IEEE NORTH JERSEY SECTION LECTURE SERIES–FALL, 1977

STUDY GROUP NO. 3

RELIABILITY AND ITS APPLICATIONS

THURSDAYS, 7:00 to 9:00 P.M., Starting October 13, 1977
I.T.T. Avionics Auditorium (at foot of tower)
500 Washington Avenue
Nutley, New Jersey 07110

Group Sponsors: Ralph Hernandez, Conrac, (201) 575-8000 ext. 262
Sergi Bogaenko, Singer Kearfott Div., (201) 256-4000 ext. 3651

Speaker: Dr. Charles Giardina, Professor, Fairleigh Dickenson University, Director, Fort Monmouth Extension of the College of Science and Engineering.

For whom intended: The information presented is intended for Designers, Managers, Reliability and Quality Control Engineers.

Course Objectives: Fundamental methods and applications developed and presented for basic reliability and design considerations. Topics will include: statistical and estimating procedures, data base implementation and effective reliability analysis for original design and design improvement, failure analysis techniques and equipment selection for determining failure modes. Techniques for improving system reliability will also be presented (i.e., redundancy, effective failure detection procedures, improved hardware and software).

(1) **October 13–BASIC CONCEPTS AND DEFINITIONS**–Reliability, availability, MTBF, failure rate, reliability distributions (exponential, gamma, weibull).
(2) **October 20–RELIABILITY STRUCTURES**–Series, parallel, (M, N) systems, combinations, stand-by systems.
(3) **October 27–STATISTICAL PROCEDURES IN RELIABILITY**–Sampling, hypothesis testing (conventional, non-parametric, sequential), inspection diagrams, confidence limits, estimation nomenclature (unbiasedness, efficiency, sufficiency, consistency), estimation techniques (maximum likelihood, bayesian).
(4) **November 3–REDUNDANCY & APPLICATIONS**–Case studies
(5) **November 10–RELIABILITY ANALYSES FOR DESIGN IMPROVEMENT**–Failure mode and effects analysis (FMEA), worst case circuit analysis, prediction analysis.
(6) **November 17–CONSIDERATIONS FOR RELIABILITY IN DESIGN**–MTBF or failure rate objective, operating life, storage life, environmental considerations.
(7) **December 1–FAILURE ANALYSIS TECHNIQUES AND FACILITIES TO DETERMINE FAILURE MODES & MECHANISMS.**

REGISTRATION FORM

Mail to: Mr. Ralph Hernandez, 324 B Hackensack St., Woodridge, N.J. 07075
Make checks payable to: North Jersey IEEE

Please enroll me in RELIABILITY AND ITS APPLICATIONS.

Name: _____ Company: _____

Address: _____ City, State, ZIP: _____

Phone: _____

Fee: $60.00 IEEE Members
$70.00 Non-IEEE Members

The IEEE
Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

SEPTEMBER, 1977

Volume 24 September 1977 No. 3

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REPORT ALL ADDRESS CHANGES TO:
IEEE Service Center
445 Hoes Lane
Piscataway, N. J. 08854
(201) 981-0060
It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

Second Class Postage Paid
at Mount Arlington, N. J.

Candidates Debate

Candidates for IEEE President will debate at Princeton University on October 13, 1977.

The debate is set for 8 PM at the Convocation Room, Engineering Quad, Princeton University.

For additional information, contact: S.J. Vahaviolos, (609) 639-2426.

Revolution In X-Rays

The Multigroup Chapter of North Jersey IEEE is sponsoring a talk by Joseph B. Kruskal on the subject of X-Ray Tomography on October 19, 1977, at 7:30 PM in the Punchbowl Room of Jersey Central Power & Light Corp., Madison Avenue at Punchbowl Rd. in Morristown.

Despite many major advances in X-ray sources and detectors since Roentgen's discovery, X-rays are still used to make pictures in basically the same way. A conventional X-ray picture is like a shadow cast by a cloud: each point in the image shows the total X-ray attentuation along a line through the object. In 1970 Sir Geoffrey Hounsfield first demonstrated a useful method for displaying an image showing the local X-ray attenuation at each point in a plane slice. There are now hundreds of computerized tomography machines in routine medical use, costing hundreds of thousands of dollars each. Dr. Kruskal displays several medical tomographs, but his talk will focus on the method by which X-ray attenuations of the conventional kind are mathematically massaged to create these new images.

Dr. Kruskal has been a member of Technical Staff at B.T.L. Murray Hill, since 1959, in the Mathematics and Statistic Research Center. He received his B.S. and M.S. from the University of Chicago and his PhD. in mathematics from Princeton in 1954. He held several academic positions from 1954 prior to joining Bell Laboratories.

He has held many high posts in technical societies, including: President, Psychometric Society, 1975; President, the Classification Society, 1972-75; and Fellow of American Statistical Assocation.

He is a member of: American Mathematical Society, Mathematical Association of America, Society of Industrial and Applied Mathematics (SIAM), The Psychometric Society, American Statistical Association, The Classification Society, Institute for Mathematical Statistics, Sigma Xi (Honor Society), and Pi Mu Epsilon (Honor Society).

Time: 7:30 PM, Wednesday, Oct. 19, 1977.
Place: Jersey Central Power & Light, Punchbowl Room, Madison Avenue at Punchbowl Rd., Morristown, N. J. (easily accessible via 287).

SEPTEMBER, 1977 – DATED MAIL

Cardiac Pacemakers: What's New?

The Metropolitan New York Chapter of the IEEE Group on Engineering in Medicine and Biology announces its program for October will cover "What's New In Cardiac Pacemakers". The Speaker for the October 5th meeting is Dr. Philip Hurzeler, Cardiac Pacemaker Center, Montifiore Hospital, Bronx, New York.

Time: 7:30 PM, Wednesday, October 5, 1977.
Place: Rockefeller University, South Laboratory, Room 204, 66th Street and New York Avenue, New York City.
Pre-Meeting Dinner: 6:00 PM, Tower Cafeteria, 64th Street and York Avenue, New York City.

Report Writing Workshop

The IEEE announces a joint effort in a "Communication and Report Writing Workshop," of a two-day duration, by the Professional Communications Group and the Educational Activities Board. The Workshop is scheduled for New Brunswick, N. J. from September 30 - October 1.

An interactive program between the students and instructors, this Workshop is designed to improve the technical writing capabilities of the participants.

Registration fees are $125.00 for IEEE Members, and $160.00 for non-Members. Enrollment is limited to 30 participants per location. Those interested are requested to contact Debbie Zemkoski, IEEE Service Center, 445 Hoes Lane, Piscataway, N. J. 08854, or phone (201) 981-0060, Extension 174.

CONTINUING EDUCATION
IEEE Career Workshops

1. Your work is not properly appreciated or adequately paid.
You're underemployed

2. You'd rather be doing something else, or anything else.
You're misemployed

3. You're not producing as you know you can.
You're unemployed, or you soon will be

These are the silent boxes of work. They cramp you when you're in them, but you miss them when they're gone.

IEEE Career Workshop offers a way out. One is scheduled for City Squire Motor Inn, 7th Ave. between 50th & 51st on October 1, 1977 (Saturday) with John Crystal. The $40 fee includes Workbook (Non-Members $60).

Tuition assistance for students and unemployed Members is available.

IEEE Home-Study Course available for $20.

Call Lorraine Castiglia, (201) 981-0060 ext. 174 or 175 for details and registration. In cooperation with the New York Section.

AES Pioneer Award

Aerospace and Electronic Systems Society has announced that proposal of names for consideration by the Pioneer Awards Committee from the member-ship-at-large is welcomed and solicited. Such proposals may be sent to the chairman of the committee, M.T. Weiss, The Aerospace Corporation, P. O. Box 92957, Los Angeles, California 90009, telephone (213) 648-5344. The names should be accompanied by substantiating information to justify consideration. Contributions by more than a single individual can be recognized by a joint award. Nominations can be submitted on a Pioneer Award Nomination Form available by writing or calling Dr. Weiss.

The guidelines followed by the Pioneer Awards Committee are that the award winner must have "contributed significantly to bringing into being systems that are in existence." These systems should be within the specific areas of interest of AESS, that is, aerospace or electronic systems. The contributions for which the award is given should have occurred at least 20 years prior to the year of the award; this guideline is to ensure proper historical perspective for evaluation of the contribution. "Significant contribution," of a specific nature, is the key criterion. Nationality, residence, membership in AESS, IEEE, or any other organization are not factors. All nominations should be submitted by December 1, 1977, for consideration for the 1978 award.

"OP AMPS 77"

The New York, North Jersey, and Long Island Joint Chapter Instrumentation and Measurements is sponsoring a Fall study series entitled OP Amps 77 (Active Filters). It will be held on Tuesdays, November 1, 8, 15, 22, 29, 1977 from 7:30 PM to 9:30 PM at the ITT conference center, 500 Washington Street, Nutley, New Jersey.

The subject of each of the lectures is as follows:

1. OP Amp Update
2. Single OP Amp Active Filters
3. Multiple OP Amp Active Filters
4. Gyrators
5. Hybrid Microelectronics

The cost for IEEE Members is:
$40 Before October 1, 1977
$45 After October 1, 1977

Cost for Non-IEEE Members is:
$45 Before October 1, 1977
$50 After October 1, 1977

Checks should be made payable to "Joint Chapter, I&M IEEE" and mailed to: Dr. Joseph J. Padalino, New Jersey Institute of Technology, Department of Electrical Engineering, 323 High Street, Newark, New Jersey, 07102.

For further information: In New Jersey - Dr. J.J. Padalino (201) 645-5321, In New York - Mr. D.C. Roberts (212) 422-4800, Ext. 8224.

IEEE NORTH JERSEY SECTION LECTURE SERIES—FALL, 1977

STUDY GROUP NO. 2

ELECTRICAL DESIGN FOR WATER AND SEWAGE TREATMENT FACILITIES

WEDNESDAYS, 7:00 to 9:00 P.M., Starting October 5, 1977
Jersey Central Power & Light
Madison Ave. & Punchbowl Road
Morristown, New Jersey 07960

Group Sponsors: John Domorski, Automatic Switch Co., (201) 966-2456
Jerry Koch, Solar, (201) 944-1667

For whom intended: Electrical Designers and Engineers involved in the design and construction of Waste and Sewage Treatment Facilities.

Course Objective: To provide a practical design knowledge for Waste and Sewage Treatment Facility systems.

(1) October 5—INTRODUCTION—Basic process design in conjunction with Environmental Protection Agency requirements (and design criteria for) these plants.
(2) October 12—POWER DISTRIBUTION—Two sessions will cover switchgear and switchboard design. They will also cover a selection of cable sizes and insulation. Design Criteria for Emerging Power requirements will be discussed.
(3) October 19—POWER DISTRIBUTION (continued)
(4) October 26—MOTORS & PUMPS—This session will cover sizing types, voltage protection, and variable speed drives.
(5) November 2—LIGHTNING SURGE PROTECTION—Two sessions will deal with design requirements needed. Proper selection and location of this equipment is extremely important.
(6) November 9—LIGHTNING SURGE PROTECTION—(continued)
(7) November 16—INSTRUMENTATION AND PROCESS CONTROL I & II—This is the heart of all Water Treatment and Sewage Treatment Facilities. Selection and coordination of this type of equipment is critical for proper operation.
(8) November 23—INSTRUMENTATION AND PROCESS CONTROLS—(continued)
(9) November 30—OVERCURRENT PROTECTION FOR WATER & SEWAGE TREATMENT FACILITIES—Code and industry standards, electrical protection for switchboards, motors, motor control centers, cables and transformers, cost analysis and future expansion, as well as how to apply this information within the system.
(10) December 7—ESTIMATING—After reviewing a selection of the various equipment needed budget estimating is extremely important and also required.

REGISTRATION FORM

Mail to: Mr. John Domorski, Automatic Switch Co., 6 Watsessing Ave., Bloomfield, N.J. 07003
Make checks payable to: North Jersey IEEE

Please enroll me in ELECTRICAL DESIGN FOR WATER AND SEWAGE TREATMENT FACILITIES.

Name:_____ Company:_____

Address: _____ City, State, ZIP: _____

Phone: _____

Fee: $60.00 IEEE Members
$70.00 Non-IEEE Members

IEEE NORTH JERSEY SECTION LECTURE SERIES—FALL, 1977

STUDY GROUP NO. 1

PRACTICAL SYMMETRICAL COMPONENTS

TUESDAYS, 7:00 to 9:00 P.M., Starting October 4, 1977
Jersey Central Power & Light
Madison Ave. & Punchbowl Road
Morristown, New Jersey 07960

Group Sponsor: Frank Relotto, GTE Sylvania, (201) 283-0600

Speaker: J. L. Blackburn, Westinghouse Corp.

For whom intended: Electrical Design Engineers, including those who perform short circuit and coordination analysis, electrical distribution system studies and power distribution equipment design.

Course Objective: To give the electrical engineers an understanding of a basic design tool. Emphasis on symmetrical components as a thinking and analytical process. Typical problems will be assigned each week.

(1) October 4—INTRODUCTION AND HISTORICAL BACKGROUND—Representation of power system. Per unit and percent notation. Phases and polarity.
(2) October 11—MATHEMATICS OF SYMMETRICAL COMPONENTS—Sequence networks. Mechanics of short Circuit Calculations. Sequence quantities during faults. A typical line to ground fault calculation.
(3) October 25—TRANSFORMER AND REACTOR CHARACTERISTICS AND IMPEDANCES.
(4) November 1—GENERATOR CHARACTERISTICS AND IMPEDANCES.
(5) November 8—LINE CHARACTERISTICS—Positive, negative and zero sequence. Reactance and capacitance of overland cable circuits. Mutual impedance calculations.
(6) November 15—LOAD AND FAULT CALCULATIONS, SIMULTANEOUS FAULT, OPEN PHASES. (PART I)
(7) November 22—LOAD AND FAULT CALCULATIONS, SIMULTANEOUS FAULT, OPEN PHASES. (PART II)
(8) November 29—APPLICATION OF SYMMETRICAL COMPONENTS IN PROTECTIVE RELAYING. (PART I)
(9) December 6—APPLICATION OF SYMMETRICAL COMPONENTS IN PROTECTIVE RELAYING. (PART II)
(10) December 13—WORKSHOP ON PRACTICAL PROBLEMS SUGGESTED BY STUDENTS.

REGISTRATION FORM

Mail to: Mr. Frank Relotto, 153 B Meriline Ave., W. Paterson, N.J.
Make checks payable to: North Jersey IEEE

Please enroll me in PRACTICAL SYMMETRICAL COMPONENTS.

Name: _____ Company: _____

Address: _____ City, State, ZIP: _____

Phone: _____

Fee: $60.00 IEEE Members
$70.00 Non-IEEE Members

PAC NEWS

Microprocessor Updates

The New York chapter of the Computer Society with its September meeting will initiate a series of meetings intended to update individuals as to what is available from various manufacturers in terms of the latest microprocessor components. Each month will present a representative from each of the major manufacturers.

On September 27, Richard Ohlrogge of Texas Instruments will be the speaker. Mr. Ohlrogge is T.I.'s microprocessor expert for the New York area.

Time: 6:30 PM, Tuesday, September 27, 1977.
Place: United Engineering Center, 345 E. 47th St., Room 111, N. Y., N. Y.
For further information: Cary J. Ringel, Con Edison, (212) 460-2395.

Reliability of Nuclear Energy

"Reliability of Nuclear Energy" is the title of a talk slated for September 20 by Robert H. Gauger, Supervisor of Reliability Services, Holmes & Narver Inc.

In the midst of the energy crisis, the future role of nuclear energy is being forged thru debate, and has drawn considerable attention from the proponents and the opponents of nuclear power. Mr. Gauger will present his views concerning the reliability of nuclear power facilities. He will include information concerning the future of breeder reactors, particularly the Clinch River Project.

The meeting is sponsored by the NY-LI Chapter of the IEEE Reliability Group. For further information, contact Joseph Drvostep, (516) 752-3530.

The meeting is open to IEEE members and non-members.

Time: 7:30 PM, Tuesday, September 20, 1977.
Place: IEEE Headquarters, 345 East 47th Street, NYC. Conference Room III
Pre-Meeting Dinner (Dutch Treat): 6 PM at Shun Lee Dynasty, 2nd Ave. and 48th Street. (Free parking after 6 PM).

IEEE Report On Societal Needs Of Young Engineers

At the request of the IEEE Regional Activities Board, the Policy and Planning Committee conducted a survey of young engineers (Institute members age 30 and younger) during the winter and spring of 1972-73. In nine Sections in the United States, 462 young engineers were interviewed, mostly face-to-face, to learn what those younger members of IEEE want from their professional society. Those interviewed were encouraged to speak freely and no effort was made by interviewers to rationalize current Institute policies or operations.

Most young members of IEEE believe that for their $35 annual dues they receive no services or benefits other than the monthly SPECTRUM, a publication regarded favorably. However, the young members look upon Group/Society Transactions as nearly worthless; their view is that these publications are too deeply technical to be of value to the practicing engineer.

The young engineers want the Institute and its leaders to speak out vigorously on the technical aspects of national problems. There is an intense feeling that IEEE should energetically work to improve the lot and the public image of the electrical engineer. The young engineer members resent the rather obvious shunning by their elders at Section meetings and in opportunities for meaningful involvement and participation in Institute affairs. Finally, there is grave ignorance of the services that IEEE can provide to its members.

There is strong belief among those who participated in the survey that the opinions expressed by the younger members are very similar to the feelings of many of the older members.

What to do? First, communicate; tell in terms unmistakable to young members what services IEEE provides. Second, make all publications and meetings useful and meaningful to the young member. Third, speak out eloquently for the engineer and for the engineering profession. Fourth, give the young member a truly active role in the planning and conduct of IEEE at the local level and at the Institute level.

In summary, the entire Institute must thoughtfully and openly re-examine the needs of the substantial and valuable segment of Institute membership that consists of 30-and-under members.

TECHNOLOGY FORECASTING
Data

"IEEE should help our country, profession, and members through forecasting." "IEEE should be more active in helping to evaluate and forecast technological developments." "National Science Foundation influences number of engineering students by scholarships, keeping supply large for industry. IEEE should represent EE's interests on NSF." "IEEE should not promote engineering during periods of economic instability." "Even when no EE's are needed, schools push for enrollment, supported by IEEE, because college staffs exert excessive influence in IEEE." "IEEE is too much controlled by colleges."

The survey developed a deep feeling from interviewees that there was a serious need for meaningful technology forecasting. Many believed that the engineering profession was already overpopulated and that IEEE should not just blindly encourage more students to join the ranks of the engineers who are presently seeking employment. In one of the areas most severely hit by recent cutbacks in the aerospace and defense industries, many young engineers became jobless. Young engineers suffered from general lack of experience when seeking new employment, while the more mature engineers suffered from highly specialized experience; both groups had difficulty within the engineering field. Many engineers, young and mature, had to leave the engineering field after long periods of unemployment. Since many experienced engineers were available, the young engineers who had limited experience were not in demand. The situation thus was a difficult one for the young engineer who had recently completed a long period of study in order

(continued on page 4)

to be able to enter the engineering profession, only to discover that there were so many unemployed engineers that chances of his finding a position in his chosen field are next to nothing. One local young engineer with an impressive work history and a background which included a M.S.E.E. left the electrical engineering field to become a highway patrolman when no work was available for him within the electrical engineering profession. This young engineer, although no longer in the EE field, agreed to participate in the face-to-face interviews in the hopes of making the profession a better one for his former colleagues and others who would be entering the electrical engineering profession and for the engineering profession as a whole.

News By Phone

It is now possible to obtain an update on events of professional interest by telephoning the USAB information line, 202-785-2180, for a recorded message. This news is of two to five minutes duration, updated weekly by the Washington Office staff and is available at all hours. Some messages include employment opportunities as well as news.

Guarrera Condemns Salary Busting

In testimony containing a virtual litany of abuses against one segment of the vital technical human resources of this country, John J. Guarrera IEEE Vice President of Professional Activities appeared before the Subcommittee on Labor-Management Relations of the House Education and Labor Committee. His testimony was in support of H. R. 314, an amendment to the Service Contract Act of 1965.

"Professional employees have repeatedly been the victims of salary busting practices by contractors and government procurement officers operating under intense pressure to cut costs and reduce bids on contracts whose principal cost component is professional salaries," asserted Guarrera. IEEE involvement in support of H. R. 314 came in response to incidences of salary busting and salary erosion in connection with the placement of service contracts with the private sector at various locations throughout the country. Guarrera reviewed numerous case studies of salary busting. In one such case, a senior lead engineer with over 20 years of engineering experience was earning $23,000 in 1972. Following the recompetition of the contract on which he was working his earnings were slashed to $10,500 in 1974. In 1976 this professional was still earning only 2/3 of his 1972 salary.

Guarrera then briefly reviewed the legislative history of the Service Contract Act. He discussed similarities between the problems the act was originally designed to resolve and the current practice of salary busting as it relates to professionals. He noted that "contractors and prospective contractors engaging in cut throat competition for government contracts were reducing their costs and their bids by paying the lowest possible compensation to the professional employees they intended to employ on those contracts."

In calling for the enactment of H. R. 314, Guarrera outlined the three major remedies it would establish.

"First, it would provide an effective salary "catch-up" provision for professional employees working on service contracts in areas where professional salary scales have been depressed because of successive waves of salary-busting. Second, all professionals would be covered under the Act equally. Third, it would provide that the prevailing salary pattern be determined by an agency of the government other than the contracting agency."

Guarrera emphasized the significance of the matter to all engineers by stating: "We believe it is a matter of great importance to our association, even though only a small percentage of our members work on such contracts. We believe it is important, not just because of its significance to them—and to them it is a matter of the gravest importance, affecting their ability to raise their families, educate their children, and maintain themselves in dignity and decency—but also because the depression of the salary scales of professional engineers anywhere denigrates the entire profession. It suggests that engineers with their highly-developed skills and critical potential for expanding Man's knowledge and ability are but a commodity of commerce to be bought and sold at the lowest possible price.

This then is a problem not only for the individuals involved, but for all engineers, for professionals of all kinds, and for society. We believe that this Committee can make a significant contribution toward righting an unconscionable economic injustice and toward restoring highly skilled professional engineers to the status rightfully theirs by favorably reporting H. R. 314, the bill sponsored by Mr. Thompson, Mr. Corman, and others."

Guarrera concluded by recognizing that alternative proposals for solutions had been set forth, and that IEEE would welcome any further suggestions for resolving the problems of salary busting and salary erosion. However, he did emphasize, "Let there be no misunderstanding, the objective must be full and complete protection of the salaries and working conditions of professional employees on government service contracts, protection that is fully comparable in every way to the protection already provided to other employees on Federal service contracts."

Guarrera was accompanied by James G. O'Hara, the IEEE attorney in this matter; Dorothy Bomberger, Staff Program Director for IEEE (who testified for Walter Elden, an official of the South Carolina Society of Professional Engineers); Mr. Frank Leslie, Secretary of the Coalition of Aerospace and Professional Employees (C.A.P.E.); Mr. Roy Peck, Chairman of the California Inter-Society Legislative Advisory Commission; Frank Palmer, Chairman of the IEEE task force on the Service Contract Act; Ron Wojtasinski, State Chairman of the Florida Engineering Counsel and Buddy Bishop, Professional Activities Chairman of the IEEE in Huntsville, Alabama.

LETTERS TO THE EDITOR

FOR BAYLESS

We believe that the incumbent Executive Vice-President of the Institute, Carleton A. Bayless. . . should be re-elected for a second term. It is particularly important to insure the election of Carl at this time. Among the four Presidential and Vice-Presidential candidates, he is the only nominee who has served in Institute offices including the Board of Directors and the Executive Committee. We believe this experience is vital to insure continuity of Institute management.

Carl's support comes from members who have a broad spectrum of interests and activities within the Institute. His opponent is supported by a group that is primarily appealing to an elitist point of view. Some members of this group held high IEEE offices during the 1960's and did nothing to avoid the painful situation that developed for many of our members at the turn of the decade. They appear to want the Institute to return to the narrow technical base of that period.

Gerry Parsons
Chairman, EEE Committee For A
Member Oriented Institute

FOR HOGAN

You will soon receive your ballot for the election of officers and directors of the IEEE. A number of IEEE members who are concerned about the future of the electrical and electronics engineering profession, and the role of the Institute in shaping that future, have formed an independent organization which has become known as the Good Government Group. The sole purpose of GGG is to seek out and endorse the best available candidates for Institute-wide offices.

The IEEE has recently expanded its activities to include professional as well as technical matters. What is the proper balance between the technical and professional activities of the Institute? How can the IEEE best represent the diverse views of its members on issues facing the profession? Some of these challenges facing the Institute are spelled out in a definitive article in the August 19th issue of Science, the weekly publication of the AAAS, American Association for the Advancement of Science.

For an adequate and appropriate response to such tough questions, the IEEE needs wise and effective leaders. They should be chosen from the most able members of the Institute. For this reason, we have urged Les Hogan to run for executive vice-president as a petition candidate; we feel that his achievements have demonstrated his qualifications.

We have also investigated the qualifications of a number of other nominees. The results are that GGG strongly endorses: Ivan Getting for President, C. Lester Hogan for Executive Vice-President.

We found the following candidates for regional directors to be well qualified: Region 1: Rex H. Beers and James E. Shepherd.

We urge you to vote for these officers and to select your regional director choice from those listed.

F. Karl Willenbrock, Secretary
Good Government Group

FOR PROFESSIONALISM

The real battle of the ballot this year is directed at professionalism. Opponents to professionalism would have you believe that IEEE professional activities will have a detrimental effect on the technical efforts of the Institute. This is not true. Only when the practicing engineer can have a voice in IEEE will he be able to protect and insure technical quality.

True, there is a split in the IEEE. But, it does not lie between technical activities and professional activities. The split in IEEE lies between the CONSUMER, the PRODUCT, and the SUPPLIER.

The consumer group is represented by Getting, Hogan, and the self-ordained Good Government Group (GGG)—the backbone of hypocrisy. These so-called heavyweights from mahogany row, buy, sell, use, and often abuse the product. The product, of course, is the practicing engineer. The supplier, as you very well know, are the engineering schools. The GGG also represents this supplier. GGG's secretary, Karl Willenbrock, is the Dean of SMU's School of Engineering. A total of 28 members of this unauthorized IEEE/GGG self-appointed committee will insure a large supply of college engineering student enrollments and a low-priced supply of engineers. Caught between these two forces is the product, the practicing engineer. He has not been permitted the opportunity to be heard, or an office in IEEE. He has suffered the pains of wage busting, salary compression, age discrimination, poor pensions, unemployment, underemployment, etc.

The United States Activity Board (USAB) and the Professional Activities Committees (PAC) are also caught between these two forces, the consumer and the supplier. USAB and PAC are fighting for professionalism. They are fighting wage busting, salary compression, age discrimination, poor pensions, unemployment, underemployment, etc. Through USAB and PAC the practicing engineer has a voice and a place in IEEE. Now USAB must fight those within the Institute that would dilute professional efforts and weaken USAB. The GGG represents the consumer and the supplier and they will dilute professional activities. USAB must maintain its voice in professional activites.

It is indeed unfortunate that I must write this but Spectrum's latest deed has violated the IEEE election policy in its efforts to affect the outcome of this election and this has left me without a choice. IEEE has published an August supplement to Spectrum titled "The Institute." In this tabloid they printed a derogatory interview with Mr. Irwin Feerst, a pro-professional, presidential candidate for IEEE. However, during 1976 a policy was made by the IEEE Board of Directors stating that interviews or articles by the candidates would not be permitted in any IEEE publication prior to the election and after the month of June. Because of this lack of integrity and professionalism, I can no longer tolerate the irresponsible "do as I say and not as I do" attitude of the BOD and the responsible parties, and I must take a stand.

In opposition to this act and in support of the USAB and professionalism, I will support Mr. Irwin Feerst for president, Mr. Carleton Bayless for vice president, and Mr. Jack Jatlow as Director of Region I. I recommend you do the same.

Richard L. Tax
PAC Chairman
North Jersey Section

PLEASE POST ON BULLETIN BOARD—ALL GROUPS ARE OPEN TO THE PUBLIC

NY&LI Sections, IEEE
Power and Industrial Div.

EDUCATION PROGRAM—FALL 1977
SPECIAL STUDY GROUPS

Metropolitan Section
ASME

WHY SHOULD YOU ATTEND OUR STUDY GROUPS:

Self-development and continuing growth of the professional in all phases of engineering has never been as important as it is now. Every day new techniques are developed and new knowledge is available which could be of vital importance in your professional activities. Keeping up with these continuing and rapid changes is imperative for any individual to stay on top of important new developments.

By attending our study groups knowledge of new facets in business and industry can be obtained. Each study group is structured in such a way as to encourage participation from the attendees. Raising questions and discussing case histories and solutions in a professional atmosphere creates a profitable learning experience for all involved.

You owe it to yourself to attend these stimulating study groups. It's a sure investment in your future.

REGISTRATION INFORMATION FOR SPECIAL STUDY GROUPS

FEE PER GROUP	PAYABLE TO	MAIL TO
$55 each for members, IEEE, ASME; $70 each for all others	"POWER & IND. GROUP N.Y. SECTION IEEE"	Kurt Herzog, Chairman Education Committee, IEEE Consulting Engineer 5 Manning Circle Pelham, N.Y. 10803

FOR FURTHER INFORMATION, CONTACT INDIVIDUAL SPECIAL STUDY GROUP COORDINATOR OR: Kurt Herzog, Chairman Education Committee, IEEE, Consulting Engineer, 5 Manning Circle, Pelham, N.Y. 10803

NOTE

Fill out one registration form for each group and mail with payment
Registrations will be accepted at first and second sessions to the limit of room capacity.

REGISTRATION FORM

Name (printed) .....
Firm ..... Position .....
Business Address .....
..... Phone No. .....
Home Address .....
.....
Study Group .....
Member of:
☐ IEEE
☐ ASME
☐ OTHER
☐ NON-MEMBER
Membership
No. _____

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REGISTRATION FORM

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Firm ..... Position .....
Business Address .....
..... Phone No. .....
Home Address .....
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Study Group .....
Member of:
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☐ ASME
☐ OTHER
☐ NON-MEMBER
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NY&LI Sections, IEEE
Power and Industrial Div.

EDUCATIONAL PROGRAM—FALL 1977
SPECIAL STUDY GROUPS

Metropolitan Section
ASME

Study Group No. 6
INTRODUCTION TO MICROPROCESSORS

Study Group No. 7
PROTECTIVE RELAYING

Study Group No. 8
TOPICS IN ELECTRIC LOAD MANAGEMENT

Study Group No. 9
GROUNDING PRINCIPLES AND PRACTICES

STUDY GROUP NO. 6
INTRODUCTION TO MICROPROCESSORS
Starting September 19, 1977
(NOTE TIMES AND DATES BELOW)
Stone & Webster (41st Floor Training Room)
1 Penn Plaza, New York, N.Y. 10001

Course Sponsor: *Kurt Herzog*
Consulting Engineer
(914) 738-2439

Course Coordinator: *Michael Casella*
I. Loring & Assoc.
(212) 563-7400

Instructors: *Dr. Robert Borrmann*
Dr. Robert Mauro

This intensive course is designed to give the student an understanding of microprocessor basic concepts; assembly language programming concepts and digital logic design within a microprocessor environment. Students will learn to assemble and edit programs, implement logic which requires assembly language and digital logic packages to interact.

Reference books for this course will be available only when ordered at pre-registration: "An Introduction to Microcomputers" by Adam Osborne, copyright 1976 by Adam Osborne & Associates, Inc., Berkeley, Calif., 2 Volumes. $20 per set.

1. September 19—6:30 to 8:30—Organization of a Microcomputer—Microcomputer Memory; The data, address, and control busses for the 6800; Timing of instruction execution; Elementary data transfer, and input/output (I/O) in the 6800. Example: A programmable pulse train generator.

NEW YORK & LONG ISLAND SECTION IEEE
POWER & INDUSTRIAL DIV.

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EDUCATIONAL PROGRAM — Special Study Groups

FALL 1977

2. **October 3—6:00 to 8:00—Binary, Octal, and Hexadecimal Arithmetic**—Boolean and logical operations; Arithmetic and logical instructions in the 6800; Condition/Status flags; Conditional Branching and looping; More on the Programmable pulse train generator; Asynchronous serial data transmission. Example: Using the processor to generate serial data. Example: Using the processor to receive serial data.
3. **October 17—6:30 to 8:30—The Microprocessor Stack**—Subroutines. Example: A time delay subroutine. Flowcharting and program documentation. Example: A "Mystery" program. Interrupts in the 6800; Addressing Modes in the 6800. Example: A memory search routine. Example: A memory copy routine.
4. **October 24—6:00 to 8:00— Microprocessor I/O**—How to connect an I/O port to a microprocessor; How to connect memory to a microprocessor; Address space allocations; Hardware aspects of interrupts and direct memory access (DMA).
5. **October 31—6:00 to 8:00—Introduction to the 8080 Microprocessor**—The 8080 instruction set; An 8080 instruction set; An 8080 programmable pulse train generator; Timing in the 8080; Digital-to-analog (D/A) Conversion. Example: A programmable wave-form generator.
6. **November 7—6:00 to 8:00—A/D Conversion**—Hardware/software tradeoffs; The 8080 control bus; Status latch; Memory-mapped or dedicated I/O addresses?; How to connect an I/O port to the 8080; How to connect memory to the 8080.
7. **November 21—6:30 to 8:30—Interrupt Hardware for the 8080**—Peripheral and support chips used with microprocessors: Uart, Fifo, Modem, A/D, D/A, Etc.; Some applications.
8. **November 28—6:00 to 8:00—Developing Microprocessor Programs**—Machine, assembly, or higher-level language?; Creating an assembly program, editors, programming strategies; Hand Assembly, machine assembly; Program testing and debugging; Vendor support for microcomputer system development.
9 **December 5—6:00 to 8:00—A Survey of Microprocessors**—Addressing modes, execution speeds and other characteristics; Special purpose processors; Microprogrammable microprocessors; How to select a microprocessor; Large-computer versus microcomputer thinking.
10. **December 19—6:00 to 8:00—Some Applications**—A PROM programmer; An adaptive serial data receiver; Universal product code reading; BCD arithmetic; Extended precision arithmetic.

STUDY GROUP NO. 7
PROTECTIVE RELAYING
TUESDAYS, 6:00-8:00 PM, Starting September 20, 1977
Stone & Webster (42nd Floor)
1 Penn Plaza, New York, N.Y. 10001

Group Sponsor: *McKinley Moore*
General Electric
(212) 750-2245

Group Coordinator: *Alex Korn*
Stone & Webster
(212) 760-2195

A nine-session study course to aid engineers in the commercial, industrial and utility fields. The course will cover the basic principles of operation, application, selection and coordination of protective relays.

1. **September 20—Symmetrical Components**—Three Phase Systems; Phasor definitions and per unit system; Symmetrical component definitions; Equipment representation; Fault calculation.
Speaker: M. Moore, G.E. PSSO, New York
2. **September 27—Measurement Devices**—Current transformers; Potential transformers; Coupling capacitor voltage transformers; Standard accuracy classification.
Speaker: M. Moore, G.E. PSSO, New York.
3. **October 4—Generator Protection**—Stator Winding; Rotor Winding; Abnormal Operating Conditions; System Back Up.
Speaker: J. Berdy, G.E. EUSED, Schenectady.
4. **October 11—Transmission Line Protection Overcurrent Relays**—Types and Characteristics; Applications; Systems Coordination.
Speaker: R.C. Patterson, G.E. PSM, Philadelphia.
5. **October 18—Transmission Line Protection Distance And Pilot Relays**—Types and Characteristics; Applications; System Coordination.
Speaker: W. New, G.E. PSM, Philadelphia.
6. **October 25—Communication Channels**—Types of Equipment Available; Operating Times; Coordination and Channel Logic; Single Function Versus Multi-Function Equipment.
Speaker: H. Fielder, G.E. EUSED, Schenectady.
7. **November 8—Transformer and Bus Protection**—Transformer Differential; Transformer Pressure; Transformer Gas Detection; Transformer Temperature Detect; Bus Differential, Current Bus Differential, Voltage.
Speaker: J. Berdy, G.E. EUSED, Schenectady.
8. **November 15—Power Station Auxiliary Protection**—Motor and Feeder Protection; Transformer Protection; Unit Substation Protection.
Speaker: M. Moore, G.E. PSSO, New York.
9. **November 22—Digital Relays**—A. Digital Distance Relay; B. Substation Automation.
Speaker: J.T. Tengdin, G.E. PSM, Philadelphia.

STUDY GROUP NO. 8
TOPICS IN ELECTRIC LOAD MANAGEMENT
WEDNESDAYS, 6:00-8:00 PM, Starting September 21, 1977
EBASCO Services
2 Rector Street, N.Y., N.Y. 10006

Group Sponsor: *Ralph Mauro*
Con Edison Co.
(212) 460-4100

Group Coordinator: *Godofredo Lara*
Port Authority of N.Y. & N.J.
(212) 466-4792

This course is designed for Engineering Consultants, Architects, Contractors and Building Managers. The lecture series will explain why Electric Load Management is important and beneficial to both the utility and the consumer. Discussion will center around the problems of and tools available to achieve Load Management. Recent developments and future trends in Load Management technology will also be presented with emphasis on ongoing projects sponsored by the Federal Government and Utility Industries. The course will conclude with a panel discussion at which many of the speakers will be available for clarification of points discussed in the preceding sessions.

1. **September 21—Load Management—What and Why**—An overview of the value of Load Management to both utility and consumer, with introduction to rate structures and economic benefit of decreased electric demands
2. **September 28—Utility Alternatives to Load Management**—Discussion of rate increases due to increased capital investment. Rate structures based on demand, Voltage Reduction, Rotating Blackouts, Frequency Decline & System Disturbances due to excessive demands.
3. **October 5—Tools of Load Management**—Discussion of Conservation efforts, demand controllers from clocks to computers-Ripple control, Radio control, time of day rates.
4. **October 12—Load Management in Commercial Buildings**—Specific applications of the items discussed in Sessions 1-3 showing changing demand envelopes, equipment to control and savings to be gained in commercial buildings.
5. **October 19—Load Management in Industrial Buildings**—An extension of session 4 with applications directed at the Industrial sector.
6. **October 26—Load Management in Residential Areas**—Application of preceding discussion to the Residential sector.
7. **November 2—Future Technology for Load Management (R&D)**—Discussions on storage techniques, heat pump, fuel cells, batteries, windmills & future developments.
8. **November 9—Summary and Panel Discussion**—This session will summarize the discussion of the previous seven sessions and allow for additional in depth discussion with the instructors at an informal session.

STUDY GROUP NO. 9
GROUNDING PRINCIPLES AND PRACTICES
THURSDAYS, 6:00-8:00 PM, Starting September 22, 1977
Stone & Webster (42nd Floor)
1 Penn Plaza, New York, N.Y. 10001

Group Sponsor: *John Tambasco*
New York State Urban Development Corp., N.Y.
(212) 974-7605

Group Coordinator: *Alex Korn*
Stone & Webster Engr.
(212) 760-2195

A review of the engineering practices and principles of system and equipment grounding. This will include the important elements in protection of transmission and distribution systems, code requirements, earth connection cathodic protection and human safety.

1. **September 22—Basic Principles**—Why ground? Fundamentals and methods of system grounding.
2. **September 29—System Grounding**—Fault current limitation and relaying. Use of concrete enclosed reinforcing rods as ground electrodes. Equipment and personnel protection.
3. **October 6—Substation Grounding**—Grounding of substation equipment and structures.
4. **October 13—Distribution System Grounding**—Grounding neutral conductors, poles, distribution equipment.
5. **October 20—Transmission Line Grounding**—Grounding of transmission tower and shield waves. Lightning protection.
6. **October 27—Industrial Plant Grounding**—Delta and Wye Systems, grounded and ungrounded.
7. **November 3—Computer and Electronic Equipment Grounding**—Equipotential raised floors, Equipment Grounding, Communication Cable Shielding, Grounding and Filtering.
8. **November 10—Cathodic Protection**—Nature of corrosion and protective circuits.
9. **November 17—Grounding Systems for Patient Care**—Electrical Systems for hospitals.
10. **December 1—Connection to Earth**—Characteristics of grounds, earth resistivity, calculations and tests.

Speakers for all sessions will be announced.