(PACE NEWS—Continued)

THE AX IS FALLING -

by M. Alterman

For the past year this section has been collecting data on job losses in technology companies—companies that employ engineers, programmers and/or scientists. Thank you to everyone who sent in contributions to this database. Listed below is the result of our efforts—75 instances of a company or government agency cutting employment with a loss of approximately 200,000 jobs. These cuts have happened or are scheduled to happen over the next several months. This list should not be considered complete.

DATE	COMPANY	LAYOFF #	COMMENTS
	Chrysler	4000	
	Cipher Data	525	
	Drexel	300	
	H-P Apollo Div	330	
5/17/89	Hartman Systems	115	Closed
5/22/89	Control Data Eta Sys	1500	Closed
6/5/89	Conner Peripherals	200	
6/5/89	Hughes Aircraft	6000	
6/5/89	Prime Computer	240	NH Close
6/5/89	UTC Norden Div	400	
6/14/89	Sikorsky Aircraft	1300	
6/16/89	Grumman Sys Div	90	
7/3/89	BBN Comm AS (DEN)	200	Closed
7/3/89	Honeywell	300	
7/3/89	H-P Appollo	100	
7/3/89	Wang	1700	
7/31/89	Honeywell	4000	
7/31/89	Lockheed Electronics	300	
8/4/89	Olin Hunt chemical	120	Closing
8/8/89	Brooks Bros clothes	290	NJ Closing
8/21/89	Ashton-Tate	350	
8/22/89	PAR Pharmaceutical	150	
8/24/89	Campbell Soup	2800	
8/24/89	Kodak	4500	
8/28/89	Tachonics (Grumman)	47	Closed
9/11/89	Comport Corp		Chap 11
9/11/89	Sprague Technologies	10%	
9/18/89	PRIAM	230	
10/16/89	Data General	2200	
10/23/89	Motorola/Codex	3000	
10/23/89	UNISYS	8000	
10/24/89	Prime Computer	2500	
10/30/89	AT&T	34000	Early Ret
10/30/89	CODEX		Attrition
10/30/89	CODEX	300	7/89
10/30/89	Von Neumann Computer		No Fed $
11/8/89	Shearson Lehman	800	
11/13/89	Cray Research	400	
11/13/89	Data I/O	50	
11/13/89	DAZIX	170	
11/13/89	IBM	1000	
11/13/89	Wang Labs	2500	
11/20/89	Evans & Sutherland		Closed
11/20/89	Sci Comp Sys		Closed
11/27/89	AMDAHL	400	
12/1/89	Lockheed Electronics	1160	Closing
12/11/89	IBM	10000	Attrition
1/14/90	US DOD	30000	Civilian
1/14/90	US DOD	20000	Military
1/16/90	Auto Companies		Large #
1/16/90	Merrill Lynch	3000	
2/1/90	Fairchild Weston		
2/1/90	Grumman	2000	
2/1/90	Gull Aviation		
2/5/90	ATT Microelectronics	1000	
2/5/90	GE Aerospace	5600	By 91
2/5/90	H-P	1000	Early Ret
2/8/90	ITT Avionics	300	Since 87 +
2/15/90	Drexel	7000	Chap 11
2/22/90	Apple Computer	400	
2/26/90	DEC	260	10/89
2/26/90	DEC		Severance
2/26/90	Tektronix	1400	
2/28/90	Shearson	2000	
3/15/90	Harris, Intersil Fab	350	Close
3/25/90	ITT Federal Electric		NJ Close
4/2/90	Multiflow Computer		Closed
4/2/90	Supertek Computers		Cray purch
4/8/90	Von Neumann Comp Ctr		Closing
4/15/90	ATOCHEM		NJ Close
4/22/90	F L Smidth		NJ Close
4/28/90	General Electric	4200	next 2 years
4/28/90	Lockheed	2750	
4/28/90	McDonnell Douglas	3000	
5/1/90	ATT Network Svc Div	6000	
5/6/90	Slater Electric		NJ Close

ENGINEERING LAYOFFS

Please make copies of all articles on engineering layoffs and send to: Mike Alterman, 509 Green Pond Road, Rockaway, NJ 07866.

PACE Committee Meets Monthly

The PACE Committee meets on the second Thursday of every month at the ITT Auditorium, 500 Washington Avenue, Nutley, N.J. (near the the ITT Tower) at 7:30 PM. Our Section Executive Committee meets there on the first Wednesday of every month (except in December) at 7:00 PM. Any questions or comments will be well received. Contact Richard Tax at (201) 664-0803 (after 7:00 PM) or write to R. Tax, 630 Montview Place, River Vale, N.J. 07675.

The IEEE **Newsletter**

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

North Jersey-IAS:

"ACCESS" Puts You In Control

On August 16, 1990, the North Jersey Section Industrial Application Society will host a presentation on "ACCESS - The Electrical Distribution Communication System." The speaker will be Mr. Ashok Mukerji, P.E., Siemens Energy & Automation, Inc., Union, New Jersey.

About The Talk

ACCESS is the intelligence of your electrical distribution system, the information you have never had, the control you have always wanted. Engineers, accountants, executives and technicians can benefit by the ability to know where electricity is going, what is causing power surges, what is the true energy cost of any process, the power to diagnose power outages or potential outages anywhere in the facility, and the power to plan accurately for expansion needs. ACCESS plugs the decision-makers into the electrical distribution system. For the first time, energy has a boss—YOU!

About The Speaker

Ashok Mukerji, P.E., is Senior Application Engineer at Siemens Energy & Automation, Inc., a leading manufacturer of electrical power distribution equipment. He is a member of IEEE and IAS. He holds a BSEE from Indian Institute of Technology, Bombay, India and an MBA from Rutgers.

Pre-Meeting Dinner

The pre-meeting light buffet dinner starts at 6:30 PM prior to the technical presentation.

Time: 7:30 PM, Thursday, August 16, 1990. (6:30 PM, buffet dinner.)
Place: ITT Auditorium, 500 Washington Ave., Nutley, N.J.
Further Information/Reservations: Vittal Rebbapragada, Chairman, IAS Chapter (201) 804-2011; Max C. Schramm (201) 887-1120.

North Jersey Section Activities JULY

July 12, 1990--"PACE Meeting: Improving E-Mail Service For Membership"--North Jersey Section's Professional Activities Committee for Engineers, 7:30 PM, ITT Auditorium, 500 Washington Avenue, Nutley, N.J. Robert Sinusas (201) 228-3941.

Upcoming Meetings

August 16--"ACCESS - The Electrical Distribution Communication System"--North Jersey Section IAS, 7:30 PM, ITT Auditorium, 500 Washington Ave., Nutley, N.J. Vittal Rebbapragada (201) 804-2011.

September 18--"The Engineer As A Manager"--NY/North Jersey Engineering Management Society, 7:00 PM, ITT Auditorium, 500 Washington Ave., Nutley, N.J. Al Bottani (201) 265-7797.

September 19--"Power System Reliability Evaluation"--North Jersey Chapter Reliability Society, 7:00 PM, ITT Avionics Auditorium, 500 Washington Ave., Nutley, N.J. Henry Moss (201) 785-6458.

September 22--"Symposium: Reliability and Risk Assessment (RA) of Industrial Utility Systems"--IEEE North Jersey Section Industry Application Society, 9:00 AM-2:00 PM, Saturday, Meadowlands Hilton, Secaucus, N.J. Vittal Rebbapragada (201) 804-2011.

Sept. 25-Dec. 4--"10-Week Seminar: Advanced Microwave Component Design"--North Jersey Section IEEE, Tuesdays, 6:30-9:00 PM, ITT-Avionics, Auditorium or Clubhouse, Nutley, N.J. John Baka (201) 455-8534.

October 17--"Gas Insulated Switchgear (GIS)"--North Jersey Section IEEE Power Engineering Society, 7:30 PM, JCP&L, Punch Bowl Road and Madison Ave., Morristown, N.J. Augie Franzoni (201) 926-6923.

Members, Student Members and Non-Members Welcome

PLEASE POST

JULY, 1990

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NEWSLETTER STAFF

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Business Manager.....A.M. Beattie

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REPORT ADDRESS CHANGES TO:
IEEE Service Center
445 Hoes Lane, P.O. Box 1331
Piscataway, N.J. 08854-1331
(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.

The North Jersey Section Executive Committee meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings (held at ITT, 500 Washington Ave., Nutley, N.J.) are open to all members. Information on each meeting agenda is available from David A. Dietsche, Section Secretary at (201) 579-1610.

Elected Section Officers are listed above.

North Jersey Section PACE:

Improving E-Mail Service For Membership

The North Jersey Section's Professional Activities Committee for Engineers will meet on Thursday, July 12, 1990. The topic at this meeting will be "Improving E-Mail Service To IEEE Members And Staff." The speaker will be Dr. Friedolf M. Smits

About The Talk

Many members of the IEEE use computers routinely in their day-to-day work. In most cases they also utilize computer communication, either through university networks, corporate networks, commercial E-mail service, or through a network of PC users.

For effective communication there is a need to be able to pass messages between a variety of such systems in a manner that is simple to use by any individual. To make this easier, a RAB/TAB Electronic Mail Ad Hoc Committee is overseeing the establishment of a "Directory Service" to cover the IEEE staff and active volunteers.

Because many of our active volunteers are associated with universities, government, or large industries, the NSF sponsored "Internet" network which is designed to support research activities, plays a key role. The IEEE Board of Directors authorized a direct Internet connection to the IEEE Service Center at Piscataway, N.J. Through such a connection it is possible to reach many other systems.

The objective of the directory service is for a user having access in some way to Internet, to reach another user with a simple Internet address. This is implemented by assigning each person a unique mnemonic E-Mail name so that his or her Internet address becomes <name>@ieee.org. Messages received by our gateway host are then autoforwarded to whatever real address the recipient specified.

Since some of our volunteers do not have access to a system that is connected to Internet, the Computer Society of the IEEE has negotiated a contract with a commercial E-mail service (Sprintmail) that has a full fledged Internet link, replacing service through Dialcom that has no Internet gateway. That service is known as "Compmail". Users on Compmail are also assigned mnemonic names as their address on the system. Messages to any one on Compmail or on a system connected to Internet are addressed on Compmail simply as "<name>". Of course, from Internet, Compmail users are also reachable with "<name>@ieee.org".

At this time, the Internet link to Piscataway is fully functional and a partial internal Local Area Network is operational. The file services of the Technical Activities Department and of the Magazine Division of Publication Services are fully connected. In addition a Field Services machine is on line.

About The Speaker

Dr. Smits received his PhD degree in Physics in 1950 from the University of Freiburg, West Germany. After joining Bell Laboratories in 1954, he worked on solid state diffusion in semiconductors, on exploratory device development, and on radiation effects in Telstar satellite components. While at Sandia Corporation, he managed research on radiation damage in semiconductor devices. After his return to Bell Laboratories he was responsible for ultrasonics and acousto-optical device development, development of MOS/LST memories, and development of bipolar L.SI devices. His last position was as Laboratory Director responsible for IC Masks and Packing. In 1972, he participated in the NSF/NASA Solar Energy Panel as chairman of the subpanel on Central Electric Power. From 1970 to 1980 he was a member of the Technical Advisory Board for two German Government supported Research Institutes. Since his retirement in 1986, he devotes most of his time to IEEE activities.

Time: 7:30 PM, Thursday, July 12, 1990.
Place: ITT Auditorium, 500 Washington Avenue, Nutley, N.J.
Further Information: Robert Sinusas (201) 228-3941.

PACE NEWS

By Richard F. Tax

MANPOWER FLUCTUATIONS GIVE ENGINEERS GRIEF

The instability of the engineering profession is graphically represented in the Deutsch, Shea and Evans (DS&E) - High Technology Recruitment Index (HTRI) shown below. Every engineer or person considering engineering as a career should be familiar with this index and the dramatic fluctuations in the demand for engineers.

The HTRI is a national indicator of technical manpower demand and based on a monthly count of recruitment ads directed to four-year or more degreed engineers and scientists. DS&E is a national recruitment advertising agency that has been conducting research on employment, recruiting and other aspects of human resources since 1950. They have maintained the Index for 30 years.

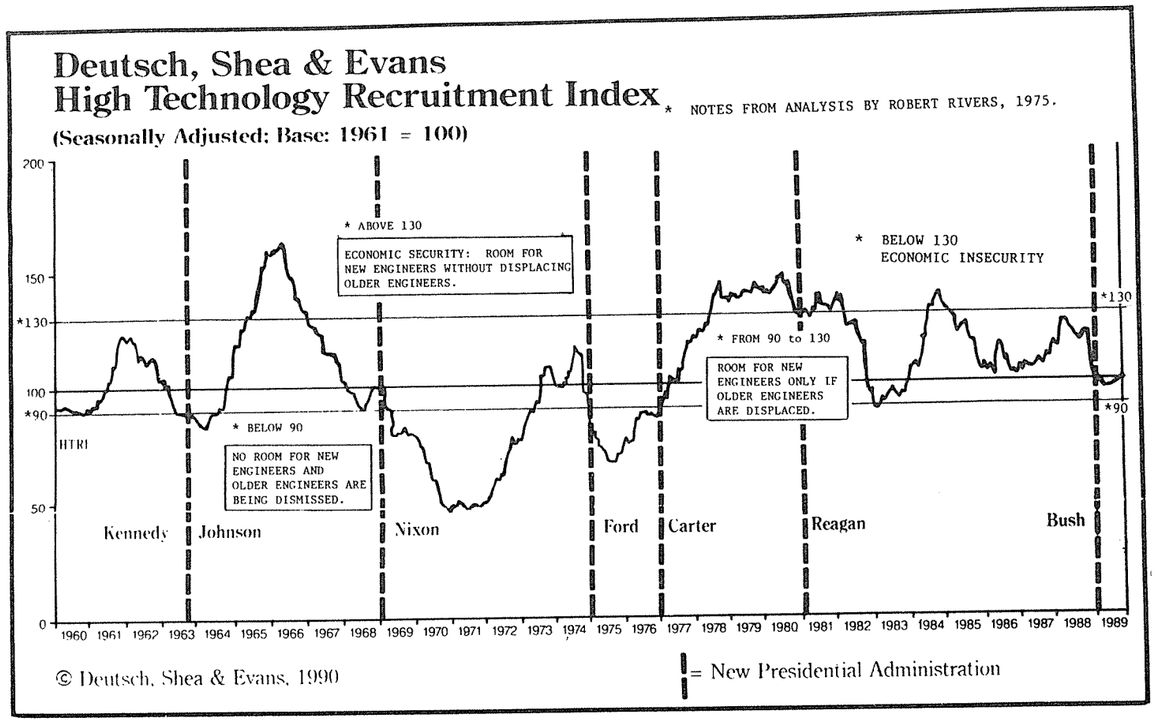
We modified the Index to include the two additional reference lines at the 90 and 130 levels and the associated observations from studies by Robert Rivers. Rivers is a Fellow of the Institute of Electrical and Electronics Engineers, a past member of their Board of Directors and a member of IEEE's Manpower committee.

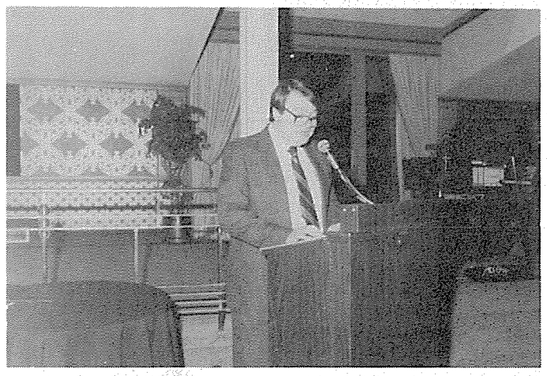
The comments by Robert Rivers highlight the periods of economic insecurity (unemployment) whenever the Index is below the 130 reference line. The curve also shows periods where our young engineering graduates are unable to find engineering employment because the demand is depressed. They may never be able to enter the profession for which they studied so hard.

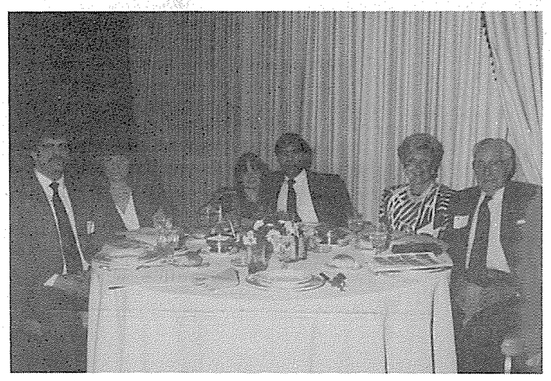
However, since more engineering graduates are not getting engineering jobs and more engineers are being underutilized the original lines projected by Rivers may now be shifted by the influence of a greater supply of engineers. Rivers said, "The current recession may be worse than the recession from 1969 to 1973." (See curve.) The increased supply is derived from the recruitment of foreign students by the U.S. engineering schools and the importation of foreign engineers. Both sources have been promoted by Engineer Shortage Propaganda (ESP) and erroneous mathematical models that only predict engineering manpower shortages. Drastic cutbacks in defense spending and the completion of engineering intensive programs such as the Space Telescope further inflates the surplus.

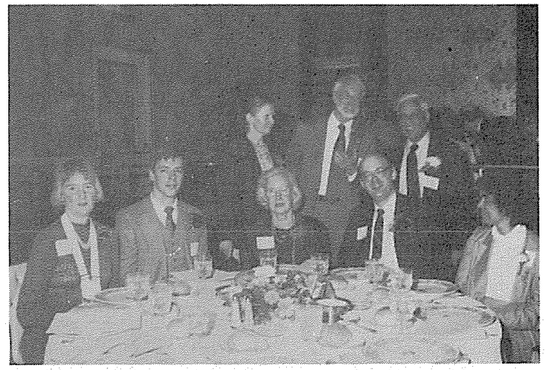
There are very good reasons for addressing the issue of fluctuating engineering manpower demand. First, this effects the lives and careers of all engineers, recent graduates and students who may choose engineering as their field of study. Second, this indicates that the engineer shortage reports were false and the shortage shouters were wrong. Third, this indicates priorities and budgets can be shifted from producing a surplus of engineers to investing in research and developments to maintain a fully utilized engineering community. Indeed, government R&D might be increased if it were known how many engineers are available.

The DS&E, High Technology Recruitment Index sheds light on the employment situation. Unemployed engineers and engineering graduates who cannot find engineering jobs may find some comfort in the assurance that they are unemployed for reasons beyond their control. They are facing these difficulties, not because they are poor engineers or students, but because there is a drastic manpower discrepancy between the supply and demand of engineers.









North Jersey ReliabilitySoc.:

Power System Reliability Evaluation

The North Jersey Chapter of the Reliability Society will meet on September 19, 1990 to hear a talk on "Reliability In Public Service Power Systems." The speaker will be Dr. Murty P. Bhavaraju, Public Service Electric and Gas Company of New Jersey.

About The Talk

The talk will describe the concepts and methods used to evaluate electric power system reliability. Probabilistic methods for reliability assessment of bulk power transmission systems will be discussed.

About The Speaker

Dr. Bhavaraju received his BE (Hons) (1961) from Andhra University, India, his ME (1963), from the Indian Institute of Science and an MSc and PhD (1969), from the University of Saskatchewen, Canada. He is a registered professional engineer in New Jersey and has been with Public Service and Gas Company of New Jersey since 1969. He is currently Least Cost and Reliability Manager in the Transmission Systems Department. During 1978-79 he was on loan to the Electric Power Research Institute where he initiated several important research projects in power system reliability. From 1985 to 1987 he was a member of the North American Electric Reliability Council, Reliability Criteria Subcommittee, representing the mid-Atlantic region. He is a member of the System Reliability Task Force in the Pennsylvania-New Jersey-Maryland Interconnection of the Council.

Dr. Bhavaraju has authored more than 30 technical papers in power system reliability and system planning. He is a member of CIGRE, a Fellow of IEEE and a member of the IEEE Probabilistics Subcommittee. He was the Chairman of the IEEE Power System Engineering Committee during 1988-89.

Free Buffet

A free buffet will be provided starting at 6:00 PM, on a first-come-first-served basis.

Time: 7:00 PM, Wednesday, September 19, 1990. (Buffet starting at 6:00 PM.)
Place: ITT Auditorium, 500 Washington Avenue, Nutley, N.J.
Further Information: Henry Moss (201) 785-6458.

IEEE
North Jersey Section Seminar
ADVANCED MICROWAVE COMPONENT DESIGN

Tuesdays 6:30-9:00 PM - September 25-December 4, 1990
ITT-Avionics Auditorium or Clubhouse, Nutley, N.J.

This evening course offered by the North Jersey Section IEEE, is designed for those graduate Electrical Engineers who have taken the IEEE Introductory Microwave Component Design course (or the equivalent), and who are working in the microwave design field.

The course will go into depth in the particular combination of electromagnetic and network theory that is required for efficient passive and active microwave component design. Design problems will be assigned each week. Familiarity with PC usage is helpful but not required; however, the student will use matrix combination in the design process. Equivalent circuits will be developed that will be both network and E-M based. These will form the basis for the various designs of filters, couplers, ferrite and other non-reciprocal active and passive devices. Design philosophy will cover the frequency range from 1 MH_z well into the millimeter region.

The instructor is Dr. Richard V. Snyder, RS Microwave (201) 492-1207.

(1) September 25 - Review of electromagnetic wave theory, including temporal and spacial field variations as applicable to the "innards" of components.
(2) October 2 - Scattering and other linear matrices, including mathematical theory and application to characterization of resonators, obstacles and structures.
(3) October 9 - Chaining and cascading multiport networks. Application of equivalent circuit principles to lumped and distributed situations. Local equivalent circuits. Lumped networks coupled with field variables.
(4) October 16 - Filter design from the lumped equivalent circuit point-of-view. Network transformations.
(5) October 30 - Filter design from the distributed circuit point-of-view, including combination of lumped and distributed variables. Principles of optimization applied to active and passive filter design.
(6) November 6 - Evanescent mode components, effects of dissipation, various printed structures. More optimization.
(7) November 13 - Multiplexing. Common junction combinatory techniques, including crossover at less than 3 dB points. Active multiplexing.
(8) November 20 - Coupled line principles. Directional couplers, hybrids, power dividers, magic tee, quadrature couplers, etc. Lumped and distributed versions of various coupled structures.
(9) November 27 - Principles and equivalent networks for various ferrite and other non-reciprocal devices, including the principles of active circulators.
(10) December 4 - Review and question week (topics of the day).

Class size will be limited to 35 maximum. Early registration is recommended. Phone reservations are **NOT** accepted. The course will not be held unless 15 registrations are received. Class notes handed out each week. Text: "Evanescent Mode Microwave Components," George Craven and Richard Skedd, Artech Books.

Where: ITT - Avionics Auditorium or Clubhouse, Nutley, N.J.
When: Ten sessions, Tuesday nights, starting September 25, 1990 from 6:30 PM to 9:00 PM.
Cost: IEEE Members $175 (registration received by Sept. 7, 1990); non-IEEE Members $250 (registration received by Sept. 7, 1990). Texts 1 and 2 included in the cost.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "Advanced Microwave Component Design"

To: Mr. John Baka, Distribution Engineering, Jersey Central Power & Light Co., Madison Ave. at Punch Bowl Rd., Morristown, N.J. 07960

Name_____ IEEE No._____

Affiliation_____ Phone No. _____

Address_____

_____

Please enclose required fee made payable to **"North Jersey Section IEEE"**

IEEE-IAS Chapter (NJ Section) Symposium
Reliability And Risk Assessment Of Industrial Utility Systems

Saturday, September 22, 1990 — 9:00 AM - 2:00 PM
(Registration 8:30-9:00 AM)
Meadowlands Hilton, Secaucus, New Jersey

On Saturday, September 22, 1990 the IEEE North Jersey Section Industry Application Society will host a panel symposium on the fundamental techniques dealing with Reliability and Risk Assessment (RA) of Industrial Utility Systems. The symposium will focus on the basic concepts that the engineers need to understand the various techniques that will be used for making reliability assessment and failure prediction of components and/or systems encountered in industrial/utility systems. This analysis is relevant to the evaluation of designs and/or to analyze the causes of operating system problems through statistical means. The present day management methods are increasingly demanding such type of evaluation from the engineer, before making investment decisions or appropriating maintenance budgets. The seminar will be given by speakers having hands-on experience on reliability and risk analyses and will describe fundamentals and some practical applications. Mr. R.V. Rebbapragada of Ebasco Services Inc., Chairman of IAS/North Jersey Chapter, will serve as the chairman for this panel sympsium.

Selected topics include:

Fundamentals and Techniques of Reliability Analysis	Dr. M.P. Bhavafaju Fellow-IEEE PSE&G
Fundamentals and Techniques of Risk Assessment	Dr. A.J. McElroy Fellow-IEEE Ebasco Services Inc.
Failure Modes and Effects Analysis	(Speaker to be announced)
Reliability Improvement Techniques	Dr. R.W. Sears AT&T-Bell Labs
Key Statistical Estimation Concepts In Reliability Analysis	Dr. M. Liechenstein Integrated Technology Serv.
Probabilistic Risk Assessment (PRA)	Mr. R.V. Rebbapragada Ebasco Services Inc.
Failure Predictions	Dr. A.J. McElroy Ebasco Services Inc.

Registration will take place 8:30-9:00 AM. Coffee and Danish will be available. Presentation will commence soon after registration with the introduction by Mr. R.V. Rebbapragada.

The cost for this complete technical discussion—including materials, morning refreshments and luncheon is $130 for Non-Members, $90 for IEEE Members, and $35 for students with valid I.D.

To reserve your place, make check or money order payable to "IEEE-North Jersey Section" and mail to Max Schramm, 8 Deerfield Rd., Whippany, NJ 07981. **Deadline: 9/10/90.**

For more information please call Vittal Rebbapragada at (201) 804-2011 or Max Schramm at (201) 887-1120.

Registration "Reliability and Risk Assessment of Industrial Utility Systems"

To: Max Schramm, 8 Deerfield Rd., Whippany, NJ 07981.

Name_____ IEEE No._____

Affiliation_____Phone No. _____

Address_____

_____

Please enclose required fee made payable to **"North Jersey Section IEEE"**

North Jersey Section-PES:

Gas Insulated Switchgear

On October 17, 1990 the North Jersey Section IEEE Power Engineering Society will feature a special presentation on "Gas Insulated Switchgear (GIS)." Mr. Arun Arora will be the speaker.

About The Talk

SF_6 Gas Insulated Switchgear offered from 50 to 800 KV by ABB Power T&D Co. Inc., will be discussed. SF_6 GIS has gained worldwide acceptance as a viable alternative to the conventional open type, air-insulated High Voltage (HV) substation. Over 20 years of operational experience have established not only the greater reliability of SF_6 GIS over conventional switchgear, but also its lack of maintenance requirements and higher degree of safety. These factors, together with other advantages, such as freedom from all forms of environmental influence, space economy, environmental compatibility, etc., have established the SF_6 GIS to be the economic alternative to conventional open type HV switchgear.

About The Speaker

Mr. Arun Arora received the BSc degree in Electrical Engineering in 1959. He gained extensive experience in power generation, transmission, and distribution systems including transmission lines. He joined GEC (UK) and engineered substations in all phases of work. In 1961, he joined the power plant division of M.A.N. in West Germany and did the electrical systems planning. In 1963, he joined ABB West Germany in the power plant electricai systems planning division and later covered all equipment until transmission end of power plants. Since 1978, he is responsible for the marketing of HV equipment in the U.S, and as of 1986, reponsible for the gas insulated switchgear equipment marketing with close ties to the engineering division.

He served as Secretary and Vice-Chairman of the IEEE PES, Princeton, N.J. and was an active IEEE working group member on surge arresters. He is a member of IEEE, VDE (Germany), and VDI (Germany).

Time: 7:30 PM, Wednesday, October 17, 1990.
Place: Jersey Central Power & Light Co., Punchbowl Room, Punchbowl Road and Madison Ave., Morristown, N.J.
Further Information: Augie Franzoni (201) 926-6923 or Hady Salloum (201) 829-5058.

At the ANNUAL SECTION BANQUET APRIL 25, 1990