FREE 1985 ENGINEERING SALARY SURVEY

High tech compensation is up—in some cases as much as 15%.

With a strong economy and business outlook, salaries for engineers in high tech industries have increased significantly—by as much as 15% in some cases.

Our most comprehensive Survey ever

The new 1985 High Tech Engineering Salary Survey and Career Planning Guide is based on contacts with almost 10,000 engineers and over 1,000 firms that hire them. Included is a review of salaries at thirty-four position and experience levels. So no matter if you're in design and development, manufacturing, test, quality control, software/hardware sales, marketing, technical support or management; you'll learn whether or not your salary is keeping pace with your peers—and what you can expect to earn as you advance your career.

In addition, the new Survey includes many charts, exhibits and graphs which are designed to help you get a thorough understanding of career trends and what you could do to capitalize on them.

Call today

California
Sunnyvale
408/738-8440

New Hampshire
Nashua
603/889-3993

Texas
Arlington
817/633-4700

Virginia
Tysons Corner
703/790-5560

Massachusetts
Burlington
617/272-5000

New Jersey
Wayne
201/628-7220

New York
Rochester
716/262-4380

Wellesley
617/431-1080

Call today

1985 FELLOW AWARD WINNERS FROM THE IEEE NORTH JERSEY SECTION

Jonathan B. Allen, AT&T Bell Laboratories
"For contributions to speech analysis and synthesis systems"

Edward G. Coffman, Jr., AT&T Bell Laboratories
"For contributions to the theory of computer operating systems"

Leonard G. Cohen, AT&T Bell Laboratories
"For contributions to optical fiber diagnostic measurements and single-mode fiber designs"

Reed E. Fisher, AT&T Bell Laboratories
"For contributions to the implementation of cellular mobile telephony"

C. Geoffrey B. Garrett, AT&T Bell Laboratories
"For contributions and leadership in MOS integrated circuit technology"

Thomas J. Martin, Public Service Electric and Gas Co.
"For leadership in the development and implementation of electrical engineering and construction standards for nuclear power plants"

Robert H. Shannum, AT&T Bell Laboratories
"For contributions to the design and implementation of satellite communication systems"

REGION 1 AWARD IN ELECTRICAL ENGINEERING MANAGEMENT

Kenneth J. Oexl, Jersey Central Power and Light Co.
"For leadership in the design and development of high voltage electric power system distribution facilities"
Effect Of Technology On Mathematics Curriculum

“The Effects of Technology On The Mathematics Curriculum” is the title of the talk to be presented by H.O. Polik of Bell Communications Research, Inc. at a March 20, 1985 meeting sponsored by the North Jersey Chapter of the Systems, Man, and Cybernetics Society and the Princeton Section of the IEEE.

About The Talk

Society provides the time so that students take mathematics every year while they are in school. Why? Probably not because mathematics is beautiful—though it is—or because it gives great training for the mind, but because it is so useful. If usefulness is the fundamental reason for teaching as much mathematics as we do, then we must exhibit, exercise, and emphasize this usefulness at every opportunity. Furthermore, as what is useful for society changes, we must change what we teach and how we teach it. But why should what is useful to society change? Because of technology! We must therefore examine HOW technology relates to the teaching of mathematics.

The speaker will discuss a number of aspects of the relationship between mathematics and technology. There is, first of all, the use of technology to help in teaching mathematics. For example, for practice, tutoring, applications, diagnosis, simulation, or test management. There are topics within mathematics which were previously pedagogically beyond the schools, but which we always had wished we could teach. Technology makes some of these possible. There are other topics which technology makes necessary. More generally, technology changes the priorities among topics and their potential importance for all students.

On a different level, mathematics itself may be changed by technology, and our planning must take this into account. We may also expect changes in the incoming student; technology may aggravate the already difficult problem of inequity of access to education opportunity. Finally, we may expect that technology will have a profound effect on the style of our teaching.

About The Speaker

Henry O. Polik is Assistant Vice-President, Mathematical, Communications, and Computer Sciences Research Laboratory, Bell Communications Research, Inc., Morristown, N.J. For the previous 22 years, he was Director of Mathematics and Statistics Research of Bell Laboratories. Dr. Polik received his B.A. from Yale University in 1947, and M.A. and Ph.D. degrees from Harvard University in 1948 and 1961. Dr. Polik has received honorary Doctor of Science degrees from Rose-Hulman Institute of Technology, Morningside College, and from The Technological University, Eindhoven, The Netherlands. He also received a Fellow of the American Association for the Advancement of Science in 1971.

Since joining Bell Laboratories in 1961 he has engaged in mathematical research in communication. He is the author of over 35 technical papers on analysis, function theory, probability theory and mathematics education. He holds a patent (joint with Dr. R. L. Graham) for his work on Interconnected Loop Digital Transmission Systems.

Time: 6:00 PM, Wednesday, March 20, 1985.
Place: Room C217, Convocation Room, Engineering Quadrangle, Princeton University.

Fiber Optic Applications in Electrical Power Systems

The content will include a systematic treatment of fiber optics (components, waveguides and cable connectors), various modulation techniques, economics and applications in communications, measurements and control. The tutorial will conclude by covering what’s next and how to get started in implementing the technology.

The speaker is D.C. Erickson, Bonneville Power Administration, Portland.

The topics are:

- FIBER OPTIC BASICS
- VARIOUS MODULATION TECHNIQUES USED IN PRACTICE
- ECONOMICS OF LIGHT WAVE OVER CONVENTIONAL COMMUNICATION METHODS
- GENERAL INTRODUCTION TO FIBER OPTIC APPLICATIONS
- COMMUNICATION APPLICATIONS
- MEASUREMENT APPLICATIONS
- CONTROL APPLICATIONS
- WHAT’S NEXT AND HOW TO GET STARTED

NJ PACE Meetings

Monthly meetings of the North Jersey PACE Committee will be held at the ITT Tower Lobby, 500 Washington Avenue, Nutley, N.J. at 8 PM on the second Wednesday of every month. Free refreshments will be offered to all.

There are many active hot PACE Projects funded by IEEE’s USAB from which you benefit. Here’s your chance to learn about them and give your input!

Call Maitland McLarin, PACE Chairman at 201-335-6847 for additional information.

Railroad Conference

The 1985 IEEE ASME Joint Railroad Conference will be held at the Roosevelt Hotel in New York City from April 16 through 18, 1985. For additional details contact Tom Marple, Transit, 95 Orange St., P.O. Box 720, Newark, N.J. 07101 (201) 648-7064.

“*The IEEE Newsletter* - March, 1985 - Page 2
Six Tutorials Featured at Electro/85 and Mini/Micro

The IEEE: Metropolitan Sections Activities Council (METSAC) and Electro/85 will cosponsor six special fee tutorials on Monday, April 22 from 9:00 am until 5:00 pm in the Sheraton Centre Hotel Ballrooms in New York City. Registration for these tutorials must be accomplished with the coupon at the end of this article. Included in each tutorial fee are course materials, lunch and Electromagnetic registration which is also valid for Mini/Micro Northeast. We urge you to register early to insure that there will be room for you.

Artificial Intelligence (AI)

This course is designed for computer software specialists, engineers and technical managers who are, or will be, responsible for AI applications. It will cover fundamentals of AI with special emphasis on building expert knowledge-based systems (EKS or KBS). Therom proving, learning approaches, and AI languages will be covered. Important applications and AI's future direction will be discussed.

Specifically the content is: Overview of AI; Introduction to ES; Basic concepts for building ES; Architecture for small and large search space, Heuristic search, Learning systems, Introduction to AI programming languages, LISP, and Prolog. Knowledge-based building tools. AI or LISP processors. Automated reasoning and conceptualizations of AI. Applications for robotics, automation, management, space, military, CAE, CAT, and automated programming.

The speakers are:

Professor Robert Hong (Tutorial Coordinator) is Technical Advisor to GRUMMAN'S Systems Engineering, and teaches graduate AI/Robotics courses at PINY. He is Chairman of AI/Robotics for Long Island IEEE, and was a member of the AI Study Group for OSTD/IDA.

Larry T. Wos, PhD, is a Senior Mathematician of Argonne National Laboratory. He is President of the Association of Automated Reasoning, and is co-author of the book entitled Automated Reasoning — Introduction and Applications.

Diane Tosh is Supervisor of AI for Melpar, E-Systems. She is Chairman of AI/Robotics and Deputy Chairman of Computer Society for IEEE, Washington, D.C.

Charles Bobelis is a Senior Engineer with Grumman Aerospace Corporation, participating in AI at He is Deputy Chairman of AI/Robotics for Long Island IEEE.

The FCC Closes In On Computer Manufacturers

More than any other legal agency, the Federal Communications Commission (FCC) sets rules of the road for the types of electronic data processing equipment. All such devices are regulated under Part 15 of its rules governing emission characteristics. This seminar will discuss these regulations and the means by which the FCC spots violators and how they go about enforcing the rules. One half of the seminar will be also dedicated to designing equipment for compliance at the printed circuit board level with a view towards complying at minimum cost.

Any devices that hook to the telephone network must also be registered under Part 68 of the FCC rules. The regulations and enforcement mechanisms are also reviewed. Methods for designing interfaces, including sample schematics, are presented and discussed.

The seminar speaker is Mr. Glen Dash who is a Director of Dash, Strauss & Goodhue, Inc. and a partner of Mahn, Franklin & Goldberg, PC. The organizers and coordinators of this seminar are Messers. Dash, Goodhue and Straus.

Millimeter Wave Solid State Sources

“Millimeter Wave Solid State Sources” will be covered by Dr. Fred J. Rosenbaum of Central Microwave Co. at the March 11, 1985 meeting of the NJ MTI/AP Chapter.

About The Talk

Millimeter wave sources have improved in performance and increased in complexity over the past decade to meet the demands of current system requirements. This talk reviews the basic millimeter wave solid-state sources: IMPATT, Gunn and Multipliers Application of these devices in dielectric resonator oscillators (DROs), voltage controlled oscillators (VCOs), injection locked oscillators (ILOs), and phase locked sources (PLOs) is described along with state-of-the-art performance results. Solid-state amplification at these frequencies will also be discussed.

About The Speaker

Fred J. Rosenbaum was born in Chicago, Illinois. He received his education in electrical engineering at the University of Illinois and in 1963 was awarded the Ph.D. degree. He was a professor of electrical engineering at Wayne State University, in St. Louis, for 18 years before joining Central Microwave Company, a division of Alpha Industries. At Central Microwave he developed research programs in micro-wave components including ferrite phase shifters and circulators, Gunn oscillators and amplifiers, IET detector elements and applications. As Chief Scientist at CMC he manages the R & D effort as well as the FET amplifier product lines.

Dr. Rosenbaum is a Fellow of the IEEE and a Centennial Medalist. He was editor of the IEEE Transactions on Microwave Theory and Techniques and served MITT’S as Ad Com President in 1981. He is the general chairman of the 1985 MITT’S International Microwave Symposium to be held in St. Louis, Missouri in June 1985.

Place: ITT Avionics, Nutley, N.J.
Pre-Meeting Dinner: 6 PM, Ramada Inn, Clifton, N.J.

New Development In Telephony: ISDN

On Wednesday, March 27, 1985, the New Jersey Computer Communications Chapter will have Thomas E. Browne of Bell Communications Research, Inc., speak on Integrated Services Digital Networks (ISDN).

About The Talk

Mr. Browne will discuss several aspects of ISDN telephone system planning in the United States and the factors that are motivating the present intense level of activity on this very important topic. ISDN is seen as the “target” architecture for the evolution of today’s telephone networks to networks supporting a wide range of voice and non-voice services.

The talk will cover the technical principles that form the basis of ISDN, its many potential user services, the state of national and international standards developments and some possible evolutionary patterns that may occur in the United States.

About The Speaker

Mr. Browne is Division Manager—ISDN Planning at Bell Communications Research, where he is responsible for defining the network architecture, development of standards and assisting the Bell Operating Companies in planning ISDN field trials and early deployment programs. He was served as chairman of one of the CCITT working groups that defined the ISDN User-Access Protocol, and has been active in the activities of the T1D1 group sponsored by the Exchange Carriers Standards Association to adopt a US standard protocol for ISDN.

He was with Bell Labs for 18 years working on development of electronic switching systems. He joined AT&T in 1977, where he was engaged in switching systems engineering and exchange network technology planning. He assumed his current position in 1983. He received a Bachelor’s degree from Manhattan College and a MSSE from New York University.

ALL WELCOME

IEEE membership is not required to attend. All are welcome! Refreshments will be served at the meeting.

Time: 6:00 PM, Wednesday, March 27, 1985.
Place: ITT Tower Auditorium, 500 Washington Ave., Nutley, N.J.


LON G ISLAND CONTINUING EDUCATION INSTITUTE INC. “Career Growth Through Continuing Education”

ARTIFICIAL INTELLIGENCE, AN IN-DEPTH COURSE

May 20-22, 1985 at the Sheraton Smithtown 110 Vanderbilt Motor Parkway, Smithtown, N.Y. Adjacent to the Long Island Expressway

Instructors: Robert Hong, Charles Bobelis, Dr. Larry Wos

To register or to request a course outline, write:
Long Island Continuing Education Institute Inc. 118 Grassly Pond Drive, Smithtown, N.Y. 11787
or call: (516) 543-7212

Fee: $75 includes text, lecture notes and lunches. Group discounts available, please inquire.

CEU’s: 2.0

**PACE NEWS**

**Professional Activities Committee for Engineers**

**Committee Will Investigate**

On February 6, The North Jersey Section's Executive Committee agreed to establish an Ad Hoc Committee to investigate the Massachusetts High Technology Council (MHTC) Report. The title of the report is "Assessment of Lifelong Learning Program Needs for Engineers and Scientists in Massachusetts High Technology Companies." The Report is based on a survey by two "Researcers" Paula G. Levantman, College of Engineering, and Glenn Pierce, Center for Applied Social Research, at Northeastern University and sponsored by the MHTC.

The purpose of the study is "to assess the extent and characteristics of education and training programs currently provided by Massachusetts High Technology Council member firms and to examine the future training needs of their workforce." The introduction to the report apparently has very little to do with the current study. However, the introduction does belabor the point of engineer and scientist obsolescence based on studies and reports of others dated some fifteen (15) years ago during the lowest point of the high technology recruiting recession.

The function of the MHTC Report Investigating Committee is to evaluate the report and present its findings to the Section Executive Committee with recommendations for further action.

The MHTC Report is anything like the AEAs manpower study that predicted engineer shortages, then one of its functions will be to influence Congressional representatives into pouring more money into the engineering schools to turn out even more engineering degrees.

---

**EMS Objectives**

The EMS is one of many technical societies/groups in IEEE. Its members may have different technical interests, however, they share a primary common interest in engineering management. The EMS objectives are scientific, literary, and educational in character and basically (1) strive for the advancement of the theory and practice of management of organizations with high engineering content and (2) maintenance of a high professional standing among its members. The purposes of EMS are:

1. Scientific and Educational with specific emphasis on the management science and technology applicable to organizations engaged in overseeing research, development, design, evaluation, production or operation of electrical or electronic equipment/systems or allied activities.
2. Professional, directed toward the advancement of the standing of the members of the professions it serves.

The EMS Chapter activities are designed to help engineers making the transition to management, engineers endeavoring to prepare for future transition, and engineers who have made the transition and are seeking knowledge to help them improve their performance. The premise is that the transition to management requires significant study and individual effort for success. The above mentioned activities should appeal to all IEEE members, regardless of their technical specialty areas of expertise.

The Chapter strives to keep local EMS members an opportunity to interact with each other periodically and to host outside speakers on subjects of most interest to the members.

We welcome new and prospective members to join our EMS Chapter. For further information, please contact: M. Izak, Chairman—EMS, Metro New York/New Jersey Chapter, NYP-A-10 Columbus Circle, New York, N.Y. 10019. (212) 397-7438.

---

**SECTION BANQUET—APRIL 19, 1985**

A time to relax, unwind and enjoy —
A time to pay tribute to our New Fellows —
A time to honor our new Senior Members —
YES it’s time for the Annual Section Banquet

Following the enthusiastic response of those who attended the Banquet the past seven years, we are returning to the Chantilier in Millburn. The affair is scheduled for Wednesday evening, April 17, 1985. Each ticket is $22.00 and includes a complete prepaid Cocktail Hour preceding dinner. Spouses and guests are welcome. Reservations required by April 10, 1985. Complete the reservation form below and return it with your payment. If any additional information is required concerning the Banquet, contact Richard Tax at 573-0387.

Inquire about corporate tables.

Use this form for Banquet reservations enclosing a stamped self-addressed envelope. Reservations required by April 10, 1985. Mail reservation request to:

Richard F. Tax
51 Hawthorne Ave
Park Ridge, N.J. 07656

Enclosed is _______. Please forward _______ tickets (make checks payable to North Jersey Section IEEE) to:

Name:

Address:

City:

Zip:

I would like to share a table (seating _______) with the following:

---

"The IEEE Newsletter" • March, 1985 • Page 4