Behavior of a Petroleum Fractionation Unit Using Multiple Time Series Analysis"

-David W. Bacon & M. O. Tade; Queens University.

"Example to Illustrate the Use of SQC Tools for Reducing In-Process Rejections"

-Tulowikzki, Pumnea & Origel; Inland Steel Company.

"Transformation and Influential Cases in Regression"

-R. Dennis Cook & P. C. Wang; University of Minnesota.

"Two Level Multifactor Designs for Detecting the Presence of Interactions"

-Max Morris & Toby Mitchell; Union Carbide Corporation.

"Mixture and Independent Variable Designs in the Coating Industry"

-Kenneth K. Hesler; DeSoto, Inc.

"Use of 'Dummy' Variables in the Determination of the Critical Pigment Volume Concentration by Multiple Regression"

-Dan Rich; Sherwin Williams Research Center.

"Robust Sample Sizes Under Conditions of Inspector Error"

-Bobbie L. Foote; University of Oklahoma

"ANOM-Bringing Experimental Design to the Manufacturing Floor"

-Ronald D. Moen; Pontiac Motor Division.

"New Criteria for Designing Fractional Factorial Experiments"

-Joseph Pignatiello; University of Arizona

"Use of the Contagious Distribution to Determine the Length of Plant Trials"

-Steve Wenner; St. Regis Corporation

QUALITY CONTROL SESSIONS:

"Use of Simple Graphics to Study Hourly Data with Several Variables"

-Tom Boardman; Colorado State University

"Fitting Straight Lines Where Both Variables Are Subject to Error"

-John Mandel; National Bureau of Standards

"Approximate One-Sided Tolerance Limits for Difference (Sum) of Two Normal Variates"

-Irving. Hall; Sandia National Laboratories

"Multivariate Control Charts in Action: Some Uses and Examples"

-John W.Philpot; University of Tennessee

"Effective Use of Multivariate Quality Control Charts"

-Mary Beth Hatton; General Motors Research Labs

TUTORIALS:

"A Smorgasbord of Bayesian Reliability Applications"

-Harry F. Martz; Los Alamos Scientific Laboratories

"Control Charting and Other Graphics Methods in Statistical Quality Control"

-Patrick P. Donnelly; Drexel University

"Process Improvement Through Feedback"

-Michael J. Mazu; B. F. Goodrich Company

"Some Properties of the Dodge CSP-3 Sampling Plan"

-Maurice Bryson & Thomas Bement; Los Alamos National Labs

"Graphical Methods and Data Analysis"

-Paul A. Tukey; Bell Telephone Laboratories

"Multivariate Control Charts"

-Frank B. Alt; University of Maryland

"An Introduction to Bounded Influence Regression: Estimation, Diagnostics and Graphics"

-Roy E. Welsch; Massachusetts Institute of Technology

W. J YOUDEN MEMORIAL ADDRESS:

"Learning About the World Around Us by Using Statistics as an Aid for Listening to and Conversing with It"

-William G. Hunter, University of Wisconsin

EDITOR'S CORNER I: RON STEPS DOWN

by Ron Askin

With this issue I am departing from the editorship of the newsletter. I wish to thank those of you who have taken time to communicate your thoughts and given your assistance to me during my term. I foresee improvement in both quality and frequency of the newsletter in the near future as Ed Mykytka takes over the helm with a new burst of energy and innovation. I hope you will all do your part to assist Ed in developing a valuable newsletter we all look forward to. Remember though, for the newsletter to be a success we all need to consider contributing our knowledge, experience and needs.

EDITOR'S CORNER II: ED TAKES THE REINS

by Ed Mykytka

I would certainly be remiss if I did not begin my comments here without acknowledging Ron Askin for making this issue possible. Ron not only gathered a lot of the material for this issue, but has also provided the impetus which keeps this newsletter moving. His efforts deserve to be lauded.

This is an exciting issue with which to start my term as editor since it features two major innovations. First, we are now having the newsletter professionally printed to give it a more professional flavor and enhance its readability. Second, in keeping with this professional spirit, we also are presenting our first "minipaper", which we hope will become a regular feature of the newsletter.

It is my sincere hope that the publication of this first minipaper will generate ideas for future submissions. As this minipaper suggests, this feature could be a forum for the presentation of good simple ideas which, perhaps, can be culled from existing material or presentations. Visual presentations, such as that provided by Mr. Gunter, would seem particularly effective. Your contributions are eagerly solicited.

Submissions of other material for publication--meeting/conference announcements, news items, comments, announcements of new publications, or other information--are also heartily encouraged. As should be evident from this issue, we are not reluctant to "advertise" conferences or meetings in detail--printing names and titles of sessions and even, perhaps, abstracts as well--since we feel that this only encourages attendance and the exchange of ideas.

Deadlines for the submission of material for the next two issues of the newsletter will be November 4, 1983 and February 3, 1984, respectively.

Nelson, Ramberg ASQC Fellows

Honored at the 37th Annual Quality Congress in Boston as Fellows of ASQC were two Statistics Division members: Wayne Nelson and John Ramberg.

Wayne Nelson is consulting statistician for the General Electric Company and has published two volumes in the ASQC "how-to" booklet series: "How to Analyze Data with Simple Plots" and "How to Analyze Reliability Data."

John Ramberg is the chairman of the Statistics Division and is a former editor of the *Journal of Quality Technology*. He has also been recognized as a fellow of the American Statistical Association.