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January 1998

Volume 50, Issue 1

SCANFAX

Features

3 The Millennium...Boom or Bust?

Computing and the year 2000—what's hype, what's fiction, what should we be concerned about?

Departments

2 Chairman's Message

9 Calendar of Events

UPCOMING EVENTS

8 *IEEE Chicago Section
ANNUAL AWARDS BANQUET / April 25, 1998*

9 *Computer Society Chapter
Fox Valley Subsection
TOUR OF ADVANCED PHOTON SOURCE AT ARGONNE
NATIONAL LABORATORY / January 10, 1998*

10 *Power Engineering Society
NUMB & NUMBER: ELECTRICAL POWER DELIVERY
IN THE 90'S / JANUARY 14, 1998*

10 *Power Engineering Society
CAREERS IN POWER ENGINEERING / January 24, 1998*

11 *Industry Applications Society
Northwest Subsection
Power Engineering Society
TRANSFORMER SELECTION AND APPLICATION
January 28, 1998*

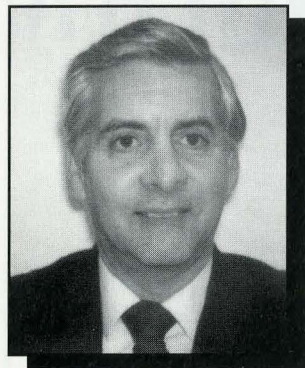
11 *Washington Awards Dinner
MR. JOHN R. CONRAD TO RECEIVE WASHINGTON AWARD
February 25, 1998*

12 Employment Opportunities

IBC Professional and Business Directory

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Welcome to the first issue of the new SCANFAX! We are very excited about our new magazine and trust that you will enjoy the new look and design. Our goal is to provide our membership with a better source of information regarding current section activities, projects, and innovations, along with monthly meeting announcements. I encourage your feedback and suggestions.

The IEEE Chicago Section signed an agreement with Slack Attack Advertising to sell advertising, design, publish, and distribute the new SCANFAX. We will continue to have control of membership distribution lists.

We have had a positive response to advertising for this first issue and are confident we can continue to increase sales. Please assist us in our efforts by

encouraging your companies and suppliers to advertise, and make sure you use the SCANFAX advertisers' services and supplies for your projects. This valuable communication tool would not be possible without the support of advertisers.

One more note of encouragement: please remember that the Chicago Section is run by volunteers! During the past several years the number of new volunteers has decreased substantially. We could use your help! Many opportunities are available, and I am confident that the time you put in will prove to be very rewarding. Please call the IEEE Business Office (1-800-898-IEEE) or myself at 312-938-0300 for more information.

Finally, I would like to take this opportunity to wish each of you and your families a healthy and happy new year. ■

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The Millennium... Boom or Bust?

By Christine M. Sloat, P.E.

Lately, we have been bombarded with prophecy regarding the fast approaching event referred to as the millennium... from entrepreneurs predicting fantastic advances to the "doom sayers" predicting pestilence, flood, earthquakes, war—the end of all as we know it, and everything in between. What's hype, what's fiction, what should we be concerned about? For the most part, it's a matter of personal choice. However, a very real millennium bug is lurking in its pupal state. And its emergence into adulthood is timed for the first second of the year 2000.

Species "Yearakus," Genus "2K"

Just what is the millennium bug, also known as Year 2000 or Y2K? Simply stated, it's a problem stemming from the use of "shortened" date fields, e.g. 98 for the year 1998. The use of two digit year identification was a conscious design decision back in the infancy of computing, driven by a tradeoff among cost, available memory, and performance. In some instances, it was as simple as reducing the number of keystrokes required to enter the date. And for some, the vision just wasn't there; the anticipated life expectancy of the programs being developed didn't reach to the turn of the next century.

Software applications frequently manipulate dates represented by these 2 digit years. Even in the mid sixties and early seventies, programmers became aware of a problem associated with changing centuries as applications used birth dates of persons born in the

1800's. At the time, the solution was to tag these numbers as "special," and eventually the problem faded as the reference to 18xx birthdays became rare. Computing in circuitry systems may lead to other "arithmetic" snafus. For instance, a two digit year field can lead to circuit failure when zero suppression or division by infinity is encountered.

So What?

Programmers update programs all the time, right? Fix the problem and move on! It can't be that difficult, can it? Think of the age we live in... the age of computers, processors, microchips, embedded chips, interconnectivity... A really big portion of the things we do, professionally and personally, is connected to a computer somewhere along the line. And think of all the things to which we attach a date—birth, marriage, purchases, retirement, bank accounts, warranties, maintenance schedules, contracts, medications... the list goes on and on.

Technically, the problem is not that hard to solve. It's the numerous places that date/digit code can hide as well as the far reaching extent of related applications that puts the fear into the equation. It has been estimated that \$400 to \$600 billion will be spent to resolve the problem in a timely fashion. "Timely" is also an issue, since time is running out. As of January 1, 1998, we have only two years to complete the task! So it's a BIG problem for a lot of reasons. The size of the task, the age of the code, documented v. undocumented, lost source codes, lack of resources, lack of time, etc.

There is a lot of rhetoric around the issue, from the optimists that tell of a smooth transition with minor glitches, to

the pessimists that talk about a global shutdown. In truth, most businesses are aware of the potential hazards and are working to solve the problem. The scary part of the equation, however, goes back to interconnectivity. Some small things may go wrong, but what sort of domino effect do those small things create?

Issues

We aren't going to spend a lot of time drawing horrific pictures about doom and gloom or getting into detail about problems or fixes. We did, however, think that you may want to consider some examples of the ramifications when the bug matures into adulthood. Here are two scenarios associated with Y2K. Remember, these relate to just one small glitch in an application, but the consequences of a failure could be far reaching.

■ **Health Care** The health care industry relies heavily on information systems and numerous data bases. When just one of the data bases or application programs is not Year 2000 compliant, the system could fail. A shipment of medical supplies with an expiration date after the year 2000 may be rejected. A person treated in May of 2000, who was born in January of 1900, may be considered as being 4 months old, not 100, for the purpose of drug dosage calculations. Suppose a computer does its calculations based on age and gets a negative number and then assumes that the patient must be deceased. Many medical devices contain embedded chips. For example, some pacemakers contain embedded chips that may "act up" as their internal clocks encounter a "00" digit. In some cases, the pacemaker may even stop functioning.

■ **Utilities** Our nation's electrical generation and delivery system is made up of many elements linked together into a computer-controlled grid. A problem in one part of the grid could have a major domino effect. Imagine the complexity of the task of finding one small problem in such a large system. Fortunately, experts in the electric generation industry point out that computers on the nation's grid do not normally perform calculations for regulating power systems using date sensitive information. A more serious situation may exist in the nuclear power generation industry. The Nuclear Regulatory Commission issued an information

notice in November 1996 addressing the "Year 2000 Effect on Computer System Software," NRC information Notice 96-70. Here is an excerpt from that notice: "... This issue may affect NRC licensees in many different ways. For example, computer software used to calculate dose or to account for radioactive decay may not recognize the turn of the century, which could lead to incorrectly calculated doses or exposure times for treatment planning. Other examples of software that may be affected include security control, radiation monitoring..."

From these few examples, one can get an idea of the far reaching implications of just a few small "glitches" in any given system. The "date dilemma" in the information/technology arena may affect:

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Validity checks... applications may not consider a value of "00" in a year field as being valid.

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Microcomputers... the computer and its software may not handle the year 2000 properly.

There are a couple of items of good news. First, January 1, 2000 is on a Saturday. Another bit of good news is that most systems that use embedded

chips don't use dates, or are in non-critical places if they fail.

The threat of real harm related to the Year 2000 problem is most probable in large, older software programs in bigger companies and institutions. Think of the computer that takes care of Social Security. And problems won't be concentrated on the stroke of midnight on 1/1/00... some will start in 1999, as aging applications make calculations into the future. Some other problems may not become evident until well into the year 2000.

Strategies

How do you protect your business, working environment, etc. from the millennium bug? This section will give you an overview of some of the things you can do before a problem occurs. You need to start evaluating, updating and testing NOW to minimize impacts and provide smooth transitions. Solving Y2K date problems is not terribly difficult, taken one program or file at a time. The real crisis comes from interconnectivity. Businesses will have to develop comprehensive project plans that include all of the links in their "chain of information," including links and connections in and out of their system.

Let's start with a very simple list of strategies for compliance, and then delve into more detail:

Evaluate... decide if a problem exists.

Audit... inventory your systems, both hardware and software.

Appraise IS capabilities... you may need to consider outside help.

Plan... develop a methodology, schedule, manpower estimate, etc.

Update... bring your documentation up to date.

Test... and re-test.

Anticipate... nothing's perfect; plan recovery methods for possible glitches.

Insure... consider potential legal and liability issues.

■ **Evaluate** Remember that, for data input, dates are not necessarily stored as they are displayed. Just because you may need to store a date with additional digits to be Y2K compliant does not mean that all of those data entry forms need drastic revision. Some dates that are input into your system may not even be used in any comparison or sort. Determine if you have any of these data types... you can probably ignore them.

■ **Audit** A better word may be inventory... Everything!... from hardware to software, company wide, and everything that your company is connected to. You may want to institute an inventory procedure for future additions as well. This

Continued on page 6.



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includes documentation, manufacturers, 3rd party vendors, code, etc. Various manufacturers may already have a fix for a particular component in your inventory, but be skeptical of such claims. Don't forget all of those items that may have embedded chips in them, like phones, elevators, alarms, etc. You will need to assess each piece of equipment. Everything in your inventory should also be rated as to its priority for upgrade. If there will be problems from Y2K in your billing system, give it a high priority. If the company VCR will have trouble recognizing time, but will still function, it would get a low priority. This process warrants careful attention and will not be easy. While you are putting the inventory together, determine the replacement cost of each item. You may find that a particular component is less expensive to replace than to upgrade.

■ **Appraise** Make a realistic determination as to the availability of qualified internal IS support. You may have to consider looking for outside help. The actual conversion process is technical and man power intensive, but there are many independent companies with professionals qualified to help you. The Information Technology Association of America has even begun a certification process which attempts to assure minimum standards of vendor competence. Additionally, evaluate your contracts with existing software vendors. Are they responsible for making your programs compliant? This will depend on what's in your contracts, warranties, liability caps, etc. Weed out all of those that you can, and get them on the job as soon as possible.

■ **Plan** Put together a comprehensive plan that will see you through the process. Don't forget a PR component. Your staff, as well as vendors and clients, should be on board with your efforts. Make sure that all aspects of your business are involved in making risk assessments. Management, legal, audit, marketing, manufacturing, sales, etc. need to be aware of risks both internally and externally. Get all of them involved.

■ **Update** This is the meat of the task. Remember to assess whether it is more cost effective to modify a particular system or component, or to migrate to a new

system. Take into account the age of the component, its effectiveness, its potential for future additional upgrades, connectivity, etc. Just make sure that any new purchase is compliant! There is no "silver bullet," or a single fix, that will cure all of the "links" you plan to upgrade. Make sure that your IS expertise is able to provide all of the tools necessary to correct the problem.

■ **Test** Test... test... test... and re-test!! It will be helpful if you can design and institute formalized/standardized vali-

dation procedures. Again, vendors may be able to help. Develop a reporting criteria for tracking all of the validation you do on your systems. It's also a good idea to track all of the costs associated with the validation procedure. Of course, this process may very well throw you back into the upgrade mode as you find more "glitches."

■ **Anticipate** A disaster recovery plan is essential. You may think that you're in the clear as the last IS professional walks out the door, but nothing is absolutely

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perfect. A disaster recovery plan will ensure that essential business functions will continue despite an unforeseen disaster. This same plan will be useful in the event that all of your upgrades are not in place on time. Remember, that little millennium bug can start maturing as early as 1999! You need to make sure that you have alternatives in place so that your business will continue to function. Other aids for anticipating problems could include setting up a dedicated "help desk" for Y2K related problems. Develop a logging system to track problems that do arise, maintaining an audit trail of associated efforts and costs.

■ **Insure** This is where your legal representation comes in. Risk assessment and management is a significant component of the Y2K problem. Everything from setting up strong contracts with vendors to insuring yourself against liability needs to be addressed. First, you need to protect all of the effort, time and cost you have put into bringing your organization into Year 2000 compliance. That means getting assurances, warranties, etc. from vendors that have provided you upgrades or assured you that your particular component is already compliant. Even with all of that in place, you will need to be concerned about future liabilities associated with an unforeseen failure. This can include business dis-

ruption coverage, professional liability, directors and officers liability insurance, even public liability exposures related to such things as time-lock vaults, security systems, etc. Be sure to protect yourself from that interconnectivity problem. If one of your suppliers falls to the millennium bug, are you protected from any losses that domino back to your organization? If your applications fail, are you covered for losses that these third parties may incur?

Y2K presents significant management, contracting, and technical challenges that for many require immediate attention. Any company can become Year 2000 compliant if it starts remedial action soon enough, and devotes the necessary resources to the task. In the final analysis, it's all in your hands. What you do, or don't do now to address potential Year 2000 problems in your business may very well define what your organization will look like in the next century. And we would like to see you there!!! ■



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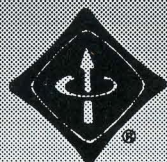
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ANNUAL AWARDS BANQUET

Our section's 1998 Annual Awards Banquet is planned for Saturday evening, April 25th, 1998 at the Westin O'Hare Hotel on Mannheim in Rosemont, IL.

Right now, we still don't know how many new IEEE Fellows we will be honoring at this event — we promise to tell you as soon as we find out.

Due to the higher cost for the dinners we have to raise our banquet ticket price slightly from \$35.00 to \$37.50. But, we want to encourage our IEEE Student Branch/Chapter Members to attend by offering them reduced price tickets (at \$30) for themselves and their friends, spouses, or "significant others." ■

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Joe Feitler

*Publicity and Ticket Chair,
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Calendar of Events

DATE	EVENT
January 10, 1998	Computer Society Chapter and Fox Valley Subsection TOUR OF ADVANCED PHOTON SOURCE AT ARGONNE NATIONAL LABORATORY
January 14, 1998	Power Engineering Society NUMB & NUMBER: ELECTRICAL POWER DELIVERY IN THE 90's
January 24, 1998	Power Engineering Society CAREERS IN POWER ENGINEERING
January 28, 1998	Industry Applications Society, Northwest Subsection, and Power Engineering Society TRANSFORMER SELECTION AND APPLICATION
February 25, 1998	Washington Awards Dinner JOHN R. CONRAD TO RECEIVE WASHINGTON AWARD
April 25, 1998	IEEE Chicago Section ANNUAL AWARDS BANQUET

UPCOMING TOUR

About the tour:

Argonne National Laboratory's Advanced Photon Source (APS) is one of the world's brightest lights, and provides super-intense x-rays for basic and applied research in materials science, biology and medicine, chemistry, physics, geology, and environmental science.

The APS was built by the U.S. Department of Energy as a national user facility. Experimental facilities for more than ten consortiums of high technology research companies, universities and government organizations are being developed.

The tour will begin at the brand new Visitor's Reception Center and Museum, off Cass Ave. just south of I-55. There you will get an overview of Argonne National Laboratory, its mission and achievements. The tour will proceed to the Advanced Photon Source and user facilities.

Tour participants must be 16 years of age or older, and must provide name, gender, date and place of birth, including city and country, and citizenship status. The tour will be limited to 50 people, so be sure to sign up early. The tour will start promptly at 9:00, so plan to arrive a little before 9:00. To register, please call the IEEE Business Office at 1-800-898-IEEE (1-800-898-4333) by Jan. 5, 1998. For more information, call Adrienne Novick at 630-713-4362.

COMPUTER SOCIETY CHAPTER FOX VALLEY SUBSECTION

Tour of Advanced Photon Source at Argonne National Laboratory

Saturday,
January 10, 1998
(9-11:30am)

POWER
ENGINEERING
SOCIETY

**Numb &
Number:
Electrical
Power
Delivery in
the 90's**

**Wednesday,
January 14, 1998**

LUNCHEON MEETING

John Estey, President & CEO, S&C Electric

About the topic:

As the electric utility industry rushes towards a new, re-regulated environment, the strategies for success will need to change. Furthermore, since re-regulation would impact differently on the main business segments of the utilities—generation, transmission, distribution, and energy services—the strategies for each segment will need to be carefully selected to suit that part of the business. Mr. Estey will use an analysis of both the utility cost structure and the marketplace to discuss strategies that will lead to success in the various segments of the new industry.

About the speaker:

John W. Estey is president & CEO of S&C Electric Company. He joined the company in 1972. Mr. Estey has served on the IEEE Power Engineering Society Governing and Executive Boards since

1992 and is a member of the Board of Directors of the Northern Illinois Business Association. Mr. Estey received a BSEE degree from Queen's University in Kingston and an MBA from the University of Chicago.

Location:

Chicago Bar Association, 321 Plymouth Court (near Jackson & Dearborn), Chicago, IL 60604

Time:

Social: 11:30am.
Lunch: 12:00pm.
Presentation: 12:15pm.

For reservations:

Lunch tickets can be purchased in the lobby (\$10.50). Call the IEEE Business Office at 1-800-898-IEEE to make your reservation.

INDUSTRY
APPLICATIONS
SOCIETY

NORTHWEST
SUBSECTION

POWER
ENGINEERING
SOCIETY

**Transformer
Selection and
Application**

**Wednesday,
January 28, 1998**

DINNER MEETING

Wes Patterson—Presenter

Technical Director, ABB Power T&D Company, Inc.

About the topic:

An informative presentation discussing the major differences in features and application of power transformers comparing liquid, dry, and cast coil type transformer construction, applications, and history.

About the speaker:

Mr. Wes Patterson brings to us his 28 years of knowledge and experience in the transformer industry. He has served as a design engineer, assistant plant manager, engineering manager, and in his current position as technical director in the Small Power Transformer Division of ABB Power T&D Company. He is an IEEE member and Chairman of the IEEE Dry Type Transformer Subcommittee. He is also a member of UL IAG 1562 and voting representative for NEMA 8TP-Transformer Products.

Location:

Como Inn, 564 N. Milwaukee Ave, Chicago, IL

Directions: The Como Inn is located on Milwaukee Avenue just off the expressway on the east side of 90/94.

Time:

Social: 5:30pm.
Dinner: 6:00pm.
Presentation: 7:00pm.

For reservations:

Cost: \$20 includes the presentation and your choice of chicken or pasta for dinner. Please call the IEEE Business Office at (800) 898-IEEE or (630) 575-8045 with your entree preference.

NOTE: Attendance at IEEE Technical Meetings is acceptable as one PDH (Professional Development Hour) per meeting, where continuing education is required for renewal of the P.E. licenses.

POWER
ENGINEERING
SOCIETY

**Careers
in Power
Engineering**

**Saturday,
January 24, 1998**

LUNCHEON MEETING

Jennifer Snow—Moderator

Thomas F. Garrity, V.P.—Global Sales, GE Harris Energy Control Systems

Clint Drescher, Electrical Engineer, Sargent & Lundy—Chicago

Robert F. Meliska, Project Engineer, Entrelec, Inc.—Dallas, TX

About the topic:

Power engineering is a fast evolving but often overlooked area in the engineering field. This panel presentation will focus on the future of power engineering as well as give examples of several different career paths available.

About the speakers:

Mr. Garrity is responsible for developing sales and key customer relationships for the joint venture with GE and the Harris Corporation. Previously he was responsible for engineering and operations at GE Power Systems Engineering Consulting.

Clint Drescher is a graduate of Univ. of Wisconsin-Madison and has served in the Summer Intern Program prior to joining Sargent & Lundy in the Nuclear

Group working on the Point Beach Nuclear Plant in Two Rivers, Wisconsin.

Robert Meliska is a graduate of Purdue University and has held positions ranging from lab tech to engineer to technical sales.

Location:

IIT Campus, The Hub, Chicago, IL

Time:

Lunch: 12:00pm.
Presentation: 12:30pm.

For reservations:

Please call the IEEE Business Office at 1-800-898-IEEE to make your reservation and for directions to the meeting room.

WASHINGTON
AWARDS
DINNER

**Mr. John R.
Conrad to
Receive
Washington
Award**

**Wednesday,
February 25, 1998**

AWARDS DINNER

Mr. John R. Conrad, Chairman of the Board of Chicago-based S&C Electric Corporation has been elected to receive the 1998 "WASHINGTON AWARD," one of engineering's prized national honors. Under Mr. Conrad's leadership since 1945, S&C Electric has become a world leader and innovator in the design and manufacture of high-voltage switching and protection equipment. The IEEE has awarded John Conrad the "Award of Excellence in Power Distribution Engineering."

The award will be presented to Mr. Conrad during National Engineers week at a banquet to be held Wednesday evening, February 25, 1998 at the Union League Club of Chicago. The IEEE is a sponsoring society of this annual event. The Chicago section, in showing support of this prestigious award, is arranging tables for our members so we can be seated together. For reservations please phone Dennis Lamont at (847) 398-4510.

Location:

Union League Club, 65 W. Jackson Blvd., Chicago, IL 60604

Time:

Social: 5:30pm.
Dinner: 7:00pm.

For reservations:

Call Dennis Lamont at (847) 398-4510 to make your reservations. Tickets are \$60.00 each.

IEEE/IAS PROGRAM SCHEDULE

- March 25, 1998** *Application Considerations for Variable Frequency Drives (Low Voltage)*
- April 22, 1998** *Application Considerations for Variable Frequency Drives (High Voltage)*
- May 13, 1998** *Stand-By, Co-Generation and Peak Shaving Power Applications*

Chicago Section Executive Committee Meeting

January 13, 1998 @ 7:15pm

DeVry, 1221 N. Swift Rd., Addison, IL

IEEE Chicago Section looking for volunteers to help serve on committees. For more information, call Chairman Irwin Smiley at (312) 938-0300.

The Nominating Committee is selecting officers for the upcoming year. If you are willing to serve, please call the IEEE Business Office at (800) 898-4333 or Chairman Irwin Smiley at (312) 938-0300.

The Northwest Subsection will hold elections at the joint meeting on January 28. Anyone interested in serving, please call the IEEE Business Office at (800) 898-4333 or Chairman Irwin Smiley at (312) 938-0300.

Employment Opportunities

Nationwide engineering firm is expanding its Chicago office. We are seeking both entry level and experienced **ELECTRICAL ENGINEERS** to assist us in our growth. Must have BSEE and excellent communication skills. PE or EI would be a plus.

Experienced Electrical Engineer position requires background in 480-volt power distribution for motors, equipment, and lighting systems integral to water, wastewater, commercial, and transportation projects. Experience in SCADA controls and instrumentation systems is helpful.

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Or fax to: (312) 938-1109

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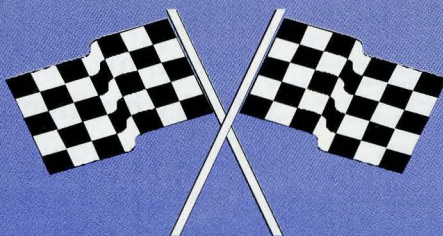


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