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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://www.ieee.org/fwcs>

Volume 49 - No. 4

April 2006

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JOINT CS/AESS & LIFE MEMBER MEETING *THE RISE AND DEMISE OF COMMODORE COMPUTERS*

DATE & TIME Monday, April 17, 2006 at 11:30 AM

SPEAKER: Tom Hyltin

LOCATION: TECO HALL, 702 N. Franklin St., Tampa, FL.

COST \$10.00 (Lunch will be provided)

RSVP Online: <http://www.time2meet.com/fwcs-meetings/> or contact Jules Joslow
@ 941-351-4812 or joslow@ieee.org by April 14 so we have a lunch count.

Tom Hyltin graduated from Univ. of Texas and was employed by Texas Instruments for 15 years. While there he worked in the field of solid state microwave and radar. He was Project Manager on the first solid state radar system, funded by the Air Force Avionics Lab, under the name of Molecular Electronics for Radar Applications, or MERA. After leaving Texas Inst., he was president of his own company, manufacturing liquid crystal displays. When his firm was purchased by Commodore, he became Vice President of R. & D. for them. He was there for 6 years. Tom is Fellow of IEEE and was the recipient of AESS Pioneer Award in 1999. Some of Commodore's equipment will be on display.



May is National Electrical Safety Month —Safety is everyone's job.

May is National Electrical Safety Month and, in support of Electrical Safety Education, your local FWCS PES/IAS is sponsoring two events in May.

First, on May 15, there will be a Lunch and Learn meeting where two utility professionals will cover what challenges they overcame in incorporating NFPA 70E into their company's electrical safe work practices. On the next day, Tuesday, May 16, there will be a seminar good for four PDH hours covering NFPA 70E-2004. A copy of NFPA 70E-2004 is included with the training. See <http://standards.ieee.org/esrc/> and pages 8 and 9 in this Signal.

Lets Re-dedicate ourselves to ensuring electrical safety at work and at home.

—TB

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THE SUNCOAST SIGNAL is published monthly by the Florida
West Coast Section (FWCS) of the Institute of Electrical and
Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is
sent each month to members of the IEEE on Florida's West Coast.
Annual subscription is included in the IEEE membership dues.
The opinions expressed, as well as the technical accuracy of
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members is made or implied.
All material for THE SUNCOAST SIGNAL is due in electronic form by
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Editor's Column—Student Chapter

You editor has accepted a new additional role, Student Branch Faculty Advisor. This is an honor and a challenge. The honor is to be asked to work with the coming new engineers and the challenge is to be able to provide appropriate guidance. I look forward to sharing this role with Srinivas Katkoori when he returns from his sabbatical.

The young women and men that I have met so far are bright and energetic. I hope to be able to keep up with them. I thank the Section for offering me this opportunity.

Now here is a challenge: Scattered throughout this Signal are notes and photos from the Student Chapter Bar-B-Que. See how many you can find. The prize? Why the knowledge you gain from reading the rest of the Signal! —PS





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IEEE & USF Electrical Engineering Senior Banquet

When: Friday, April 28, 2006 at 6:00pm - 11:00pm. Dinner is served at 7pm.

Cost: USF Students, \$12; Non-Students to attend is \$15; sponsoring a table for 8 is \$150

All Graduating Seniors from **Fall 2005** and **Spring 2006** are **FREE**

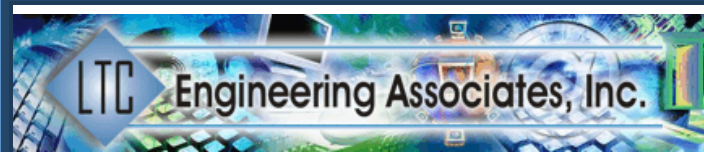
RSVP: Call IEEE at 974-4776 or Irene Wiley at 974-2659 or go online at <http://time2meet.com/fwcs-students1/index.html>. Payment must be made by April 18th

Come on guys let's make this Senior Banquet a huge success. Everyone will have a great time with dinner, dancing, music, and visiting with your friends.

We are proud to bring you the Electrical Engineering Senior Banquet to celebrate the graduating classes of Fall 2005 and Spring 2006. We hope to have full participation from Students, Faculty, and friends. —Irene Wiley



The Student Chapter BBQ was held on March 2nd at USF.



Phone: 941.921.9046 x122 (Mr. Frame)

Email: info@ltceng.com

www.ltceng.com

Can you answer these questions? If so, let's talk...

1) What is the theoretical minimum sampling rate needed to sample a signal that is bandwidth limited to 2 MHz that will allow full recovery of the signal?	7) What is the form of the Fourier Transform of a rectangular pulse with width of T seconds, and what is the frequency of the first spectral zero crossing?
2) Refer to question 1. What would be a practical minimum sampling rate? Why?	8) For a PCM frame synchronizer, would you expect a performance gain (ability to obtain lock) from operating on soft versus hard bit decisions?
3) Are all FIR filters unconditionally stable?	9) In the general case, can a QPSK signal be non-coherently demodulated?
4) What FIR characteristic allows for linear phase?	10) How many unique 12 bit states are in a maximal length R12 LRS?
5) What is the minimum impulse response duration (approximate) of a 10 Hz low pass filter?	11) What is the Hamming distance between the two's complement binary representations of 8 and 128?
6) What can be said about a filter's phase response if it has a constant group delay?	12) What's the maximum bit rate of a 500 kilobaud QPSK communications link?

LTC Engineering Associates, Inc. is a small company located in Sarasota, FL. We are looking for candidates to use their academic and professional experience to develop general purpose computer based signal processing applications. The areas of interest span the range from radar to personal communications systems with emphasis on communications systems. Candidates should have an extensive academic background in signal processing and communications theory including signal estimation, filtering, signals and noise, modulation/demodulation and synchronization processes. Knowledge of both analog and digital systems is required.

The candidate must be adaptable, independently motivated, self-starting, and an innovative thinker. Ideal candidates have backgrounds that include:

- An advanced degree in Electrical Engineering with an emphasis on Digital Signal Processing and Communication Theory
- 5 or more years of implementation experience
- 5 or more years of technical industry experience, preferably in Signal Processing
- Participation in rapid prototyping/product development cycles (concept through deployment)
- Excellent verbal and written communication skills
- U.S. Citizenship is a **requirement**

1) 4 Msps 2) About 2.5*2 MHz or 5 Msps or greater (to compensate for realizable anti-aliasing filters). 3) Yes 4) Symmetrical coefficients 5) 0.1 seconds or (1/10 of a second) 6) Linear phase response 7) A sinc (or $\sin x/x$) signal...1/T Hz for zero crossing 8) Yes. About 3 dB 9) No 10) $2^{12} - 1$ (4095) 11) 2 12) 2 bits per baud or 1Mbit/sec

Building Engineering Education Infrastructure in Florida— Sharing What Works

On April 28, 2006, the University of Central Florida's (UCF) College of Engineering and Computer Science (CECS) will be hosting this pre-college engineering education conference. The one-day conference will showcase pre-college programs that are successfully reaching young students in and outside of the classroom. UCF is working with the College of Engineering at the University of South Florida, O-Force, the IEEE West Coast Section, Project Lead the Way, and numerous schools and industry organizations to identify speakers for two panel sessions in the morning and two additional panel sessions in the afternoon. For additional details see <http://partner.cecs.ucf.edu/EEC06/>.

Key to the success of the conference will be attendance by K12 administrators/educators and engineers. Practicing and retired engineers are especially invited to attend as they are the subject matter experts who are capable of helping teachers and other educators incorporate engineering concepts into the curricula. They further have the ability to assist educators and their students via mentoring in the classroom (and on-line), presenting what engineering is and what engineers do and connecting engineering to science, math and technology courses. In a recent "Why Engineering Survey" conducted by UCF-CECS in coordination with ASME members nationally, 84% of the engineers surveyed indicated they did not interact with a scientist or engineer as part of any classroom activity. Of the 16% who had the benefit of an engineer in the classroom, over 90% indicated it directly contributed to their pursuit of engineering as a career. Practicing and retired engineers have the ability to make an enormous impact on students and can forever change their career aspirations.

Please join with UCF-CECS and our partners to recognize what works in engineering education. You will learn about programs such as the Teacher In-Service Program (TISP) that "features IEEE Section volunteers sharing their technical acumen through the development and demonstration of technologically oriented subject matter to local pre-university educators in an in-service or professional development setting." Mr. Sean Denny with IEEE West Coast Section will be presenting the program and you can learn more about becoming involved.

Persons interested in attending the conference may sign up to be kept abreast of new developments by completing at <http://partner.cecs.ucf.edu/EEC06/StayInformed/New/>.

Please address any questions or comments about the upcoming conference to Mr. Bruce Furino at UCF-CECS at bfurino@mail.ucf.edu.

**IEEE**

Special Workshop *FPGA Design and Verification* *with VHDL*

This four day class occurs on four Friday Afternoons in
May 2006

This class will impart through lecture and hands-on lab exercises a current methodology, using best practices, for designing and verifying Field Programmable Gate Arrays using VHDL. After completing this class, each student will be able to describe the structure, behavior, and timing of a simple digital circuit using VHDL. Students will be able to synthesize the design, place and route the design into an FPGA, build test benches, and verify the correctness of the design through simulation.

Time/Dates: 1:00 PM to 5:30PM, Fridays: May 5, May 12, May 19, and May 26;

Instructor: Jack Killingsworth, President Siliconexion Inc.

Location: Mid Pinellas County, exact location is to be announced later.

Cost: \$500 IEEE Members, \$650 Non-Members, \$300 Students and Unemployed
Includes class notes and lab workbook. Evaluation Software will be provided free by FPGA vendors.

RSVP: Online at: <http://time2meet.com/fwcs-meetings/>
(Select CS/AESS Chapter Meeting)

Make checks payable to: Siliconexion, Inc
Send checks to:

Siliconexion, Inc.
10380 131st Street
Largo, FL 33774

Questions: Contact Jack Killingsworth at 727 596-1990 or
j.killingsworth@ieee.org

Students must have access to a PC with Windows 2000/XP professional, 512M bytes memory and 2G bytes free hard drive space for homework assignments.

Mentors from the Programmable Logic User Group will be on call to help with homework assignments if needed.

Addition Information: Jack Killingsworth is a Life Member of the IEEE, and a Georgia Tech graduate. His professional experience includes FPGA Design since 1988 and with VHDL since 1993. He is a Xilinx Expert and has also completed designs using Altera, Actel, and Lattice FPGAs. His experience includes ASIC design using both VHDL and Verilog.

(Advertisements)



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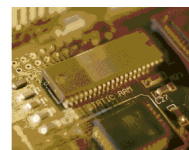
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ISI can help with

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- IRA's
- Roth IRA's
- college funding 529 Plans
- life insurance

to meet group and individual needs. My engineering background of over 30 years qualifies me to understand engineers and to help them with their financial planning and investment needs. Note, health insurance is not a service of ISI. IEEE member since 1969.

LD20552-01/06



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High Speed Signal Integrity Analysis

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turnkey product development*

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PES/IAS FWCS Presents

Gulfstream Natural Gas System update

Date& Time Tuesday, April 18, 2006 12 Noon – 1PM

Subject: Update on Natural Gas Supply for Power Companies and more

Speakers: George Matzke VP Gulf Stream Gas Co.

Location: TECO Hall, 702 N. Franklin Street, Tampa

Cost: \$10.Members; \$5 Student members and \$20 Nonmembers. Lunch is Included and it will be served at the conference

RSVP: Online reservations at:

<http://www.ewh.ieee.org/r3/floridawc/>

Questions: Ghaff Khazami, PE (813) 960- 0990,

gkhazami@ieee.org

Come join the PES West Coast Chapter for a luncheon meeting and hear our special guest speaker on the subject of the Natural Gas System in the State of Florida. You will be able to find out about the impact of the gas supply on the power plants and other needs. Gulf Stream's, Vice President, Mr. George Matzke will update you on the subject, perhaps you will find the answer to some of your questions related to the future of the power utilities that depend more on the natural gas supply.

Speaker Biography:

Mr. George Matzke is the Vice President of Gulf Stream Natural Gas System. He has a BSME and an MBA from the University of New York.

Gulf Stream Natural Gas System is a joint venture of Duke and Williams. Gulfstream will deliver natural gas from the Mobile Bay area accessing both Alabama and Mississippi infrastructure to the center of Florida.

Prior to joining Gulf Stream, Mr. Matzke worked in business development for Progress Energy Corporation. Progress Energy is focusing on developing energy projects with an emphasis on the needs of the Southeast. Mr. Matzke did extensive work on understanding the dynamics of the Southeast Energy market especially in the State of Florida. He has extensive commercial experience in working with fuels, electricity and large capital projects.

Directions:

I-275 Downtown Exit, Ashley to N. Franklin Street, to 702, TECO Building



There Has Never Been A Better Time To Tell Your Fellow Engineers About IEEE Membership

When you experience something good, you want to share it with others. It's the natural thing to do. AND NOW, BETWEEN MARCH 1 AND AUG 15, YOUR FELLOW ENGINEERS CAN TRY IEEE FOR 1 / 2 THE PRICE.

This is the idea behind the IEEE Member-Get-A-Member (MGM) Program. Most members know how beneficial IEEE membership is in their professional lives and what it has meant to their technical and career development. With this campaign, IEEE members themselves can get the word out about IEEE's membership benefits and as a result, help IEEE membership grow.

Beginning 1 September 2005 and running through the 2006 IEEE dues year which ends on 15 August 2006, the IEEE will conduct the MGM Program to encourage members to recruit their colleagues to join IEEE. In return for their efforts, the recruiter will earn a US\$5.00 credit voucher for each member recruited which can be used toward 2007 IEEE dues, IEEE Society fees or the purchase of IEEE products and services.

Most importantly, between March 1 and August 15, joining IEEE is \$78 which is ½ of the full annual membership dues of \$156. It is a great time to try an IEEE membership.



What Is A UL Listing And What Does It Involve?

Date: Friday, April 21, 2006

Time: Registration & Breakfast: 8:00AM – 8:45AM
Seminar: 9:00AM – 2:00PM

Location: Seminole Electric, 16313 North Dale Mabry Hwy, Tampa, FL 33618

PDH Credits: 4 professional development hours will be awarded. Be sure to enter your name and PE number on the signup website as it appears on your license. Florida exempt provider #00015.

Cost: \$75 Members, \$125 Non-Members, \$15 Students—
Includes Breakfast & Lunch

RSVP: Online at: <http://www.ewh.ieee.org/r3/floridawc/>
(Select Reservations)

Make checks payable to: IEEE FWCS

Send checks to: Ralph Painter, IEEE FWCS Treasurer
648 Timber Pond Drive, Brandon, FL 33510-2937

Space limited to the first 50 registrants!!!

Questions: Tom Blair at 813-228-1111, ext 34407 or
thblair@tecoenergy.com



Do you know the difference between the UL markings shown above? If not, you will benefit from this training. Each UL Mark has its own specific meaning and significance. The UL Mark on a product means that UL has tested and evaluated representative samples of that product and determined that they meet UL's requirements. Under a variety of their programs, products are periodically checked by UL at the manufacturing facility to make sure they continue to meet UL requirements. This seminar will cover what the requirements are for a product to be UL Listed.



Top 10 Ways To Screw-Up Your Engineering Career

Yea! We've finally reached the end – I can now share with you my two best techniques for taking your career in your own hands and causing it to short circuit all by yourself. Why bother to let someone else fire you? These are my final two suggestions for how you can accomplish this. I believe that these are the two best ways that engineers can take their future in their own hands and derail their careers:

#2: Never Make A Decision Without Having ALL Of The Facts

You will NEVER have ALL of the facts that you need. The ability to reliably estimate scope/size/time/cost quickly and correctly is invaluable. You've heard the sad engineering stats: 80% of projects fail due in part to poor estimating. Projects at your company have lots of things that need to be estimated: schedule, cost, staffing levels, risks, etc. Keep your eyes open and learn how experienced folks come up with their estimates.

#1: You Got A Degree – Now You Are All Done Learning!

Here's the payoff for having read this far: the key to having a successful career is in becoming a subject matter expert for your area. Your university work was a great accomplishment but that was in the past. Going forward, your value will be determined by how you can help your employer solve its problems and in order to do this you have a lot of learning to do as you grow to understand how it runs its business both today and tomorrow.

I have shared a few ways that you can stop your career in a dramatic fashion. The choice is yours: how do you want your career to turn out? If instead of taking my advice, you decide that you want to have a great career, then you will need to continue to study and learn, seek new work challenges, meet and help new people, and look for tough problems to solve. Everything changes – never, ever, stand still!

—JA



USF Student Chapter Picnic/BBQ

Hey! This IEEE Promotion Day brought out over 100 students and most signed up for our e-newsletter. With ExComm members and a software company in attendance we were able to get a number of students to decide to join the IEEE. Well done Chapter!

A New Member Benefit – The FWCS Online Community

<https://www.ieeecommunities.org/ieee.floridawest>

"A professional society provides a forum for advances to be related, and for people to learn about them."

—Benjamin Richard Teare, Jr.

When IEEE was founded, its members could easily get together for face-to-face, real time communication due to their location. But, as the membership of the Institute grew, efforts had to be made to increase the participation of those living in other parts of the country. Additionally, as the scope of electrical engineering expanded, engineers became more specialized and sought to exchange information with others in the same specialties. It was this need to interact that led to the formation of the first Technical Committee in 1903. How many times were you faced with an engineering challenge that you wished you had someone you could contact for guidance? Now you have a tool to give you access to thousands of engineers facing the same challenges that you face. Today, with the continuing growth in membership throughout the world, we must find new ways to provide that same level interaction regardless of location.

To that end IEEE has developed its Online communities and your Florida West Coast Section now has a site for you local members in the FWCS to network with other members in the area. The new website for your online community is <https://www.ieeecommunities.org/ieee.floridawest>

Some benefits of Online Communities are:

- Online collaboration and continued communication outside of in-person meetings and teleconferences.
- Ability to Chat online with other members of the community.
- Enhance networking opportunities
- Discussions on the latest technologies, vital issues, and IEEE activities
- Just-in time education for application on the job
- Access to technical experts and peers for question asking, advice, and problem-solving
- Peer review of work

At IEEE, the goal of online collaboration is to call forth the best that members have to offer one another and minimize all of the obstacles that we can in order for this exchange to occur.

—TB



Congratulations to 2005 IEEE FWCS Lignell Outstanding Teachers!

By Zhen Tong

For some years now, the Florida West Coast Section (FWCS) has participated in the Lignell Award for Outstanding Teacher Recognition Program. The award is to recognize and honor outstanding teachers for their contributions in pre-college education in Mathematics and Science in Hillsborough, Pinellas and Pasco Counties. Because of these wonderful teachers, many students have developed the interest in engineering, and later, lead them pursuing careers in the engineering field. As the information age approaches here, we are in great need of more young talents to further pushing the technology to the unthinkable. These teachers help make our dreams reality.

This year, we have received many nominations. It was a tough decision as the committee went through the evaluation process. In the end, these teachers shine through. We congratulate this year's winner:

Hillsborough County **Christopher Hart**, Paul Wharton High School

Pinellas County **Sara DePerro**, Thurgood Marshall Fundamental Middle School

Pasco County **Cathy Gaffney**, Zephyrhills High School

This award program is open to all individuals teaching classes in Mathematics or Science in the public middle schools and high schools during the current school year. As we wrap up this year's winners with public recognition, award plaque and an honorarium, please keep in mind to continue your efforts in nominating outstanding math and science teachers for this prestigious award. Let our teachers know we appreciate their outstanding work!

If you need more information on this award, please visit us at <http://ewh.ieee.org/r3/floridawc/celebrate/> or via e-mail to tong@ieee.org.



Lots of hungry students at BBQ





Applying NFPA 70E to Electric Utility Operations

Date: Monday May 15, 2006
Time: **Registration & Lunch: 11am – 1PM**
Speakers: **Richard Mesker**, CSP, OHST, CUSA, Manager, Health & Safety, **Sumter Electric Company** and **Douglas F. Mills**, CSP, OHST, CUSA, Progress Energy **Florida, Inc.**
Location: TECO Hall, Tampa Electric Company, 702 N. Franklin Street, Tampa

Cost: TBD – (\$10 Members of IEEE or NISHA or ASSE, \$20 Non-Members. Includes Lunch)
RSVP: Online <http://www.ewh.ieee.org/r3/floridawc/> (Select Reservations)
Space limited to the first 35 registrants!!!
Questions: Tom Blair at 813-228-1111, ext 34407 or thblair@tecoenergy.com

Your local IEEE PES/IAS Chapter is offering this Lunch & Learn session on Applying NFPA 70E to Electric Utility Operations presented by Mr. Richard Mesker, CSP, OHST, CUSA, with Sumter Electric Company and Mr. Douglas F. Mills, CSP, OHST, CUSA, with Progress Energy where they will share their experiences of incorporating NFPA 70E into their companies Electrical Safe Work Practices.

Since its adoption in 2000, NFPA 70E has quickly become the benchmark of determining protection for electrical workers. Safety professionals in the electric utility industry have also come to recognize this standard as a best practice. However, adapting this best practice standard to the electric utility industry is difficult and challenging due to significant differences between the electrical utility industry and the industrial plant environments. This presentation will focus on the strategies, techniques and analysis used at a Fortune 250 electric utility to incorporate NFPA 70E into its electrical safety work practices at its power plants and its transmission and distribution operations.

Douglas F. Mills has been with Progress Energy a Fortune 250 diversified utility company, and stationed at the Crystal River Nuclear Plant for over 25 years serving as a Health Physics technician and currently as the Senior Occupational Health and Safety Specialist. Experienced in cross functional aspects of health and safety, he holds a Bachelor of Science degree in Technology in Health Physics and is expecting to complete his Masters of Science in Public Health, Industrial Hygiene, from the University of South Florida in 2006. Professional Certifications held by Mr. Mills include the Certified Safety Professional (CSP) from the Board of Certified Safety Professionals as well as the National Registry of Radiation Protection Technologists (NRRPT) and Occupational Health and Safety Technologist (OHST) from the Council on Certification of Health, Environmental and Safety Technologists. Professional Memberships and affiliations include American Society of Safety Engineers (ASSE), Full Member of the American Industrial Hygiene Association, (AIHA-National), a member of the Florida Chapter of AIHA, also a member of the American Conference of Governmental Industrial Hygienists, (ACGIH). Mr. Mills is also a member of the Institute of Electrical and Electronics Engineers (IEEE), a member of the IEEE Standards Association as well as serving on the p1584 Working Committee.

Richard Mesker is presently Manager of Health and Safety at Sumter Electric Company. He was previously the Manager of Health and Safety Florida at Progress Energy. Mr. Mesker has over 20 years of experience in Power Plant Operation, Electric Utility, Safety, Radiation Protection, Power Plant Water Chemistry Programs and Utility Safety Management. Mr. Mesker is a graduate of the US Navy Nuclear Power Program. He received a Bachelor of Science degree in Business from the University of the State of New York and performed graduate studies at the University of South Florida in Industrial Hygiene and Safety Management. He's a certified safety professional, certified utility safety administrator, occupational health and safety technician, and registered with the national radiation protection technologists. His current and past affiliations include the Nuclear Industrial Safety and Hygiene Association (NISHA), the Southeastern Electric Exchange, Accident Prevention Section and the American Society of Safety Engineers (ASSE).



Chapter Officers



John, Paul & Jim



??



Update on NFPA 70E-2004 Electrical Safety in the Workplace

Date: Tuesday, May 16, 2006
Time: Registration & Breakfast: 8:00AM – 8:45AM
Seminar: 9:00AM – 2:00PM
Speaker: John Leedy, P.E., President, LEEDY ELECTRIC CORP. Member, IEEE
Location: Lakeland Electric, 501 East Lemon Street, Lakeland, FL 33801
Cost: \$150 Members, \$225 Non-Members (Non-Members interested will receive a membership in IEEE), \$100 Students. Includes Breakfast, Lunch, & seminar text, “NFPA 70E – Standard for Electrical Safety in the Workplace” (a \$41 value)

Seminar Text



A \$41 Value

Your local IEEE PES/IAS Chapter is offering this 4 hour seminar on Electrical Safety in the Workplace by John Leedy, president of Leedy Electric Corporation.

This training session will be devoted to the subject of Electrical Safety in the workplace. Topics such as “how does electrical safety and the NFPA-70E apply to the workplace” and “what is required to be compliant with the standards” will be covered. A copy of the standard, NFPA-70E-2004 Standard for Electrical Safety in the Workplace is included in the training costs.

John Leedy graduated from University of Florida in 1982 with a Bachelor of Science in Electrical Engineering with an emphasis in Power Delivery. John worked for Dillard Smith Construction as a protective relay technician. He joined General Electric as a Field Engineer, specializing in Power Substations and DC Electronic Drive Systems in Paper Mills as well as Project Management of Paper Machine Drive System retrofits and substation construction. John left GE to join the family business, Leedy Electric Corp, in 1987. He earned his Professional Registered Electrical Engineering certification for the State of Florida in 1992 and his Masters in Engineering Management from the University of South Florida in 2002

Along with several other career related certifications earned since being with Leedy Electric Corp., he earned his Certified Power Quality Professional certification and has been working with NFPA 70E regulation since 2002, performing site Arc Flash Hazard Analysis and training management and employees on the standard. Leedy Electric Corp is located in Mulberry Florida, and has been in business since 1975, specializing in Engineering and Electrical Service for the residential, commercial and industrial industries.



Brain Teaser Challenge—Cont. from p. 11

extra terrestrial origin. But I digress. The phaser is an energy beam weapon. Though the program never really explains what sort of energy it projects, it kind of looks like a laser beam. Let's say I built a phaser with a laser diode that puts out a thin beam at 640 nm wavelength, and then shined it through a single slit between two razor blades producing a nice pattern on a wall that was 33 feet away from the slit device. There was a very bright spot in the center and then dark and light patches extending to each side. The distance on the wall from

the brightest point in the center to the darkest point in the first dark patch to the right was 5". It seemed that there were several more dark areas at the same distance from each other, in both directions. Can you tell me what the gap diameter was between the razor blades, based on the observations above? Can you say Fraunhofer single slit diffraction?.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>).



IEEE-USA Leadership Workshop in St. Louis

By Jim Lumia & Jim Howard

Representing the Florida West Coast Section, Ralph Painter, Jim Howard and Jim Lumia attended the IEEE-USA Leadership conference over the March 4th weekend. With a total attendance of over 190 representatives from all over the US, the workshop was an outstanding venue to learn more about leadership, programs available to our members and the work the IEEE-USA is doing in Washington to

benefit all the US IEEE members.

Ralph Painter was a speaker and presented the Teacher In Service Program at the session titled "Prepare Our Kids for Global Competition Through Pre-College Math & Science Literacy". This program helps teachers to raise interest in science and engineering and was a program that began in the Florida West Coast Section that has now spread to many IEEE Regions throughout the US and the World.



There were two candidates for next year's IEEE-USA president: Russell Lefevre and Joe Lillie, who presented their goals and vision for IEEE-USA to help our electrical/electronic engineering profession in the United States. We were able to meet and discuss our ideas and issues with these candidates.

The program consisted of four concurrent sessions of presentations: Professional Activities, Government Relations, Enhancing Local Member's Competitiveness, and Career Resilience. These presentations provided us with

many ideas and speaker contacts for our local professional activities planning of section meetings as well as future Professional Activities workshops and seminars.

There were some excellent presentations by successful entrepreneurs and consultants offering guidance and sharing their experiences. The Career tract had good presentations which can be expanded to workshops for our local members. As technology, business, and companies change, we need to be aware and proactive. Engineers need to be capable of doing more than one kind of job, know what skills are in demand, and find ways to get experience in those areas such as changing jobs or volunteering for projects. Engineers need to add value to their company's or client's strategic plan and avoid being just an service commodity.



The Government Relations presentation provided IEEE-USA's stance on many of the issues that affect us from work visas to intellectual property rights. You can learn more about these issues at <http://www.ieeeusa.org/> and you can help by getting to know your local Congressional Representatives and getting involved with the Florida West Coast Section's Professional Activities Committees for Engineers (PACE). PACE is a grassroots network of IEEE volunteers and committees organized at the section and chapter level in the United States with support from their regions and the IEEE-USA.

For more information and to download the presentations from the IEEE-USA Leadership Workshop go to: <http://www.ieeeusa.org/calendar/conferences/2006workshop/program.asp> and scroll down to the tracks (listed in color) and click on any of the presentations shown.

IEEE-USA is an organizational unit of the Institute of Electrical and Electronics Engineers, Inc. created in 1973 to support the career and public policy interests of IEEE's U.S. members. IEEE-USA's mission as outlined in the IEEE Bylaws is to recommend policies and implement programs specifically intended to serve and benefit the members, the profession, and the public in the United States in appropriate professional areas of economic, ethical, legislative, social and technology policy concern. The vision is to serve the IEEE United States member by being the technical professional's best resource for achieving life long career vitality and by providing an effective voice on policies that promote U.S. prosperity.



Brain Teaser Challenge Column

—By Butch Shadwell

March BTC Last month, we had a little archeological taste treat involving toast. The problem was "... tooling down the road in your auto-drive car at 200 mph. Your exit is approaching and you need to slow down. If your computer driven car can regulate the braking force so the passengers feel a constant force due to deceleration, what force will a 200 lb passenger feel as the car decelerates from 200 mph to 20 mph in 1000 feet?"

I like to keep things simple if I can, so here is my simplified approach to this problem. First since the deceleration is constant, it is easy to get the average speed through the 1000 Ft, $(200+20)/2$ mph then convert to ft/s. This comes to 161.3 ft/s. Divide this into 1000 ft, and we find that it took 6.2 seconds to slow down in this distance. Knowing this, all we have to do is take the delta speed, 180 mph = 264 ft/s, and divide it by the time elapsed, to get the actual deceleration rate, 42.6 ft/s². If we say that 1g = 32 ft/s², then by dividing we know that the passenger felt 1.33g due to deceleration. Since we know that the mass of this passenger causes 200 lbs of force at 1g, we know that the deceleration force is 266 pounds. One of my many brilliant readers (John Gerig) added that the passenger was actually feeling the vector sum of the acceleration due to gravity and the deceleration due to slowing, which comes to 1.66g forward, but down a bit. But I bet you already knew that.

April BTC I am not a Trekkie! Okay, so I really enjoy most of the different Star Trek incarnations, but that doesn't make me a Trekkie. If I was anything as a Star Trek fan, maybe you could call me a Trekker, but definitely not a Trekkie. The fact that I actually made my own Next Generation Star Trek uniform, with the commander insignia, and a realistic (non-working) badge communicator, doesn't make me a Trekkie. It was just a lark for a Halloween party one year. Maybe I've worn it a few times since then, but like ... never to church or grocery shopping, or anything like that. Well maybe grocery shopping one time, on the way to somewhere else. But I really don't think anyone noticed. It's not like I'm getting made up like a Klingon or something. I've heard those forehead ridges can itch.

I'm glad I've gotten that out of the way, and that it is perfectly clear that I am not one of those weirdo Star Trek fans, or Trekkies as they are called. But you know some of the Star Trek technology holds special fascination for me. Take the phaser for example. After years of research, I have compiled evidence that the prop used in the show was actually a replica of a genuine piece of alien technology. I know this may come as a shock, but we have been visited by many of the alien species we all thought were fictitious characters from the Star Trek TV series. In private letters to me, Majel Barrett Rodenbury admitted that her deceased husband was in fact of

— Brain Teaser Challenge Cont. p. 9

Ralph Painter Receives IEEE-USA Professional Leadership Award

—By Jim Lumia

On March 4th, our Florida West Coast Section treasurer, Ralph Painter, received the IEEE-USA Region 3 Professional Leadership Award at the IEEE-USA Leadership Workshop in St. Louis. Ralph was instrumental in initiating the acclaimed Teacher In Service Program (TISP) in our section. This program trains and assists middle school and high school science teachers in presenting experiments to their students that will raise their interest in math, physics, and electrical engineering. The Teacher In Service Program is now spreading to other IEEE sections and throughout the IEEE regions.

The FWCS is very grateful to Ralph for his tireless work in this program. The future of technology leadership in the United States rests with our children. The Teacher In Service Program offers our youth a chance to realize their ability and interest in engineering.

Ralph will be training IEEE members from other sections at the Region 1 Teacher In-Service Program training workshop on March 24-25 in Boston. This is one of several workshops in the U.S. and other countries organized by Doug Gorham, IEEE Educational Activities Board, to build on the early TISP work of the Florida West Coast Section. IEEE is partnering with the Boston Museum of science to present the workshop to fifty IEEE members and educators.

Other local members who have participated in this area's teacher in-service activities include: John Luce, John Stankowich, Jules Joslow, Scott Haynes, Tom Blair and Quang Tang. Sean Denny currently coordinates the teacher in-service training and other K-12 outreach activities for the Florida west coast area.



Ralph Painter (left) receives the Professional Leadership Award from Ralph Wyndrum, IEEE-USA president

April 2006 Calendar of Events (For more information see P. 1 *Inside this Signal...*)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	3	4 <u>5:30 pm:</u> IEEE FWCS ExCom Meeting, TECO Hall, Tampa	5	6	7	1 SouthEastCon
SouthEastCon					SouthEastCon	8
9	10	11	12	13	14	15
16	17, <u>11:30 am:</u> Commodore Computers, TECO Hall, Tampa p 1	18 <u>Noon:</u> Gulfstream Gas TECO Hall, Tampa p 5	19	20	21 <u>8 am:</u> UL Listing Seminole Electric, Tampa p 6	22
23	24	25	26	27	28 <u>6 pm:</u> USF Sr. Banquet, p 2. UCF Infrastructure p 3	29
30	31	1	2	3	4	5

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