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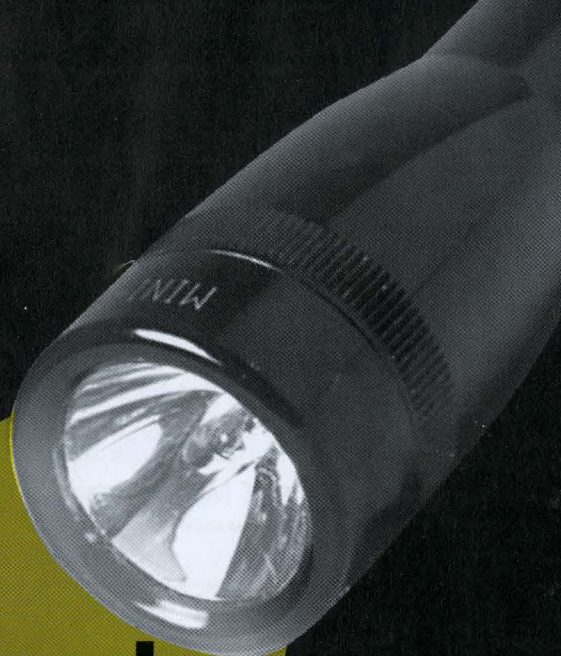
October 2003

Volume 55, Issue 8



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www.ewh.ieee.org/r4/chicago

A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —



Blackout Problems

Anticipated by
IEEE Members

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Meeting notices should be sent to graphics@slackattack.com

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SCANFAX

October 2003
 Volume 55, Issue 8

Features

- 4 **Blackout Problems**
Anticipated by IEEE Members

Upcoming Events

- 5 **Chicago Chapter of the IEEE Power Engineering Society**
Article 500 NEC Hazardous Locations, Scope, Definitions and Techniques
 Wednesday, October 8, 2003
- 6 **IEEE EMC Society Chicago Chapter/SAS Chicago Chapter/ IEST Chicago Chapter**
42Vdc-The Next Generation Automotive Battery System
 Tuesday, October 14, 2003
- 6 **IEEE Fox Valley Subsection and IIT-Rice Campus**
Fermilab Accelerators: Past, Present and Future
 Wednesday, October 15, 2003
- 8 **IEEE-IAS/IES Dinner Presentation**
Tour of S&C Electric Company
 Wednesday, October 15, 2003
- 9 **IEEE Communication/Computer Society Chicago Chapters**
Can We Add New Features Without Changing Existing Code?
 Wednesday, October 29, 2003

Departments

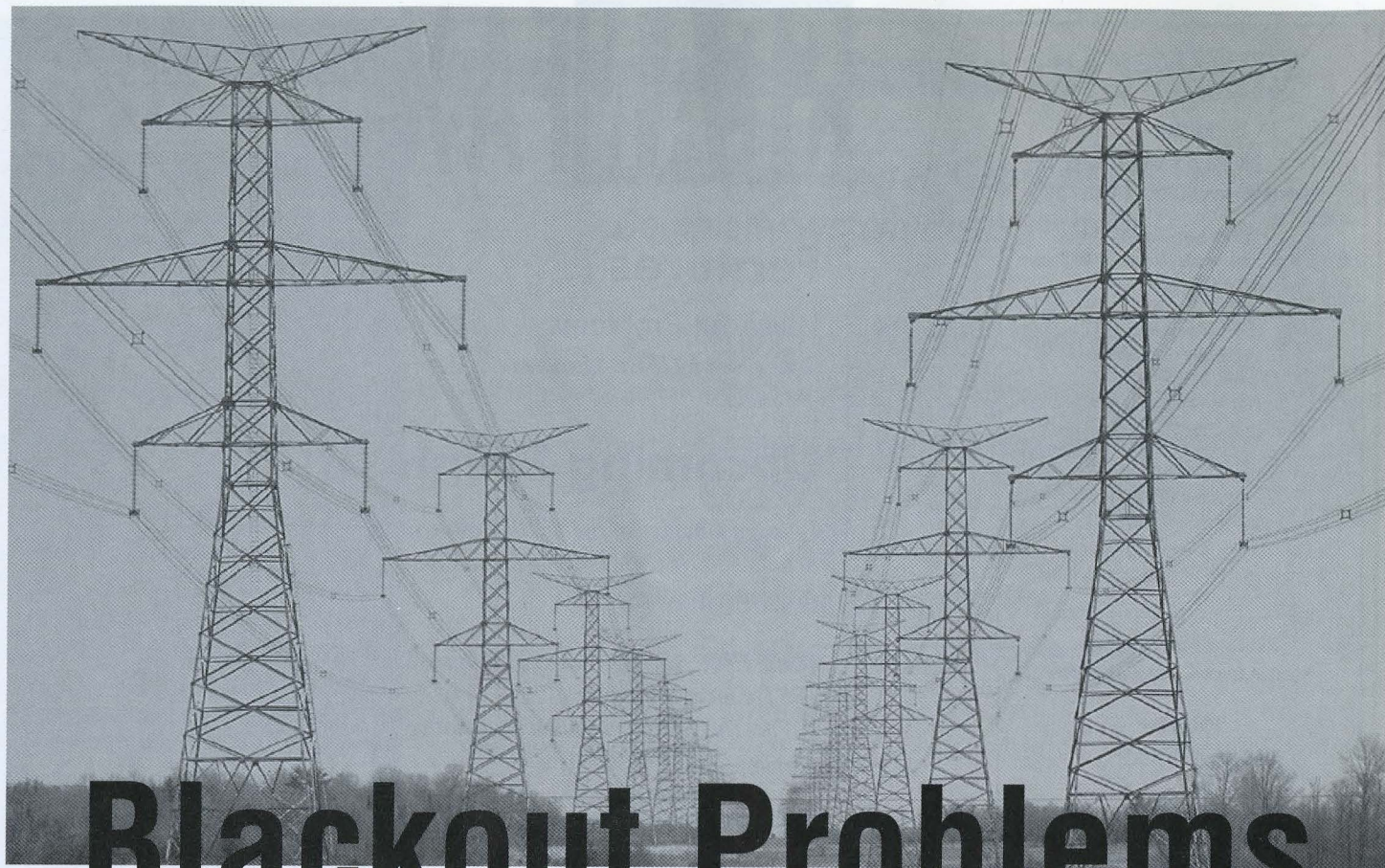
- 10 **Professional and Business Directory**
- 10 **Advertiser Index**
- 11 **Employment Opportunities**

CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, October 14, 7:00 p.m.

DeVry DuPage, Room TBA, 1221 N. Swift Rd., Addison, IL
 No Registration Needed

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Blackout Problems

Anticipated by IEEE Members

By Paul Zukowski

While it is still too early to have all the details on exactly what caused the recent major power blackout in the northeastern United States, parts of the Midwest and Canada, many of the issues troubling the electric power industry have been brewing for years.

In fact, the power grid vulnerability that seems to be behind the blackout was predicted in January of 2001 in an article in *IEEE Computer Applications in Power*.

"Virtually every crucial economic and social function depends on the secure, reliable operation of energy, telecommunications, transportation, financial, and other infrastructures," wrote Massoud Amin of the Electric Power Research Institute (EPRI), Palo Alto, Calif. "This strong interdependence means that an action in one part of one infrastructure network can rapidly create global effects by cascading throughout the same network and even into other networks. The potential for widespread disturbances is very high."

Amin went on to discuss how EPRI is working with the Department of Defense on the Complex Interactive Networks/Systems Initiative, a five-year, \$30 million program, is to develop new tools and techniques that will enable large national infrastructures to self-heal in response to threats, material failures, and other destabilizers.

"In the coming decades, electricity's share of total energy is expected to continue to grow, as more efficient and intelligent processes are introduced into this network. For example, controllers based on power electronics, combined with wide-area sensing and management systems, have the potential to improve situational awareness, precision, reliability, and robustness of this continental-scale system. It is envisioned that the electric power grid will move from an electromechanically controlled system into an electronically controlled network in the next two decades," Amin wrote.

Unfortunately, the recommendations in the article have yet to be acted on, as witnessed by the very first one: "By 2003, strengthen the power delivery infrastructure. Resolve electric power infrastructure vulnerability threats."

The article discussed the difficulty of coming up with the proper combination of sensing devices and computer programs to control the complex power grid. "Infrastructures are highly interconnected and interactive, making them well suited for agent technology. Indeed, infrastructure networks already use agents in the form of decision-making and control units distributed among layers throughout physical, financial, and operational subsystems (including supervision, maintenance, and management). Agents assess the situation on the basis of measurements from sensing devices and information from other entities. They influence network behavior through commands to actuating devices and other entities. The agents range in sophistication

from simple threshold detectors, which choose from a few intelligent systems on the basis of a single measurement, to highly intelligent systems."

As for the blackout of 2003, a look at an earlier blackout can provide some clues. On August 10, 1996, faults in Oregon at the Keeler-Allston 500 kV line and the Ross-Lexington 230 kV line resulted in excess load, which led to the tripping of generators at McNary Dam, causing 500 MW oscillations, which led to separation of the North-South Pacific intertie near the California-Oregon border. According to Amin, this led to islanding and blackouts in 11 U.S. states and two Canadian provinces. He wrote that some researchers have shown that shedding approximately 0.4% of the total network load for 30 minutes would have prevented the cascading effects of the August 1996 blackout. Perhaps something similar will be found for this year's event.

In another IEEE publication, the CEO of a major power company also foresaw problems with the retail deregulation of the power industry. "Electricity is not just another commodity, and electric markets cannot be structured like other commodity markets," said Allen Franklin, chairman, president, and chief executive officer of

Southern Company (one of the largest producers of electricity in the U.S.), an electrical engineer and a senior member of IEEE. "Many of our policymakers and much of the public now realize that. They recognize that we need to be thoughtful and very deliberate in making changes to what is, in my judgment, the most critical infrastructure and most critical market in America, as electricity is a key driver of all other markets and businesses."

According to Franklin, Southern Company agrees with the Federal Energy Regulatory Commission (FERC) that investor-owned utilities give up control of transmission and let third parties operate and control transmission systems. Southern is taking part in setting up a regional transmission organization (RTO) in the southeast. While wholesale power can be deregulated, Franklin feels that "the promises of retail deregulation have been overhyped and underanalyzed." The entire article is available in the July/August 2003 issue of *IEEE Power & Energy* magazine.

Meanwhile, in the wake of the blackout, IEEE-USA announced its support for legislation empowering the FERC to create a self-regulating reliability organization, the Electric Reliability Organization

(ERO). The ERO would give the North American Electric Reliability Council (NERC) the necessary legislative authority to assure the reliability of the complete North American electric system. NERC is a voluntary, industry-created organization created to ensure that the bulk electric system in North America is reliable, adequate and secure.

"If left uncorrected, the decline in the quality and reliability of electric power will continue to imperil the lives of our citizens and seriously impact the nation's economy," said IEEE-USA President Jim Leonard. "Reliability of the electric grid needs to be the first and foremost consideration in any national energy policy. To restore reliability to its proper place at center stage in the market, Congress must pass legislation creating an organization empowered to develop mandatory and enforceable reliability standards."

For more information on electricity reliability and communications from the IEEE-USA Energy Policy Committee, go to: <http://www.ieeeusa.org/forum/blackout.asp>.

For more background on major power disruptions, see: <http://www.nerc.com/BlackoutTable.pdf>. ■

LUNCH MEETING

Chicago Chapter of the IEEE Power Engineering Society Article 500 NEC Hazardous Locations, Scope, Definitions and Techniques Wednesday, October 8, 2003

Derek Dibble, EGS Electrical Group

About the Topic:

This presentation will review the NEC Articles 500 through 503 on Hazardous Locations for Class, Division and Groups. It will also briefly cover Article 505 and compare this IEC "Zone" approach to the NEC.

Because conduit seals have proven to be one of the biggest problem areas in hazardous applications they will get special attention. And because of the resurgence of Switchracks as an alternative to dedicated non-hazardous buildings, they will also be discussed in depth with IEEE Paper No. PCIC 2001-22 as the reference.

Examples of the design requirements to meet the various NEC and IEC

hazardous ratings will be displayed as these requirements are discussed and compared.

About the Speaker:

Derek Dibble is the Midwest Specification Engineer for EGS divisions O-Z/GEDNEY, Appleton and SOLA/HEVI-DUTY. Derek has a EE degree from the University of Wisconsin, Milwaukee and has been in the industrial controls industry for 28 years. He has been a product specialist for Emerson, Westinghouse and local distribution.

Location:

Chicago Bar Association
321 South Plymouth Court
(Near Jackson & Dearborn), Chicago, IL

Time:

11:30 AM Social
12:00 PM Lunch (optional)
12:15 PM Presentation
1:00 PM Adjourn

Reservations:

Lunch tickets can be purchased in the lobby bookstore (\$11.00). Please call the IEEE Business Office at (312) 253-4333 to make your reservation. For more information, please visit the Chicago Chapter IEEE PES web site: <http://peschicago.org>.

EVENING MEETING

IEEE EMC Society Chicago Chapter/SAS Chicago Chapter/IEST Chicago Chapter 42Vdc-The Next Generation Automotive Battery System Tuesday, October 14, 2003

Norman Traub, Director of Electrical Initiatives, SAE International

About the Topic:

All vehicle manufacturers are faced with the challenge of providing more electrical power to offer increasingly fuel efficient and safer vehicles. This can best be accomplished by raising the system voltage provided by the on-vehicle "utility company."

Vehicle manufacturers and their suppliers have been discussing the most cost effective way to provide the higher amounts of energy being forecasted. All are in agreement that global cooperation and standardization will be needed. This presentation will outline efforts by the automotive community to provide a degree of standardization to the process and will define some of the technical challenges facing implementation in production vehicles including the impact of 42V on electrical arcing of contacts.

About the Speaker:

Norman L. Traub is the SAE Director of Electrical Initiatives, including the 42V Initiative. Traub has lectured extensively on 42V electrical systems, including the SAE World Congress, International Power Electronics Conference, International Society of Automotive Transportation and Technology. He is a member of the MIT/Industry Consortium on Advanced Automotive Electrical/Electronic Components and Systems (50 multi-national companies). He is also the chairman of the SAE 42V Advisory Committee. Traub received his MSEE from Michigan State University.

Location:

Elite Electronic Engineering
1516 Centre Circle
Downers Grove, IL 60515

Sponsorship:

This event is a joint meeting of the Chicago Chapters of the IEEE EMC Society, Society of Automotive Engineers (SAE), and the Institute of Environmental Science and Technology (IEST).

Cost:

Buffet dinner \$10.00. Cash or Check payable to IEEE EMC Society Chicago Chapter; No charge for presentation.

Time:

6:00 PM Dinner and Social Hour
7:30 PM Presentation

Reservations:

R.S.V.P. required for dinner by 10-7-03. Steve Laya at (630) 495-9770. For more info visit IEEE EMC Society: www.ewh.ieee.org/soc/emcs/chicago/ SAE: www.chicagosae.org/events.html.

EVENING MEETING

IEEE Fox Valley Subsection and IIT-Rice Campus Fermilab Accelerators: Past, Present and Future Wednesday, October 15, 2003

Dr. G. William Foster, Fermilab

About the Topic:

Thirty-five years ago Fermi National Accelerator Laboratory - the highest energy Particle Physics laboratory in the world - constructed the world's most powerful subatomic particle accelerator.

Twenty years ago Fermilab reinvented itself as an antimatter-matter collider. Accelerators were reborn using superconducting magnets.

Today competitors are producing larger and more powerful accelerators, and Fermilab is expected to lose its status as the world's highest energy accelerator. Three leading contenders for Fermilab's next project are described, as well as the ways that they might fit on (or off) of the Fermilab site.

About the Speaker:

Bill Foster and his brother founded Electronic Theatre Controls in 1974, now the largest manufacturer of theater lighting equipment worldwide. In 1979 he returned to physics, getting his Ph.D. from Harvard looking for Proton Decay. Instead the experiment found a burst of Neutrinos from Supernova 1987a, for which Foster was the co-recipient of the 1989 Rossi Prize in cosmic ray physics. At Fermilab he built electronics for the CDF detectors, was a co-author on the CDF Top Quark discovery paper, designed integrated circuits for the Supercollider, designed and built over 500 accelerator magnets in use at Fermilab, and developed experimental superconducting magnets. In 1998 he was awarded the IEEE Prize for Accelerator Technology.

Location:

IIT's Rice Campus, 201 East Loop Road, Wheaton, IL. More directions and a map are available at: <http://www.rice.iit.edu/directions.html>.

Sponsorship:

IEEE's Fox Valley Subsection and Illinois Institute of Technology's Center for Professional Development (Rice Campus).

Time:

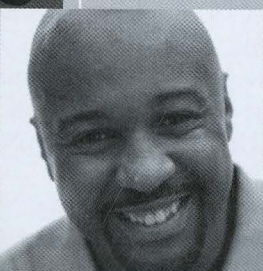
6:00 PM Networking Time
7:00 PM Presentation

Reservations:

Reservations are not required. The Fox Valley subsection web page is at: www.ieee.org/foxvalley.



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IEEE-IAS/IES Dinner Presentation Tour of S&C Electric Company Wednesday, October 15, 2003

Gary Wetzel, S&C Electric Company

About the Topic:

S&C Electric Company was founded in 1911 by two Commonwealth Edison engineers to make high voltage liquid power fuses. The company has grown significantly since its inception and remains privately held. S&C currently employs 1,700 people at its 46 acre, 1.2 million sq. ft. Chicago facility. S&C is a vertically integrated company that specializes in manufacturing products for the switching and protection of electric power. The tour will include a comprehensive look at the manufacturing process. Areas covered will include tooling, machining, plating, bending, cutting, galvanizing, welding, painting and assembly. A close up look at state of the art high-tonnage presses and horizontal machining centers will also be included. The tour will culminate with a visit to S&C's Product Demonstration Center where other S&Cers will be available for hands-on product demonstrations. S&C products include power fuses, outdoor switches and breakers, pad-mounted gear, underground distribution switchgear, metal-enclosed switchgear, arc-resistant switchgear and a

complete line of power quality products such as source-transfer, UPS and voltage support systems. A UPS demo where a 1 MW UPS system feeding an entire molding operation will switch from utility to UPS and back to utility will also be performed.

About the Speaker:

Education: BSEE, Lafayette College & MBA, University of Wisconsin - Whitewater.
Present Position: Manager of Product Management, Metal-Enclosed Gear Products Division.

Mr. Wetzel is an EE and has over 20 years of experience working for major electrical manufacturers including RTE, Cooper, Kearney and S&C Electric Company. Gary has spent the last 7 years working for S&C Electric Company in his present position.

Location:

S&C Electric Company
6601 North Ridge Blvd.

S&C Electric Company is located in the North side of Chicago on Ridge Blvd. North of Devon and South of Pratt

Cost:

Cost is \$25 IEEE Member and \$30 non-member. Parking is included at no charge. Please call the IEEE Business Office at (800) 898-IEEE or (630) 493-4333 with your reservation. Please note any special meal requests at the time of the reservation. You can also make your reservations on line at www.iaschicago.com.

Time:

5:00 PM Social
5:45 PM Dinner
6:30 PM Tour
7:30 PM Product Demonstration Center

Reservations:

See www.iaschicago.com for detailed directions and a map. Your cost includes the tour and buffet dinner with various selections.

Note: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.

D.L.S.'s expanded CSA NRTL Safety Program

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D.L.S. Conformity Assessment, Inc. has expanded its North American NRTL Safety program to focus on CSA, a recognized leader for safety compliance in both the U.S. and Canada. This newly expanded relationship provides the fastest compliance path in the industry. The CSA NRTL mark, which holds the same status as UL and other NRTL agencies, is globally recognized. This program provides a fully staffed engineering team and a state-of-the-art testing facility to speed products to the marketplace, with up front design assistance and problem solving included. For more information call Jack Black at (847) 537-6400 or check out this web site: www.dlsemc.com/CSA.

Background information

Manufacturers previously had to take their products to multiple compliance agencies, many of which took extended periods of time to issue certification. OSHA has decided that no compli-

ance agency should have a monopoly and has designated several agencies to be Nationally Recognized Testing Laboratories (NRTL's). In other words, OSHA recognizes CSA as having the same status in the U.S. as UL has. This means manufacturers can meet their compliance needs for both the U.S. and Canada in a fraction of the time and cost previously experienced. And this can be accomplished in the United States at D.L.S. Conformity Assessment, Inc. in Wheeling, IL.

For 84 years CSA has been proudly displaying their safety mark on all types of electrical and electronic equipment. CSA International tests to applicable U.S. standards, including ANSI, UL, CSA, NSF, and many others. CSA marks are accepted by major retailers, manufacturers, distributors, specifiers and regulators throughout the U.S. and around the world including companies such as Apple, Black & Decker, Delta, GE, Hewlett-Packard, Hilti, Hubbell, IBM, Majestic, Mitsubishi, and Moen.

For more information about this press release, contact Brian Mattson: bmattson@dlsemc.com or (847) 537-6400.

IEEE Communication/Computer Society Chicago Chapters (Joint with IEEE Fox Valley Subsection) Can We Add New Features Without Changing Existing Code? Wednesday, October 29, 2003

Dr. Francis Leung, Electrical and Computer Engineering Department, Illinois Institute of Technology

About Topic:

One of the most difficult tasks in software development is to add new features to existing code. The programmer must manually trace line-by-line the different execution flows of existing code to determine where to make the changes. The new code will intermingle with existing code, making it difficult for reuse or customization. This talk will introduce the Feature Language designed to allow the programmer to write the new feature according to a model of the application but independent of existing code or code being developed by other programmers concurrently. After code development, the programmer can select the set of features to be included in an application, have them analyzed by a tool to identify the conditions by which the features interact, and write a separate program to resolve the interactions.

About the Speaker:

Dr. Francis Leung is on the faculty of the ECE Department of Illinois Institute of Technology. He has more than 20 years of experience in the telecommunications industry and large-scale software development. He is an IEEE Fellow, cited for his

contributions to operating systems, protocols, and programming methods supporting the development of distributed systems and multimedia communication applications.

Before joining IIT, Dr. Leung managed research and development organizations at Motorola and Bell Laboratories in the areas of cellular infrastructure architecture, interactive video server, electronic switching system software, multimedia communication protocols, ATM technology and application oriented language. He was granted 12 patents including the original patent on Remote Procedure Call and 3 other patents that won the prestigious AT&T patent awards. He led the development of the switching software for the first field trial of voice over frame relay and the first multimedia conferencing system over ATM. Dr. Leung received his Ph.D. in Computer Science from the University of California, Berkeley.

Location:

IIT Rice Campus, Room 166.

Directions:

The IIT Rice Campus is on the northeast

corner of the junction of East Loop Road at Butterfield Rd. The intersection is about 3 miles west of IL 355 and IL 53.
Map: www.rice.iit.edu/directions.html.

Time:

6:30 PM Social (Free snack and beverages)
7:00 PM Presentation

Sponsorship:

IEEE Communication Society Chicago Chapter, Computer Society Chicago Chapter and IEEE Fox Valley Subsection.

Cost:

There is no charge for attending the seminar.

Reservations:

Reservations are not required, but registering your intent of attendance at ieechi@yahoo.com is appreciated. For More Information: Visit IEEE Chicago Section website at: www.ewh.ieee.org/r4/chicago/ or contact:

Jack Sherman - j.sherman@ieee.org
Yigang Cai - ycai@ieee.org
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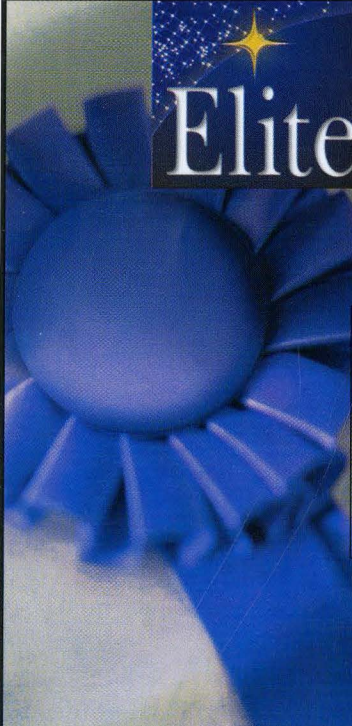
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 723 S. Dearborn Street, Chicago, IL 60605
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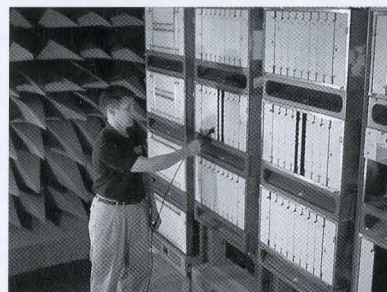
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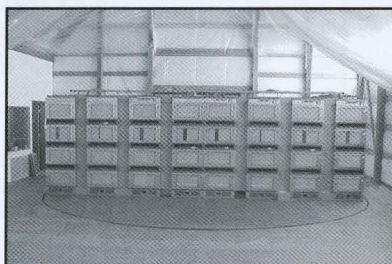
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