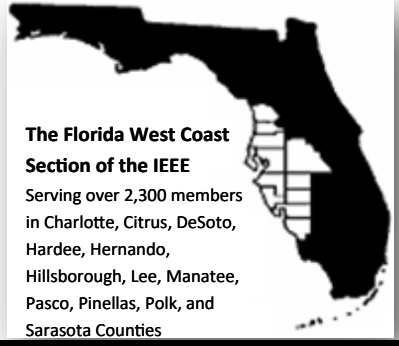
http://www/ieee.org/fwcs



IEEE

THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Volume 64—No. 4 April 2018

IN THIS SIGNAL:

Upcoming Meetings

EXCOM Meeting

Tuesday, April 3, 2018 5:30PM at TECO Plaza
Register online at http://time2meet.com/fwcs-excom/index.html
Open to all FWCS Members

ABCs of Generator Excitation Systems and Relaying Seminar

Friday April 13, 2018 8:00AM
Register at http://time2meet.com/fwcs-pes4/index.html
Details—Page 4

SoutheastCon—April 19-22

SoutheastCon—Tutorials

Friday April 20, 2018 8:00AM & 1:00PM
Register at http://time2meet.com/fwcs-pes1/index.html
Details—Page 5

FPL Solar Plant Tour

Friday April 27, 2018 1:30PM
Register at http://time2meet.com/fwcs-pes2/index.html
Details—Page 6

Uniting the World with Technology

The annual Region 3 conference, SoutheastCon, will be held from April 19-22 at the St. Petersburg Hilton Bayfront. Several of the student activities will be held at the nearby USF St. Petersburg campus. In addition to the region meetings, technical track (paper and poster sessions), and student competitions, two half-day tutorials, carrying CEH credit for license renewal, will also be offered (see page 5 of this Signal for details).

Social highlights of the conference include a welcoming reception and the awards banquet where outstanding members of Region 3 are honored for their accomplishments. Also included is a companions program which takes advantage of the wide variety of entertainment venues downtown St. Petersburg has to offer, including museums, parks, sporting events, even a segway tour of the beautiful Bayfront area.

The technical track includes papers covering the topics Power and Energy; Control, Automation, and Estimation; Electrical, Electromagnetic, and Electronic Systems; Computer Hardware, Software, and Big Data; Communications, Signal and Image Processing; and Technology and Society.

The student program includes competitions in hardware (robotics), software, ethics, technical paper, T-shirt, website, and a hackathon. Assisting the USF students in organizing and running the various student activities will be students from Florida Polytechnic University. This event marks the first joint effort between the Florida West Coast Section's two universities. The planning of the student conference has been a fantastic opportunity for the two schools to work together. But next year, the gloves come off when SoutheastCon will be held in Huntsville, Alabama, and both FWCS universities will be eligible to compete head to head!

Young Professionals Activities at SoutheastCon

The **FWCS Young Professionals** group would like to invite all its members to a series of professional development workshops that will be held at SoutheastCon. This year, we will participate in the conference by covering topics of interest to both students and professionals and organizing networking opportunities. We would love to have all local Young Professionals join us!

The event will take place on Saturday, April 21st in the late morning at the Hilton Bay Front in St. Petersburg, Florida. For details regarding the conference and registration, please visit: www.southeastcon2018.com.

Rules & Laws and Ethics CEHs—Hold the Date!

A pair of meetings will be held on Friday June 29, 2018 from 9:30am-11:30am covering the (1) the rules and laws that govern the practice of engineering in Florida, and (2) ethics and the practice of engineering in Florida. One Rules & Laws CEH and one Ethics CEH, which meet the requirements for Florida PE license renewal, will be awarded for these meetings. Check the next issue of the Signal for details and registration information.

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.

All material for THE SUNCOAST SIGNAL is due in electronic form by 1st Sunday after the 1st Tuesday of the month preceding the issue month.

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Useful links:

http://www.ieee.org/benefits Global Benefits Finder

http://www.ieee.org/discounts Discounts Page

PE Corner

Art Nordlinger, PE, Senior Member

Records Retention—A Reminder

Excerpts from an article by WILLIAM BRACKEN, PE, SI, CFM, originally printed in the Florida Board of Professional Engineers Connections Newsletter

The start of the new year is the time when businesses and individuals tend to work on organizing current records and purging old ones. Be careful, though, that you don't purge records that Florida Statutes or the Florida Administrative Code require you to keep.

For engineers, Chapter 61G15, F.A.C., contains two separate provisions that require licensees to retain records. The first of these provisions is found in Chapter 61G15-22, *License Renewal, Continuing Education.*

Chapter 61G15-22.008, *Record Keeping.* *It is the licensee's responsibility to maintain sufficient records to demonstrate completion of qualifying professional development hours for at least two licensure cycles (four years).*

This provision requires each licensee to keep sufficient records to demonstrate that the minimum number of continuing education hours have been completed. These records are to be kept for no less than two renewal cycles or four years from the close of the renewal cycle that they were earned in. So, some records may actually need to be kept for up to six years for those professional development hours that were earned close to the beginning of a renewal cycle. For example, the most recent renewal cycle ended in February 2017; if you took a CE class in March 2017, you will need to keep that certificate until at least February 2023.

The second of these provisions is found in Chapter 61G15-30, *Responsibility Rules Common to All Engineers.*

Chapter 61G15-30.009, *Retention of Engineering Documents.* *At least one copy of all documents displaying the licensee's signature, seal which is legible to the reader, date, and all related calculations shall be retained by the licensee or the licensee's employer for a minimum of three years from the date the documents were sealed. These documents shall be maintained in hardcopy or electronic format.*

This provision requires each licensee to keep at least one copy of every document that was signed, sealed, and dated, regardless of whether it was physical or electronic. The provision requires these records to be kept for no less than three years from the date the documents were sealed. It allows the licensee to maintain these documents in hardcopy or in electronic format, provided the signature and seal can be verified. For example, in the case of an originally physically signed, dated, and sealed (embossed) document, the embossed copy can be scanned and maintained digitally provided the embossing on the original can be seen within the copy (typically accomplished by rubbing graphite over the embossing).

The provision also requires that each licensee or their employer retain all calculations relating to the signed, sealed, and dated documents for no less than three years from the date the documents were sealed. It also allows the licensee to maintain these documents in hardcopy or in electronic format.

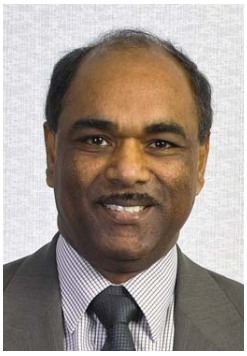
One final word of caution, with the ever-increasing push toward paperless files, computer back-ups and offsite storage are highly recommended. The loss of stored information resulting from the loss of a computer does not alleviate the licensee from his or her obligation to comply with any of these requirements.

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn new skills or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs. Demand for our seminars is high and increases as renewal time approaches. Sign up now!

E-Week Banquet

The 2018 E-Week banquet's theme, *Engineers Inspiring Wonder*, was most appropriate as keynote speaker Frank DiBello of Space Florida shared with the audience the ambitious plans and promising future of the Kennedy Space Center. Commercial space travel with multiple launches weekly is right around the corner, driven by visionaries like Elon Musk and Jeff Bezos. And Florida is at ground zero for these and countless other exciting developments involving the space industry!

At the banquet, IEEE awarded Engineer of the Year to **Dr. Murty Yalla** for his contributions to power system protection and automation. Also recognized by the Florida West Coast Section were Young Engineer of the Year **Anthony "TJ" Ross** and Engineering Student of the Year **Mohammed Chehab**.



Dr. Murty Yalla
Engineer of the Year

Anthony "TJ" Ross
Young Engineer of the Year

Mohammed Chehab
Engineering Student of the Year

Also recognized at the banquet were the Lignell Outstanding High School Teacher award recipients: **Robert D. Beatty**, Hardee Senior High School, *Advanced Placement (A.P.) Environmental Science, Honors Chemistry, and Experimental Science*; **Robin Kremer Ladd**, St. Petersburg High School, *A.P. Calculus and International Baccalaureate Mathematics*; **Jessica F. Miller**, St. Petersburg High School, *A.P. Environmental Science and Leadership Program*; and Jordan **M. Lujan**, Lennard High School, *A.P. Biology, Honors Biology, and Biology*.

Leader's Center

Organizational Change
Manager's Anxiety with Production Improvement—Part 1*

Paul Schnitzler, Ph.D—Life Senior Member

We know that employees become anxious under the threat of a change. Did you know that managers may also be anxious when introducing a change? This anxiety can lead to actions that actually block the change.

Let's look at a company having production quality problems. Yields are low and customers have been complaining or returning products. The production manager (PM) is concerned that the company might fail if production is not improved significantly…and soon. What can he do?

He knows production and believes that certain changes in the production processes can correct the problem. But he also knows that the needed changes are likely to make his employees uncomfortable.

He has read much about introducing change and how to help employees deal with change; do it right and they help make it a success. The books recommend showing the employees that they are valued: get their help, get their ideas, and give them some control over what happens to them. That is, give them some power over their fate.

The PM must give some of *his* power to his employees!

But remember that the PM has a lot at stake here. What if he can't make the change work? What if the change he introduces does not provide the needed improvements? The company is already hurting; if the changes do not correct the problem, his own job may be on the line.

He thinks "I better keep tight control over everything." The last thing an anxious manager will do is give up any of his power! And yet, that is exactly what must be done.

To deal with this, the PM simply must "bite the bullet." Use the employees' knowledge and skills, get their ideas to find the best way to improve production, and get their help to make it happen. And accept that he will be uncomfortable.

It's the best chance he has to make the changes succeed.

Still, the PM must still do something reduce his anxiety. This fear is actually likely to increase as he follows the steps above! For all of this to work, the PM will need to find ways to trust his employees. He must also trust that he is capable of picking up the pieces when things don't go as expected. One way to do this is to hold regular meetings to review the status while not "holding the reins" too tightly and micromanaging the group. Here, again, the PM can work with the employees to help decide together how to best keep him informed so that he is able to see that things are moving well…while staying sane.

More on that coming soon.

Don't want to wait? Then go to http://leadchangewithoutfear.com/ and check the tab "Successful Real Change."

* Adapted from ***Lead Change without Fear*** by Paul Schnitzler

ABCs of Generator Excitation Systems and Relaying

Date: Friday, April 13, 2018 **Time:** Registration & Breakfast: 8:30AM-9:00AM
Seminar: 9:00AM – 2:00PM

Speaker: Gene Asberry, Senior Application Specialist, Basler Electric Company
Ben Kazimier, Principal Application Engineer, Basler Electric Company

Location: FRCC 3000 Bayport Dr. #600, Tampa, FL 33607

Parking: Use parking lot for Hyatt (North side only).

Cost: $100 Members, $200 Non-Members, $20 Students. Includes Lunch.

CEH Credits: 4 continuing education 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.

RSVP: Online at: http://time2meet.com/fwcs-pes4/index.html
Make checks payable to: IEEE FWCS Send checks to: Treasurer—IEEE PE/IA Chapter
3133 W. Paris Street
Tampa, FL 33614-5964

Questions: Steve Antman at steve.antman@cepowersol.com or (863) 701-4170

In the excitation portion of the presentation, you will learn synchronous generator basics along with the features and functionality of a AVR/ Static exciter system. We will examine the limiters, protection associated with the exciter and Power System Stabilizers. We will also talk about PID control and the Auto Tuning features.

Gene Asbury (IEEE member), has been a Senior Application Specialist for Basler Electric Company, in Highland IL, since 2006. He has performed in various capacities since he started with Basler Electric in 1987: Quality Control Supervisor, Technical Sales Specialist, Project Coordinator, Proposal Engineer, and Application Specialist for Excitation Systems. Gene attended Southwestern Illinois College and received degrees in Industrial Technology and Communication Electronics.

R. Benjamin Kazimier is a Principal Application Engineer with Basler Electric Company. He holds a Bachelor's Degree in Electrical Engineering Technology from Purdue University. His work experience includes design, installation, testing, and commissioning of protective relaying equipment and a diverse range of power system apparatus. He is a member of the Georgia Tech Protective Relay Conference planning committee, the IEEE, the IEEE 1547 working group, the IEEE SCC21 working group, regularly attends IEEE-PSRC functions, and is the chairperson of the PSRC K10 working group.

SoutheastCon 2018

Half-Day Tutorials—Friday April 20

Register at time2meet.com/fwcs-pes1/index.html

8:00am—12:00pm: Fundamentals of the Power System

Michael Wright, Power Grid Engineering, LLC

This four hour session examines the fundamentals of the power system, specifically from a protection & control standpoint. The technical content is a highlight of Power Grid Engineering's Power Systems 101 seminar which aims to answer some big picture questions about how a power system works. The session helps to explain Protection and Control to those new to the industry as well as provide a thorough review for engineers, engineering technicians, and field relay technicians.

1) Power System Overview: Pathway of Power, Types of Generation, Renewables and Future of Fuel, Transmission & Distribution Systems; 2) Purpose of Breakers: Turn Power System On and Off, Open in the Event of a Fault; 3) Substation Layout Drawings: One-Line, Functional, and Schematic Diagrams; Front and Rear Panel Layout; 4) Substation Layout Examples: Distribution and Transmission Stations, What Trips What?; 5) Protection Zone Diagrams: What are they? How do we create one? What do we do with them?

Michael Wright is President of Power Grid Engineering, LLC. He is a Florida native and graduated from the University of Florida where he received a Bachelor's of Science in Electrical Engineering in 1998. Michael received his MBA from Rollins College in 2004. Upon graduation from the University of Florida, Michael accepted a job with Florida Power Corporation (now known as Duke Energy) as a protection & control engineer designing those systems for generation, transmission and distribution substations. He gained vast industry experience in the Relay Engineering and Relay Construction divisions of Duke Energy where he offered support to field relay techs on construction projects. In 2007, Michael left the power company to start *Power Grid Engineering, LLC*. Michael has led the company for 11 years and currently has a staff of over 300 employees performing power engineering services throughout the United States. In 2003 Michael developed a 40 hour curriculum designed to explain the "big picture" of protection & control and this will be his 16th consecutive year teaching this class, with refinements and additions each year.

1:00pm—5:00pm: DER OPERATION, CONTROL and PROTECTION

Wayne Hartmann, Senior VP, Protection and Smart Grid—Beckwith Electric Co.

Distributed Electric Resources (DER) are making larger inroads into our distribution systems. This technical session provides a background into DER operation and associated protection and control considerations for conventional and inverter-based power sources. We will review types of DER/DG and the modes in which they can operate in parallel with the distribution system.

1) Explore Types of DERs
2) Utility and Facility Drivers for DER
3) Rates and DER Operational Sequences
4) Industry Concerns
5) IEEE 1547: Industry DER Guide
6) Sample Utility DER Interconnection Guide
7) Interconnection Protection: "The Five Food Groups"
8) Interconnection Transformer Impacts
9) Energy Source Types and Impacts
10) Example Protection Applications
11) Distribution Protection Coordination and Control Issues
12) Smart Grid / Microgrid and DER
13) Impact of IEEE 1547A

Wayne Hartmann is Senior VP, Protection and Smart Grid for Beckwith Electric. He provides customer and industry linkage to Beckwith Electric's solutions, contributing expertise for application engineering, training and product development.

Before joining Beckwith Electric, Wayne performed in application, sales and marketing management capacities with PowerSecure, General Electric, Siemens Power T&D and Alstom T&D, with his focus on the application of protection and control systems for electrical generation, T&D and DER, and distributed energy resources.

He is an IEEE Senior Member and serves as a Main Committee Member of the IEEE Power System Relaying Committee. He is presently the Chairing the "Investigation of the Criteria for the Transfer of Motor Buses" Working Group. His IEEE tenure includes having Chaired the Rotating Machinery Protection Subcommittee ('07-'10), contributing to numerous standards, guides, transactions, reports and tutorials, and teaching at the T&D Conference and various local PES and IAS Chapters. He has authored and presented numerous technical papers and contributed to McGraw-Hill's "Standard Handbook of Power Plant Engineering, 2nd Ed."

Tour FPL DeSoto Next Generation Solar Energy Plant

Date: Friday, April 27, 2018 **Time:** registration at 1:30PM
Presentation: tour starts at 2:00PM

Location: FPL DeSoto Next Generation Solar Center, 4051 NE Karson St., Arcadia FL 34266

Cost: Free for Members, $10 for Non-Members, $5 for Non-Member Students.
Make checks payable to: IEEE FWCS Send checks to: Treasurer—IEEE PE/IA Chapter
3133 W. Paris Street
Tampa, FL 33614-5964

RSVP: Online at: http://time2meet.com/fwcs-pes2/index.html

Questions: Steve Antman at steve.antman@cepowersol.com or (863) 701-4170

Space limited to the first 50 registrants!!!

At Florida's first-ever solar energy center, 90,500 solar panels move into position to catch the sun's rays. The largest of its kind in the nation when it opened in 2009, this facility continues to serve customers using photovoltaic, or "PV," technology – a process for converting sunshine directly into electricity for FPL customers. In 2016, FPL completed Citrus – 74.5MW ground mounted installation and in 2017 FPL completed WildFlower also a 74.5MW ground mounted PV installation.

Solar works for you during the day, when the sun is not hiding behind clouds, generating megawatts of clean, zero-emissions energy. 25 megawatts is enough to power about 5,000 homes. The original emissions-free center is estimated to help us eliminate nearly 37,000 metric tons of greenhouse gases each year and thousands of barrels of oil, making it a clean and energy independent way to bring you electricity. Come see the magic!

Coming from the north on US 17, the site is about 1 mile south of the Hardee/DeSoto County line. When you turn onto Karson Street, go to the end of the road and fork to the right. Come in through the gate and follow the road to a second gate, toward the building. (It's easy, you won't miss it.) There is NO signage on 17 so you must look for Karson Street.

When you get to the gate press the call button and they will be able to remotely open the gate.

Pictures will be allowed and for safety reasons, be sure to PLEASE WEAR CLOSED TOED SHOES.

NFPA 70E-2018
Electrical Safety in the Workplace

Date: Friday, May 11, 2018 **Time:** Registration & Breakfast: 8:30AM-9:00AM
Seminar: 9:00AM – 2:00PM

Speaker: John Leedy, P.E., Owner, LEEDY ELECTRIC EAST, LLC

Location: FRCC 3000 Bayport Dr. #600, Tampa, FL 33607

Parking: Use parking lot for Hyatt (North side only).

Cost: $150 Members, $300 Non-Members, $100 Students. Includes Breakfast, Lunch, and the seminar text, ***NFPA 70E—2018 Standard for Electrical Safety in the Workplace*** (a $74 value)

CEH Credits: 4 continuing education 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.

RSVP: Online at: http://time2meet.com/fwcs-pes4/index.html
Make checks payable to: IEEE FWCS Send checks to: Treasurer—IEEE PE/IA Chapter
3133 W. Paris Street
Tampa, FL 33614-5964

Questions: Tom Blair at 813-228-1111, ext 48179 or thblair@tecoenergy.com

Seminar Text

A $74 Value

Your local IEEE PES/IAS Chapter is offering this 4 hour training on *Electrical Safety in the Workplace* by John Leedy, Owner of Leedy Electric East.

This training session will be devoted to the subject of Electrical Safety in the workplace as it related to the latest edition of the NFPA 70E-2018 released in January. This training will cover details of the standard and highlight updates new to 2018. Topics such as "how does electrical safety and the NFPA-70E apply to the workplace" and "what is required to be compliant with the standard" will be covered. Real world examples and lessons learned will be presented.

A copy of the standard, NFPA-70E-2018 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 and commissioning. John left GE to join the family business, Leedy Electric Corp, in 1987. He earned his PE license for the State of Florida in 1992 and the State of Georgia in 2013 and received his Masters in Engineering Management from the USF in 2002. John has been working with NFPA 70E regulation since 2002, performing hundreds of Arc Flash Risk assessments throughout the SE United States, training management and employees on the standard. Leedy Electric is located in Mulberry Florida, and has been in business since 1975, specializing in Engineering and Electrical Service for the commercial and industrial industries.

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IEEE SoutheastCon 2018

April 19-22, 2018

St. Petersburg Hilton Bayfront

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Motor Starting MV Circuit Breaker Retrofill

Metal-Clad switchgear with air-magnetic medium voltage circuit breakers was typically used in the past for motor starting applications for station service equipment. Frequent operation of these circuit breakers led to excessive wear of the breaker contacts and operating mechanism, and premature failure of the air-magnetic circuit breakers. Over the years these breakers required extensive reconditioning and overhaul, using OEM and after-market parts and components. Increasing cost of maintenance and obsolescence by OEM's requires a new approach.

CE Power has developed a solution to extend the life of existing metal-clad switchgear. By performing a MV fused vacuum contactor retrofill, the most vulnerable components are replaced while the integrity of the switchgear is maintained. This significantly reduces maintenance costs and increases reliability of the system.

Overview

- Vacuum contactors designed and tested for switchgear applications, up to 2,500,000 operation cycles
- Primary contacts sealed inside a vacuum bottle
- Operating mechanism consists of few moving parts and components
- Primary fuses sized to protect the motor and cable from short circuit condition
- Non-load break isolation switch provides a visible disconnect of the primary circuit
- Proper interlocking and controls design
- New microprocessor motor control relay provides improved protection, remote monitoring and communication

Advertising Section

GARD

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DSP-ADM

The new DSP-ADM provides total system protection from ground faults and arc flash. As a base model it is designed to detect the event of a single ground fault, signal an alarm, and provide pulsing capability so that maintenance personnel can locate the faulted circuit without interrupting the process. Maintenance can be immediately alerted to the problem and an operator dispatched to located the fault to isolate it promptly.

The DSP SYSTEM can assist in locating the fault with a pulsing fault location circuit. In the event of a second ground fault, the DSP acts quickly to prevent loss of two feeders by selectively tripping the lower priority feeder only.

- Ground faults cause havoc on plant production processes, shutting down power and equipment and critical loads.
- Ground faults disrupt the flow of products through manufacturing processes and cause data loss in computer centers leading to hours or even days of lost productivity.
- Ground faults pose health and safety risks to personnel, creating hazards such as equipment malfunctions, fire and electric shock.

TECHNICAL SPECIFICATIONS

Power Requirements	100-240V, 50/60 Hz or DC, 25 VA
Dielectric	Relay contacts to chassis1500 V rms for 1 minute alarm level Control terminals to chassis 1500 V rms for 1 minute alarm level IEC-60255-5
Trip Level Inhibit	25% of systems ground current
Contact Ratings	DSP-DFM: Trip Contacts- Form "C" SPDT 10 Amp., 240 V AC resistive DSP-DPS: Alarm Contacts- Form "C" SPDT 8 Amp., 240 V AC resistive IEC-60950
	DSP-DFM: Pickup Accuracy: ±10% of system let-through current
Temperature Range	0¤C to 50¤C

Advertising Section

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¾ Page	$110	$143	$530	$663	$925	$1,110
Full Page	$140	$182	$670	$838	$1,175	$1,410
Insert / Sheet	$200	$260	$800	$1,000	$2,000	$2,400

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Or fax your address changes to (732) 562-5445

April 2018 Calendar of Events (For more information see P. 1) *in this Signal…*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	**2**	**3** *EXCOM Meeting 5:30pm TECO Plaza*	**4**	**5**	**6**	**7**
8	**9**	**10**	**11**	**12**	**13** ABCs of Generator Excitation Systems Details—P. 4	**14**
15	**16**	**17**	**18**	**19** SoutheastCon Hilton Bayfront St. Petersburg	**20** SoutheastCon Hilton Bayfront St. Petersburg Tutorial Details-P. 5	**21** SoutheastCon Hilton Bayfront St. Petersburg
22 SoutheastCon Hilton Bayfront St. Petersburg	**23**	**24**	**25**	**26**	**27** FPL Solar Tour Arcadia Details—P. 6	**28**
29	**30**					