ASQ Statistics Division Newsletter

Volume 7, Number 1, March 1986

Contents

Chairman's Message

Strategic Planning

Last October, at the Fall Technical Conference in Corning, New York, several Statistics Division members and officers met to discuss possible future directions for the division. We were essentially asking if we as a division are providing the right products/services. to the right people…in the right form…and at the right time. In other words, are we doing that we should be doing? To directly address and take action on this question a two-day meeting has been scheduled for the Statistics Division Council on March 10 and 11 to initiate a strategic planning exercise.

Our challenge as a division is to create and support activities which are responsive to the needs of each of the 6,500 members and which promote the use of statistical methods for improving quality and productivity wherever these methods may be appropriately applied. I am anxious to receive any ideas or comments from you concerning future directions for the division. Do you feel that today you are being properly served by the division? My address is listed on the list page of this newsletter. We are planning to continue discussion on this important subject at the annual Quality Congress in May and have targeted June for the completion of this planning effort.

Annual Quality Congress

As I am sure you are aware, the ASQC Annual Quality Congress is scheduled on May 19-21, 1986, in Anaheim, California. Eva Chen is serving as the Statistics Division representative to the Annual Quality Congress Program Committee. Eva, along with her own Statistics Division Program Committee, has planned and developed six statistics sessions for the technical program in Anaheim. One of these sessions will be a special panel discussion with three eminent statisticians¾Don Marquardt, Blan Godfrey, and Brian Joiner¾addressing "The Statistician's Role in Quality Management." In addition, the Statistics Division is sponsoring a preconference tutorial on "Design for Manufacturability, Quality and Low Cost¾The Taguchi Approach." Dr. Genichi Taguchi, Dr. Madhav Phadke, and Mr. Rajiv Keny will serve as instructors. The six statistics program sessions and the preconference tutorial represent one of the strongest contributions made by the Statistics Division to the Annual Quality Congress. I extend a sincere thank you and hearty congratulations to Eva and her entire committee. Additional details on the Statistics Division sessions are provided in this newsletter.

Statistics Division Meetings

In conjunction with the Annual Quality Congress, a Statistic Division Council Meeting has been scheduled on Saturday, May 17, from 4:00 p.m. to 6:00 p.m. On Sunday evening, May 18, the Statistics Division Annual Meeting will be held in the Disneyland Hotel. In addition, the division will have a hospitality suite available for you each evening of the conference. I look forward to seeing many of you in Anaheim and encourage you to attend our annual meeting and join us in the hospitality suite for a bit

of cheer.

"How To" Booklets

Many of you have already taken advantage of the division program which provides a complimentary copy of one of the "How To" Series booklets to each Statistics Division member and which makes available any of the ten volumes from the series to division members at specially reduced prices. I encourage each of you to take advantage of this opportunity. If you have recently jointed the Statistics Division and did not received the last issue of the newsletter describing this program, please contact Tony Salvia, newsletter editor, at the address on the last page of this newsletter. He will promptly forward the necessary information to you.

"He that leaveth nothing to chance will do few things ill, but he will do very few things." —Marquis of Halifax

Statistical Standards Committee

Ozzie Willner, Chairman

With the rapid growth of the Statistics Division it has been virtually impossible to keep abreast of its numerous activities. In this article I would like to acquaint you with the activities of the Statistical Standards Committee and at the same time avail myself of the opportunity of asking for volunteers.

I first became aware of this activity in January 1980 when Bill Hunter discovered that the Statistics Division of the ASQC, according to its by-laws, must have an official Standards Committee which implied it must also have a chairman. Bill very persuasively convinced me to become the chairman.

The full committee was organized in April 1980. The following people very graciously accepted my invitation to serve on the committee: Sherman Babcock, Acheson Duncan, Blanley Godfrey, Greg Gruska, John Jaech, Burton Liebesman, John Troxel, Joe Taiakals and Harry Wadsworth. The committee membership is growing but not nearly enough to keep up with the workload.

The main responsibilities of this committee are two-fold. First, the committee initiates the writing of many new ANSI/ASQC standards in the areas of quality programs, statistical procedures and sampling requirements that are suggested from within or outside of this committee. Second, the members of this committee frequently serve as reviewers of newly proposed national or international quality standards.

Recently, several members of the Statistical Standards Committee have been very active in completing work on several standards. Work has been completed on ASQC Standard B1 1985, B2-1985 and B3-1985 also designated as ANSI Z1.1, Z1.2 and Z1.3, "Guide for Quality Control Charts, Control Chart Method for Analyzing Data and Control Chart Method of Controlling Quality During Production". Much credit goes to our capable writing chairman, Sherman Babcock who undoubtedly proved that he possesses infinite patience.

A new standard, "An Attribute SkipLot Sampling Program", has recently been formulated and proposed as an ANSI/ASQC Standard. Burton Liebesman has done an outstanding job as the writing chairman in guiding this standard through the intricate phases.

A major rewrite has recently taken place for ANSI/ASQC Standards Al, A2 and A3 on Definitions, Terms and Symbols. Harry Wadsworth and his writing committee have done a marvelous job to make sure that the new standard agrees with the nomenclature of international standards.

Much work remains to be done. There is a constant stream of requests for the review of statistical or quality control standards from the ANSI Z-1 Committee and from the US Technical Advisory Groups (TAGS) to ISO T-69 and ISO TC-176. If you would like to serve as a reviewer please contact me: Ozzie Willner (412) 476-5954.

ISI Section on Official Statistics

The International Statistical Institute has established a new Section named: International Association for Official Statistics (IAOS).

The objectives of the Association shall be to promote the understanding and advancement of official statistics and related subjects, and to foster the development of effective and efficient official statistical services through international contacts among individuals and organizations.

The IAOS is an international association open to all those who are interested in official statistics in the broadest sense: the membership is not to be restricted to official statisticians but in particular academic statisticians and others using official statistics are also encouraged to join the IAOS.

The ISI Bureau has appointed a Provisional Executive Committee charged with the task of making the IAOS operational. The Committee is composed of: Chairperson V. Nyitrai (Hungary), M. Beyene (Ethiopia), J. L. Bodin (France), T. N. Guner (Turkey), T. Nakamura (Japan), J. L. Norwood (USA), L. Klaassen (Netherlands), E. Lunenberg (ISI-ex-officio).

The annual membership dues for 1986 and 1987 are fixed at 35 Swiss francs. Those enlisted as members and having paid the 1986 dues before June 1, 1986, will be designated as IAOS Founder Members. UNESCO coupons may be used for dues payments.

Further information and application forms may be obtained from the ISI Permanent Office, 428 Prinses Beatrixlaan, P. O. Box 950, 2270 AZ Voorburg, The Netherlands.

Speakers List

Persons who would like their names to appear on a Statistics Division Speakers List are invited to contact the Division through their Regional Councilor or

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W. J. Youden Memorial Address: Meeting the Challenge of Total Quality[1]

Ronald D. Snee
E. I. du Pont de Nemours & Co., Inc.

There is little doubt that American industry, and American society in general, is facing a severe challenge. We all must change if our businesses and way of life are to survive. Some feel that, if the U.S. is not careful, it will become a colony once again-exporting raw materials and importing finished goods. This challenge affects all of us including those working in colleges, universities, and government. We all have a responsibility to take action. The attitude that "my end of the boat isn't sinking therefore I don't need to get involved" won't work. We will all succeed or fail together. Teamwork is needed.

To meet this challenge many companies have adopted a policy of TOTAL QUALITY and have focused all the resources of all business functions-research and development, manufacturing, marketing, purchasing, finance, etc.-on meeting the needs and expectations of their customers. In the total quality approach, "customer" is interpreted broadly to mean anyone, internal or external to the organization, who comes in contact with the output or product of your work. Each of us has many customers including the persons we pass our work to, our managers and supervisors, anyone who reports to us, and our families, as well as persons outside the company who buy our products.

Understanding the management and ingredients of total quality is the subject of this address. It is emphasized that, as indicated by the theme of this conference "Statistical Methodology-The Tools to Get to Total Quality," statistical methodology is only one component of total quality. Statisticians and other quality professionals must adopt this view and understand all aspects of total quality if they are to effectively help meet the challenge. W. E. Deming tells us that statistics is too important to be left to statisticians. The goal is to get many statistically-minded workers, scientists, engineers, and managers in industry; it is not to employ a lot of statisticians. This approach results in new roles for statisticians that require a broader view and an acquisition of new skills.

It is helpful to divide the management of total quality into three components: philosophy, management policies and procedures, and tools.[2] Ideally, an organization develops a philosophy to guide them, as they institute management policies and procedures to guide the organization. They select tools (e.g. computers, robots, statistics) as needed to aid them in doing their job. Unfortunately, many people focus only on one or two components to the exclusion of the other components, e.g. managers focus on philosophy and policy and procedures, while statisticians focus only on tools. The goal should be for everyone to understand the importance and role of all three components and to ensure that each is given proper attention. Deming's 14 points fit nicely into this model. His points 1, 2, 5, 8, 9, and 12 are philosophical in nature while points 3, 4, 6, 7, 10, 11, 13, and 14 relate to management policy and procedures. Statistical process control techniques are the tools that he promotes.

In his 1984 Youden Address Brian L. Joiner[3] divided Deming's 14 points into 3 principal ingredients-quality, all one team, and scientific approach. The model for excellence of Peters and Austin[4]

consists of care of customers, people, constant innovation, and leadership. Similar ingredients are present in Warne's[5] model for Japanese manufacturing superiority, and Watson's[6] management guiding principles for IBM. It is concluded that the move toward total quality can be greatly enhanced by management paying attention to four key ingredients, customers, people, innovation and leadership. Management must also be sure that they have a total quality management system (philosophy, management policies and procedures, and tools) to deal with each of these key ingredients.

These models indicate that statisticians and other technically trained personnel have new roles (e.g. understanding management's needs, team building, leadership, facilitator) for which they have little formal training. Statisticians must broaden their view from individual clients and statistical tools to the whole organization and its customers. Statisticians must focus on their customers' needs and expectations. Because they are a service function, they should practice total quality like other parts of the organization.

The recognition that total quality must involve all business functions identifies an important opportunity for statistics-quality in research and development. Fortunately, Taguchi[7] has given us some help in this regard. He has developed a general systematic approach to product and process design that is proactive and has a statistical basis. It also focuses on a key concern-robustness in use-the ability of the product and process to withstand a wide variety of uses and conditions. If we believe in constant improvement, then we can only conclude that the goal should be to determine how to make more effective use of Taguchi's approach.

The debate surrounding Taguchi's methods highlights a key point made earlier. Statisticians have focused their evaluation almost totally on the statistical tools that Taguchi uses. The value of the techniques, and the customer need, are robustness of product and process design and a system for achieving it.

The creation of total quality is a top-down process that must have the active participation of top management. If you want to help an organization get to total quality, you must influence the management and all others who make decisions. Good technical work is important, but real progress and impact come from influencing how the organization runs its business and makes its decisions. Deming's 14 points call for the transformation of statisticians as well as American management. A cultural change in statisticians¾how statisticians think and behave and what they value and reward¾is required. Statisticians must become proactive. They must learn organizational development techniques and methods for influencing an organization. This will not be easy. While learning new skills is exciting, it is also filled with many anxieties. The feeling is similar to that experienced by managers when they attempt to learn how statistics can help them do their job better.

By taking a broader view and learning new skills, statisticians can help their organizations use statistical tools more effectively and move toward total quality. Some, who have the skills and interest, will focus on management and organizational development. This should not, however, be the goal of all statisticians.

So it's clear, we-managers, quality professionals, technical personnel, statisticians-have new roles that require new skills. All of us must learn and implement total quality. In addition, managers must learn statistical thinking. Quality professionals and other technical personnel must learn statistical thinking and the tools to put it to work. Statisticians must learn organizational development techniques. Real progress will be made when we all understand each other's needs and frustrations, so that we can help each other become better. In the final analysis many different types of contributions are needed for the success of an

organization. All contributions are important and everyone can contribute. The goals are to get everyone working to their potential and to reward excellence rather than the type of contribution.

It is concluded that a cultural change by everyone is required if we are to meet the challenge of total quality. Leadership, vision and teamwork are needed. We must become proactive and have an outward focus on total quality rather than an inward focus on statistical tools. There can be no growth without change. We exist only to serve our customers whether they are internal or external. We have to make effective use of all the resources we have to meet our customers' needs. Statisticians should recognize that total quality applies to them as it does to all members of an organization.

Finally, patience, persistence and practice, practice, practice-are necessary. It takes a long time to change direction. Juran predicts that 15 years will pass before U.S. industry will deal effectively with the quality crisis.8 We must continue to work toward our goals and deliver the message in many ways to different audiences. Practice makes perfect. Practice your new role and learn by doing. It is only through change in attitude and behavior that TOTAL QUALITY will become a reality

References

1. A summary of the W. J. Youden Memorial Address given at the 1985 ASQC-ASA Fall Technical Conference in Corning, NY, October 24-25, 1985. Dr. Snee is Consultant Supervisor in the Gulf Regional Office, Engineering Department, E. I. du Pont de Nemours & Co., P.O. Box 3269, Beaumont, TX 77704 and is Fellow of ASQC and ASA.
2. Marquardt, D. W (1984) New Technical and Educational Directions for Managing Product Quality. *The American Statistician*, **38**, 8-14.
3. Joiner, B. L. (1985) The Key Role of Statisticians in the Transformation of North American Industry. *The American Statistician*, **39, 224-234.**
4. **Peters, T and Austin N. (1985)** ***A Passion For Excellence, Random House, NY.***
5. ***Warne, J. L. (I 985) Quality and Other Keys to Manufacturing Competitiveness. The Juran Report, No. 4, 11-15.***
6. ***Watson, T., Jr. (1962) McKinsey Foundation Lecturers, Columbia University Also see Pascale, R. T. and Athos, A.G. (1981) The Art of Japanese Management, Warner Books, N.Y.***
7. ***Taguchi, G. and Wu, Y (1 980) Introduction to Off-Line Quality Control. Central Japan Quality Control Association. Available from American Supplier Institute, 32100 Detroit Industrial Expressway, Romulus, MI 48174.***
8. ***Juran, J. M. (1 985) Catching Up: How is the West Doing? Quality Progress, November 1985,18-22.***

ETI Help Wanted

The Education and Training Institute needs instructors for a variety of programs, listed below. Basic qualifications: (1) in-depth knowledge of the subject matter, (2) ability to organize technical material in accordance with ASQC training standards, (3) able and available to teach courses on a regularly scheduled basis. Previous teaching/course development experience is desirable. Interested? Contact Stephen L. Gordy, Technical Project Engineer, ASQC, 230 West Wells Street, Milwaukee. (414) 272-8575.

Subject areas include:

- Basic Statistical Quality Control
- Design of Industrial Experiments
- Fundamentals of Quality Control Managing for Quality
- Managing Quality Costs
- Managing the Inspection Function
- Product Liability Prevention
- Quality Audit-Development and Administration
- Quality Engineering
- Quality Management for Supervisors
- Reliability Engineering
- Software Quality Assurance
- Statistical Process Quality Control
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Research Conference On Reliability And Quality

An international research conference on Reliability and Quality will be held at the University of Missouri, Columbia, Missouri, June 9-11, 1986. The primary purpose of the conference is to bring together researchers from industry, government and universities so that they may exchange ideas to identify direction for future relevant research in the areas of reliability, quality and related experimental designs. The conference is planned by the Research Subcommittee of the American Statistical Association Productivity and Quality Committee and is sponsored by the University of Missouri, U.S. Air Force Office of Scientific Research, U.S. Office of Naval Research, U.S. Army Research Office and the National Science Foundation. The program will consist of invited and contributed papers on a broad spectrum of topics. The following are serving as members of the Program Committee: Larry Crow (AT&T Bell Laboratories), Douglas DePriest (Office of Naval Research), Russ Hannula (GE-C.E. & M), Margaret Krier (Eastman Kodak), Robert Launer (Army Research Office), Gary C. McDonald (General Motors), Paul Shaman (University of Pennsylvania), Williams Woodall (University of Southwestern Louisiana), Brian Woodruff (Air Force Office of Scientific Research). The coordinator of the conference is Asit P. Basu. Several leading researchers are expected to participate. The Program Committee will be pleased to consider suitable contributed papers.

Send abstracts and all inquiries to A. P. Basu, Department of Statistics, University of Missouri-Columbia, Columbia, Missouri 65211. Phone Number: (314) 882-8283 or (314) 882-6376.

40th Quality Congress

The 40th Anniversary Quality Congress will be held in Anaheim, California on May 19-21, 1986. This year, the Statistics Division will be presenting an exceedingly strong program. Here are some highlights:

1. A special panel discussion session with distinguished panelists:
   Mr. Donald Marquardt
   President, American Statistical Association
   Dr. Blanton Godfrey
   Head, Quality Theory and System Development, AT&T Bell Laboratories; and
   Dr. Brian Joiner
   Chief Executive Officer, Joiner Associates
   The theme of the panel is **"The Statistician's Role In Quality Management"**
   Statistics Division Chairman Peter Jacobs will moderate this session.
2. Tutorials on newly published booklets of the ASQC "How To" Series:
   A. How to use regression analysis in quality control
      Dr. Douglas C. Crocker
   B. How to plan an accelerated life test-some practical guidelines
      Dr. William Q. Meeker and Dr. Gerald J. Hahn
      The tutorials will be taught by the authors.
3. Three Technical Sessions with nine (9) papers presented by eleven (11) outstanding speakers covering a wide spectrum of statistical applications and theories.

In addition to the above Congress Programs, the Statistics Division is sponsoring a Pre-Conference Tutorial on "Design for Manufacturing, Quality and Cost¾The Taguchi Approach". The honorable Dr. Genichi Taguchi, the renowned Japanese engineer, Dr. Madhav Phadke and Mr. Rajiv Keny, both from AT&T Bell Laboratories, will be the instructors.

Do not miss all these exciting programs sponsored by the Statistics Division! For further information contact Dr. Eva Chen, Program Chairman, Statistics Division, 1986 Annual Congress at (408) 986-7435, or write to: Dr. Eva Chen, ROLM Corporation, Mail Stop 790, 4900 Old Ironsides Drive, Santa Clara, CA 95054.

Tutorials

Congress attendees have learned to seek out the conference tutorials -- and with good reason. These helpful sessions sharpen skills in specific techniques, introduce new tools, and update current levels of understanding.

How to Use Regression Analysis in Quality Control

Douglas C. Crocker, Ohio State University

This session will introduce the general principals of regression analysis (RA) and its use in quality control. The material will be presented from the QC practitioner's viewpoint. This will not be just a statistical treatment of the subject that might be found in a textbook, but a comprehensive approach to the subject including the specification of goals prior to data collection and the steps taken in the RA modeling process. The simple (one-predictor) model will be examined in detail and multiple linear regression will be introduced. Plan to bring an understanding of significance testing and confidence intervals and leave with a sense of what you can accomplish using regression analysis.

Monday, 2:15 - 3:45 p.m.
Session 1.1.3

Planning an Accelerated Life Test-Some Guidelines

William Q. Meeker, Iowa State University, and Gerald J. Hahn, General Electric Co.

Tests of materials and products conducted at high levels of stress provide timely information that can be extrapolated through a physically reasonable statistical model to obtain estimates of life at lower, normal levels of stress. This tutorial shows how to plan those tests. You will be guided through an example estimating a percentile of the time to failure distribution using a "standard" test plan and, for comparison, a statistically optimum test plan and an alternative plan that meets practical constraints while maintaining desirable statistical properties. The thoroughly useful guidelines presented here will allow you to plan accelerated life tests that are both robust to moderate departures from the model assumptions and reasonably efficient when compared with theoretically optimum plans.

Tuesday, 2:30 - 3:30 p.m.
Session 2.2.3

40th Quality Congress Program

MONDAY, MAY 19, 1986

2:15 p.m. - 3:45 p.m. 1.1.3 STATISTICS (Tutorial)

- "*How to use Regression Analysis in Quality Control*"
  Douglas C. Crocker
  Ohio State University
  Columbus, Ohio

4:00 p.m. - 5:30 p.m. 1.2.3 STATISTICS

- "*A Comparison of Bayes & Classical Producer's Risk*"
  Gary G. Brush
  Bell Communications Research
  Holmdel, N.J.
- "*Inspect Small Samples When Quality is Poor*"
  Wayne B. Nelson
  General Electric Co.
  Schnectady, N.Y.
- "*Garbage Out-Or, The Fine Art Of Putting Garbage In*"
  Michael F. Flynn
  Stat-A-Matrix, Inc.
  Edison, N.J.

TUESDAY, MAY 20,1986

10:30 a.m. - 12:00 p.m. 2.1.3 STATISTICS

- "*Statistical Process Control for Multivariate Data*"
  Frank Alt
  University of Maryland
  College Park, Md.
- "*Economic Comparisons of Control Charts*"
  Lonnie Vance
  Thomas J. Lorenzen
  General Motors Research Labs.
  Warren, Mich.
- "*Lot Quality Distribution for Dependent Processes*"
  A. Ethan Mergen
  Rochester Institute of Technology
  College of Business, Rochester, N.Y.
- Donald S. Holmes

Institute of Administration & Management,
Bailey Hall Union College
Schnectady, N.Y.

2:00 p.m. - 3:30 p.m. 2.2.3 STATISTICS (Tutorial)

- "*How to Plan an Accelerated Life Test-Some Guidelines*"
  William Q. Meeker
  Iowa State University
  Ames, Iowa

  Gerald J. Hahn
  General Electric Co.
  Schnectady, N.Y.

3:45 p.m. - 5:15 p.m. 2.3.3 STATISTICS

- "*Better Than Tagucbi Ortbogonal Tables*"
  Dorian Shainin
  Dorian Shainin Consultants Inc.
  Manchester, Conn.
- "*Simulation by Experimental Design¾A Taguchi Concept*"
  Thomas B. Barker
  Rochester Institute of Technology
  Rochester, N.Y.
- "*A Zero Defects Paradigm*"
  Bruce Hoadley
  Bell Communications Research
  Holmdel, N.J.

WEDNESDAY, MAY 21, 1986

8:00 a.m. - 9:30 a.m. 3.1.3 STATISTICS

- "*The Statistician's Role in Quality Management*"
  (Special Panel Discussion)
  Members of the Panel
  Donald W. Marquardt, DuPont
  Blanton Godfrey, AT&T
  Brian Joiner, Joiner Associates

Quality Congress Statistics Division

SPECIAL PRECONFERENCE TUTORIAL

Sunday, May 18, 1986
Dr. Genichi Taguchi

Dr. Madhav Phadke and Rajiv S. Keny
AT&T Bell Laboratories

Design for Manufacturability, Quality and Low Cost - The Taguchi Approach

A major factor in producing high quality at low cost is to have robust product designs. The performance of these products is expected to be robust against manufacturing variation, environmental variation, and aging. For applying the concept of robust design to different engineering problems, we require a method to study the effects of a large number of parameters orthogonal array experiments to evaluate variability and the analysis of the experimental data to obtain the optimum solution.

The wide acceptance and use of this method by Japanese industry has been a major contributor to Japan's success in producing high quality products at competitive prices. This method, developed by Genich Taguchi, has been successfully applied at AT&T Bell Lab, ITT, Xerox, Ford, and other U.S. companies. Case studies will be presented during the tutorial. This one-day tutorial will be held on Sunday, May 18, 1986, from 9:00 a.m. to 4:00 p.m. in the Disneyland Hotel, Anaheim, California., Fee (includes lunch): $125.00 for registration prior to April 1, 1986. $150.00 for registration after April 1, 1986,or at the door. Make checks payable to Statistics Division, ASQC. Send check and self-addressed envelope to Marilyn Hwan, Raychem, 300 Constitution Drive, Menlo Park, CA 94025, or call (415) 361-6576.

For additional tutorial information, please contact. Karin Beumer, ROLM Corporation, MIS 792,4900 Old Ironsides Drive, Santa Clara, CA95054 or call (408) 986-7459.

Mixture Experiments Software

Richland, Washington - An innovative computer software package that will aid in the design and analysis of mixture experiments is the subject of a proposed multiclient study by Battelle's Pacific Northwest Laboratories.

Mixture experiments are used throughout industry to develop promising new products, such as foods, pharmaceuticals, glass, ceramics, coatings, alloys, fertilizers, insecticides and petrochemicals. In a mixture experiment, such ingredients as chemicals, minerals or food products, are combined and processed to develop a product. Mixture experiments help researchers determine what combination of ingredients, and what values of variables such as time and temperature, are necessary to produce a product with desirable properties.

In recent years, advanced techniques for designing and analyzing mixture experiments have been developed. However, many of these techniques require specialized computer software which is not readily available. As a result, valuable techniques may be ineffectively used, or not used at all.

"One of the keys to cost-effective product formulation is the efficient design and analysis of mixture experiments," said Dr. Greg Piepel, a senior research statistician at Battelle. "These statistically based methods are an effective means for industries to develop better products," he added.

Battelle researchers are proposing the development of a computer software package called MIXSOFT. The software will incorporate many design and analysis tools and techniques developed in research and available through literature.

The MIXSOFT software package will enable users to quickly and routinely use many specialized mixture experiment design and analysis techniques to solve product formulation problems. MIXSOFT will enable users to eliminate the need for time-consuming manual implementations of the techniques, reduce the time and costs of product development through the use of efficient statistical mixture designs, and better understand how the proportions of the ingredients and other variables, such as temperature, affect the end-product.

Battelle will conduct group-sponsored work on MIXSOFT through contract research agreements. Organizations for individuals interested in the project may obtain additional information by contacting Dr. Greg F. Piepel, Statistical Information Sciences, Battelle Pacific Northwest Laboratories, P.O. Box 999, Richland, WA 99352, (509) 376-4325.

Battelle's Pacific Northwest Division, with laboratories in Richland, Seattle and Sequim, Washington, performs research development for industrial sponsors and government agencies. The Division is a component of Battelle Memorial Institute, the world's largest independent research institute. Other major Battelle research facilities are located in Columbus, Ohio; Frankfurt, West Germany; and Geneva, Switzerland.

1986 Fall Technical Conference

The 30th Annual Fall Technical Conference will be held October 23 and 24, 1986, at the Adam's Mark Hotel, Charlotte, North Carolina. The Conference is co-sponsored by the American Society for Quality Control (Chemical & Process Industries Division, Statistics Division) and the American Statistical Association (Section on Physical & Engineering Sciences). The theme is **Statistics and Teamwork; Keys to Quality Improvement**. Persons interested in presenting a paper for any of the three parallel sessions (Statistics, Quality Control, and Tutorial) should send the title of the paper and an abstract (100 words) to any of the program chairmen of the sponsoring organizations. The session on statistics should be kept at or below the level of *Technometrics*, quality control and tutorial at or below the level of the *Journal of Quality Technology*. The sponsoring organizations are ASQC-CPID: David C. Stump, Tennessee Eastman Company, P. 0. Box 1973, Bldg. 284, Kingsport, Tennessee 37662; ASQC-SD: William H. Woodall, Department of Statistics, University of Southwestern Louisiana, and P.O. Box 41010, Lafayette, Louisiana 70504; ASA-SPES: David L. Sylwester, Department of Statistics, 332 Stokely Management Center, University of Tennessee, Knoxville, Tennessee 37996-0532.

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Minipapers

Division members are encouraged to submit minipapers on topics of interest. Minipapers are not formally refereed, but they are edited for length and clarity. The queue of papers is currently quite small; send yours in now for prompt attention.

Editor's Corner

This issue is going out to over 7,500 Statistics Division members. Our Division continues to show rapid growth. One of the main reasons for this is the wealth of activity that we're involved in. The Division's participation in the 40th Quality Congress, described in the newsletter, is a good example of that activity.

After the last issue (which was my first one), it became almost immediately obvious that members actually do read and enjoy the newsletter. We hope that you'll continue to do so, and we welcome any suggestions, comments, and criticisms you may have.

If you'd like to submit a minipaper, but you're not sure about topic, style, and so on, please call me or write about your ideas. We'd be pleased to assist you with your paper. The basic ingredient of a good minipaper is applicability: is the topic something that can be used, and is the explanation reasonably simple and concise?

One possible area for minipapers: your experiences with various QC software programs. If you've been using a program package for some time and you now find that the package is indispensable, surely there are a lot of other people who can benefit from your experience.