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RELIABILITY FIRST



Note from the President

Dear Stakeholders,

I hope everyone's New Year is off to a fantastic start, and I can certainly say that is the case for us here at RF. Only two months into this new decade, I am already optimistic that this will be our best year yet – not only for RF but for the ERO as a whole.

In addition to welcoming Ben Felton and Joe Trentacosta to our Board and lining up an impressive agenda for our upcoming Spring Reliability and CIP Workshop, we celebrated our Third Annual Innovation Retreat and hosted the ERO's first-ever Internal Controls Workshop.

Our Innovation Retreat is one of my favorite days of the year because it demonstrates what we can accomplish when we truly embrace change and work together to stay ahead of the curve. Speaking of collaboration, I am thrilled that so many of you traveled to Cleveland (especially in February!) for the Internal Controls Workshop.

Our expectations were more than exceeded by the teamwork and engagement shown by the 130+ attendees,

as well as the willingness to uplift their peers shown by the presenters.

Both of these events showcase something I am exceptionally proud of: the forward-thinking and inclusive culture we have worked hard to cultivate. It is reassuring to see guests from NERC, FERC, our Board and the other Regional Entities at these types of events because both internal and ERO-wide support for fresh ideas and creative solutions are critical to successful progress.

In the spirit of continuous improvement, I hope to see many of you throughout the year as you take advantage of the valuable events taking place in each Region. Registration is filling up for our Spring Reliability and CIP Workshop in Detroit, and we are already looking forward to our Human Performance and Protection System Workshops this summer in Cleveland.

Forward Together,

Tim



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From the Board



RF is excited to welcome two new members to the Board of Directors for 2020: Ben Felton and Joe Trentacosta. In this newsletter, we have asked Joe Trentacosta, SVP & CIO at Southern Maryland Electric Cooperative (SMECO), to share some of his experience and thoughts for the upcoming term.

Please tell us a little about your educational background and professional experience.

I was born and raised in New York, and I stayed local with my education by attending Fordham University for my BS and New York University for my MBA. I started my 16-year career in the telecommunications industry at Verizon Wireless where I moved up the IT ranks to become Director – IT for the Washington/Baltimore region (this is what brought me to Maryland) and then Executive Director – End User Support for the Mid-Atlantic area.

I was hired by SMECO in 2003 as their first CIO, and I am currently the Senior VP and CIO responsible for IT, Security/Compliance, Safety and Customer Service. SMECO is an electric cooperative that ranks as the eleventh-largest out of the 800+ in the U.S. We are a member-owned nonprofit organization that provides electricity to more than 165,000 services in southern Maryland.

What sparked your interest in joining the RF Board?

I've been involved with this part of our business because my team is responsible for managing some of SMECO's many compliance efforts, including coordinating with NERC and RF. I appreciate the importance of SMECO – and all utilities across the industry – working closely with our regulators. Encouraging and developing these dynamic, collaborative relationships throughout the industry is key

to furthering our joint efforts of maintaining reliability and security. With SMECO's COO, Ken Capps, recently retiring from the RF Board, it's important that we lead by example in continuing such an impactful relationship.

How do you anticipate your past experience will contribute to serving RF?

My significant IT experience hopefully will allow me to help shape and inform CIP compliance efforts. In the electric utility business, we are striving to strengthen our security and compliance programs every day. The fast pace and ever-changing nature of our work make it even more critical that we collaborate across the industry to stay one step ahead of the bad actors out there.

Although small in size, SMECO has spent the past 15 years aggressively implementing state-of-the-art technology. This organization-wide progress ranges from creating formal programs for data analytics and enterprise risk management to establishing advanced infrastructure platforms such as storage area networks, virtualization technology, and active-active data centers. We have also implemented a number of member-facing self-service options.

What is happening in the industry today that you are most excited about?

I'm excited about the advancing world of digital communication where we connect the grid, the meter and the member. We need to satisfy our members who are always "on" and always using our services to stay connected. This is especially true of Gen Y/Millennials, who make up 22% of the population, and Gen Z, who make up 18% of the population. As an industry, are we ready?

Smart homes, digital assistants (like Alexa) and smart appliances are pushing this connectivity even further. We are living in a time of evolution for distributed generation, and we need to stay ahead of the curve in order to maximize the opportunities it will bring our members to better control their energy usage.

**ReliabilityFirst's
Board of Directors
and Committee
Meetings will be
held at the
RF Offices in
Cleveland, OH
March 18-19, 2020**

[Click here for details](#)



Updated Data Sampling Worksheets



Data sampling is an important tool for Compliance Monitoring, and ReliabilityFirst has made improvements to its sampling worksheet, known as Attachment C.

What's New?

Entity feedback and process review have led RF to separate each Standard and Requirement into its own Microsoft Excel document instead of the one, large workbook that was used in the past. This will provide entities with a more flexible and user-friendly experience when sending specific sample requirements to each identified Subject Matter Expert (SME) to populate.

Please keep in mind that these worksheets are templates and should be used as a guidance to help prepare for upcoming engagements. All entities will still receive Attachment Cs from RF as part of the audit or spot check notification package, and these may be customized dependent upon the specific engagement.

Where Can I Find the New Worksheets?

The updated Excel files can be found on the [Operations & Planning page](#) of RF's website. For ease of use, each file name includes the Standard or Requirement.

For questions or comments, please utilize the [Contact Us Page](#) on our website.

MISO Forward - Next Steps

MISO, like other regions, is facing profound changes that have reshaped its markets in recent years. MISO presented its [MISO FORWARD report](#) at the ReliabilityFirst Fall 2019 Workshop (and summarized in the September-October RF Newsletter), exploring these changes and the “3Ds” of overarching trends. To begin to address the changing landscape, MISO is focusing on three key themes of Availability, Flexibility, and Visibility. The report closes with a framework and action plans to address these system needs across three distinct stages: [Explore](#), [Decide](#), and [Do](#).

Since publishing the MISO FORWARD report in March 2019, MISO's progress on multiple initiatives signals that the report has accelerated organizational efforts to prepare for industry change. The report's action plans, across stages of [Explore](#), [Decide](#), and [Do](#), are integrated into MISO's 5-year forward-looking work plan, called the [Integrated Roadmap](#).

Two action steps from MISO FORWARD include publication of papers framing the RTO's approach regarding [Resource Availability and Need](#) and [Distributed Energy Resources](#). Additionally, MISO FORWARD 2020 is in final preparations for publication this March. MISO FORWARD 2020 will discuss how utility business models may diversify as the industry changes, which will in turn impact their needs from an RTO.

Additional actions include roadmap items detailed below. Updates can be found through the initiative links below, or summarized in this [one-page work plan](#). Together, the action items constitute a first pass at what work is required to address the changing resource mix.

Availability– The ability of transmission and energy resources to meet requirements at all hours:

- [Short Term Capacity \(IR010\)](#): Short-term capacity, which can provide energy within a relatively short period of time (e.g. 30 minutes) is an important tool for maintaining reliability. This project explores options, including existing and/or new pricing mechanisms, for ensuring availability of short-term capacity in an efficient manner to address Voltage and Local Reliability, regional, and system-wide requirements. Tariff revisions have been filed with FERC and MISO is working toward a Q4 2021 implementation.
- [Queue Improvement \(IR072\)](#): When faced with the long wait, queue customers may pursue interconnection at the distribution level due to expediency. MISO has limited visibility of distribution assets. Improving

queue process efficiency while balancing flexibility and risk will increase the number of generation resources available. FERC accepted MISO's filing for Docket No. ER20-41-000 and MISO is targeting a Q1 2020 implementation.

Flexibility– The ability to anticipate and adapt to frequent and significant changes in resource output and demand, including the enabling of new sources of flexibility:

- [Automatic Generation Control \(AGC\) Enhancement for Fast-Ramping Resources \(IR027\)](#). MISO identified opportunities to utilize fast-ramping resources and improve overall efficiency of the market. Regulating reserve suppliers can potentially reduce production costs by freeing up resources providing regulating reserve to provide energy and/or contingency reserves. FERC accepted filings in Docket Nos. ER19-2619-000 and -002 and MISO is targeting a Q1 2020 validation.
- [FERC Order 841 Compliance: Storage Participation \(IR062\)](#). MISO is working to establish a participation model for Energy Storage Resources to provide capacity, energy, ancillary services, and non-market products. MISO is targeting a Q2 2022 implementation.
- [Enhanced Modeling of Combined Cycle Generators \(IR002\)](#). Combined cycle are currently offered with a single offer curve. Increasing the modeling configurations provides market participants the ability to more accurately model costs and can result in production cost savings for the market. This is a high priority project on MISO's [Market System Enhancement](#) and MISO is working toward a Q2 2023 implementation.

Visibility– The ability to see and coordinate relevant resource, demand, and power flow attributes in operating and planning horizons:

- [Multi-day Operating Margin volumetric forecast \(MSC008\)](#). A Multi-Day volumetric forecast can better identify potential operating day issues in advance. This project is [live](#).
- [Distributed Energy Resources \(DER\) \(IR070\)](#). A high penetration of DERs could have notable implications for MISO and require a stronger transmission and distribution interface. The DER issue is intended to explore, and advance collaboratively-developed DER priorities with stakeholders. MISO is hosting DER stakeholder workshops with the Organization of MISO States to better frame the issues in 2020.

The Lighthouse

By: Lew Folkerth, Principal Reliability Consultant

Out-of-Band Management

In this recurring column, I explore various questions and concerns related to the NERC Critical Infrastructure Protection (CIP) Standards. I share my views and opinions with you, which are not binding. Rather, this information is intended to provoke discussion within your entity. It may also help you and your entity as you strive to improve your compliance posture and work toward continuous improvement in the reliability, security, resiliency and sustainability of your CIP compliance programs.

There are times that I also may discuss areas of the Standards that other entities may be struggling with and share my ideas to overcome their known issues. As with lighthouses, I can't steer your ship for you, but perhaps I can help shed light on the sometimes stormy waters of CIP compliance.

This is a condensed version of a more detailed article that can be found in full length on the RF website [here](#).

What is Out-of-Band Management?

Out-of-band management is a method of managing computer systems that does not rely on having a physical presence at the computer system. This approach involves a network interface on the computer system that is used outside of the normal network connectivity, hence the term "out-of-band." Since the purpose of out-of-band management is to manage the server remotely, almost all out-of-band management is a form of remote access.

Most data center-class servers have the capability for out-of-band management. For example, Dell offers its "integrated Dell Remote Access Controller (iDRAC)," and Hewlett Packard Enterprise offers the "integrated Lights Out (iLO)" controller. All server vendors I've researched offer some form of this capability.

Out-of-band management is usually implemented by adding a controller with its own network interface to the server. The controller is an additional small computer with extensive monitoring and control capabilities for the server.

Remote Console

A significant feature of a management controller is the ability to access the server's hardware console remotely. This is not the same as using remote access client software to sign in to a Windows or Linux operating system. Once you sign in to the management controller, you can bring up the remote console



40 Mile Point Lighthouse, Rogers City, MI – Photo: L Folkerth

and see the same display as the hardware video port on the server. The remote keyboard and mouse behave exactly like they are directly connected to the server.

Why is this important? The remote access capability is available even before the system boots its installed operating system. On power up, the remote console sees the boot-up sequence and can enter BIOS and other console-only modes to configure the system, possibly without further authentication.

Web Interface

The management controller has many more capabilities. Many of these can be accessed through a web interface via the management port on the server. The web interface capabilities include:

- Monitoring server temperatures, voltages and power consumption;
- Setting the device that the server will boot from next;
- Power on, power off, or perform a hardware reset to cause a reboot;
- Upload a disk image to the management controller internal storage and then boot from that image;
- Create a blank disk image on the internal storage and make that image accessible to the server; and
- Download an image from the internal storage.

The Lighthouse

Continued from page 5

One of the exercises I've performed involved obtaining administrative access to the server through documented features of the management controller (and a little password cracking). With only default credentials, I was able to obtain files containing encrypted passwords. I then cracked the encrypted passwords on a penetration testing system and was able to remotely sign in to the server's operating system with full administrative privileges.

Are out-of-band management capabilities inherently bad? Of course not. They can be very useful in managing a server at locations such as substations or control centers that do not have local IT staff to manage the IT-type systems. Use of out-of-band management capabilities can improve reliability by shortening downtime and by permitting monitoring of systems so preventive actions can be taken in a timely manner.

Compliance and Security Recommendations

Identification

The best approach I've seen in applying the CIP Standards is to identify the management controller as a Cyber Asset that is part of the hardware of the server. Since it is part of the server, it must be classified the same as the server. For example, if the server is part of a high impact BES Cyber System, then the management controller would be identified as part of the same BES Cyber System. The controller would be tracked in your documentation as a separate Cyber Asset, even though it is actually part of the server.

Whether you use this approach or devise an approach of your own, be sure to identify and document ALL of these management controllers. Audit teams are aware that these capabilities, if not protected, can present a high risk to reliability, and they are actively monitoring for any of these interfaces you might miss.

Networking

Most server vendors recommend connecting the management controller to a network that is separate from the other networks connected to the server, hence the "out-of-band" designation. For servers within an ESP, this separate network must also be within an ESP. Otherwise the management controller would be an EAP, a role it is not suited to adopt.

Access Control

You must control access to the management controller at least as tightly as you

control access to the server itself. Interactive Remote Access to a management controller within an ESP must be through an Intermediate System.

Baselines, Patching, Etc.

The management controller should be subject to the same requirements as the server for baselines and change control, patch management, vulnerability assessment, ports and services, and password management.

Conclusion

Be sure to review all of your Cyber Assets within CIP scope and identify the out-of-band management capabilities of each. Document the presence of this capability on each applicable server, identify these devices in your Cyber Asset lists or baselines, and apply the appropriate CIP Standards to each. Be certain you have changed the default passwords.

Requests for Assistance

If you are an entity registered within the RF Region and believe you need assistance in sorting your way through this or any compliance related issue, remember RF has the Assist Visit program. Submit an Assist Visit Request via the RF website [here](#).

Feedback

Please provide any feedback you may have on these articles. Suggestions for topics are always welcome and appreciated.

Lew Folkerth, Principal Reliability Consultant, can be reached [here](#).

Regulatory Affairs

FERC Accepts NERC's Performance Assessment



Every five years, NERC submits a Performance Assessment to FERC, showing how NERC and the Regional Entities have satisfied the applicable statutory and regulatory criteria for maintaining certification as the Electric Reliability Organization.

On January 23, FERC issued an order accepting NERC's Assessment for the 2014-2018 period, stating that NERC and the Regional Entities met their necessary requirements. FERC found that NERC has successfully developed and enforced Reliability Standards, and continues to meet the criteria for ERO Certification.

FERC recognized NERC's continuous efforts to better coordinate strategies and goals with the Regional Entities through the ERO Enterprise Long-Term Strategy. However, also FERC identified some key areas of improvement.

Most notably, FERC asked NERC to increase the comprehensiveness of its audits of the six Regional Entities and to update the Sanction Guidelines to better fit the risk-based approach to enforcement.

The full report is available [here](#).



Standards Update

This recurring column provides our Registered Entities with relevant and recent updates to the Reliability Standards and Requirements.

General NERC Standards News

Compliance Monitoring and Enforcement Program Annual Report Now Available

The [Compliance Monitoring and Enforcement Program \(CMEP\) Annual Report](#) is a comprehensive summary of CMEP activities in 2019, and has data regarding overarching ERO compliance items. Additionally, the CMEP report contains the ERO's CMEP priorities for 2020.

Other Resources Posted

NERC has posted the following additional resources:

- The revised ERO Enterprise Evidence Request Tool Version 4.0, which is a request for information tool for CIP Compliance monitoring engagements.
- A [slide presentation](#) and [streaming webinar](#) for the Project 2019-03 – Cyber Security Supply Chain Risks webinar.

Notable NERC Filings

In January-February, NERC filed the following with FERC:

- Compliance Filing in Response to January 16, 2013, FERC Order. This filing includes an unaudited report of NERC's budget to actual variance information for Q4 of 2019.
- Petition for Approval of Proposed Reliability Standard TPL-007-4. TPL-007-4 addresses Transmission System Planned Performance for Geomagnetic Disturbance Events.

NERC's filings can be found [here](#).

Notable FERC Issuances

In January-February, FERC issued the following relevant orders:

- Order Approving Reliability Standard TPL-001-5. TPL-001-5 addresses Transmission System Planning Performance Requirements. The primary differences between TPL-001-4 and TPL-001-5 are an increased focus on: (1) single points of failure of protection systems, and (2) planned maintenance outages and stability analysis for spare equipment strategies. The new Standard requires planning coordinators and transmission planners to perform annual planning assessments of their systems considering conditions and contingencies with a risk-based approach. Specifically, affected entities must comprehensively study and prepare for planning events and extreme events.
- Order Approving CIP-012-1 Cyber Security-Communications between Control Centers. NERC developed CIP-012-1 pursuant to an order from FERC to address entities implementing controls to protect data communication, specifically Real-time Assessments and Real-time monitoring data, between bulk electric system Control Centers.
- Order on Five-Year Performance Assessment. FERC issued an order accepting the ERO's third Performance Assessment, and found that NERC continues to satisfy applicable statutory and regulatory criteria for certification as the ERO, and that the Regional Entities also satisfy those thresholds.

Relevant FERC issuances can be found [here](#).

Standards Update

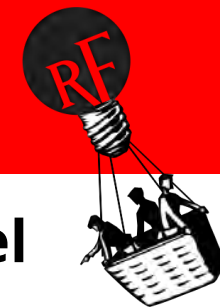
New Standards Projects

Several new Standards projects and new project phases are underway. Projects are described on the NERC [Standards](#) website, along with links to all drafts, voting results, and similar materials. Recent additions include the following projects:

Project	Action	Start/End Date
Project 2019-03-Cyber Security Supply Chain Risks	Initial Ballots and Non-Binding Polls Comment Period	3/02/20 - 03/11/20 1/27/20 - 2/25/20
Recent and Upcoming Standards Enforcement Dates		
April 1, 2020	CIP-003-8 – Cyber Security – Security Management Controls	
July 1, 2020	CIP-005-6 – Cyber Security – Electronic Security Perimeter(s); CIP-010-3 – Cyber Security – Configuration Change Management and Vulnerability Assessments; CIP-013-1 – Cyber Security – Supply Chain Risk Management; PRC-002-2 – Disturbance Monitoring and Reporting Requirements (50% compliance for Requirements 2-4, 6-11)	
October 1, 2020	PER-006-1 – Specific Training for Personnel; PRC-027-1 – Coordination of Protection Systems for Performance during Faults	
January 1, 2021	CIP-008-6 – Cyber Security – Incident Reporting and Response Planning; PRC-012-2 – Remedial Action Schemes	
July 1, 2021	TPL-007-3 – Transmission System Planned Performance for Geomagnetic Disturbance Events (Requirements 11 and 12)	
January 1, 2022	TPL-007-3 - Transmission System Planned Performance for Geomagnetic Disturbance Events (Requirements 6, 6.1-6.4, 10, 10.1-10.4)	
July 1, 2022	PRC-002-2 – Disturbance Monitoring and Reporting Requirements (100% compliance for Requirements 2-4, 6-11)	
January 1, 2023	TPL-007-3 – Transmission System Planned Performance for Geomagnetic Disturbance Events (Requirements R3, R4, 4.1. 4.1.1–4.1.2, 4.2, 4.3, 4.3.1, R8, 8.1, 8.1.1–8.1.2, 8.3, 8.4, and 8.4.1)	
January 1, 2024	TPL-007-3 – Transmission System Planned Performance for Geomagnetic Disturbance Events (Requirements R7, 7.1, 7.2, 7.3, 7.3.1–7.3.2, 7.4, 7.4.1–7.4.3, 7.5, and 7.5.1.)	

These effective dates can be found [here](#).

Watt's Up at RF



Follow-Up with Our New Vice President and General Counsel



2019 was a great year for many reasons – and one of those reasons was Rob Eckenrod joining the RF team as Vice President and General Counsel. The first newsletter of 2019 included an article introducing Rob with a series of questions, so we're circling back to share his thoughts on year one and beyond.

As a follow up to last year's question about how you got into the energy industry, what is the biggest change you have seen in the industry since you began?

The regression from the competitive, wholesale electric power market we saw emerge almost 20 years ago to more state subsidized programs now is

a huge change. We see this especially in our Region, and it goes hand-in-hand with the changing resource mix that has steadily been gaining traction as a complex risk category. It's important that we don't simply view this as a one-dimensional change because the implications of resource adequacy and resource reliability are dynamic. This change in regulatory philosophy creates a ripple effect throughout wholesale power markets and our industry overall.

As a follow up to the question about what you were looking forward to accomplishing at RF, what has been the highlight of your first year?

I'm very proud of the reciprocal learning between myself and the RF staff. During my tenure at PJM, I interacted with many of the RF team members, but I wasn't truly acquainted with everything that happens behind the scenes at the Regional Entity level to ensure that the electric grid is reliable and secure. The team's willingness to teach me about their day-to-day work has been energizing, and the enthusiasm and pride everyone has for their work was apparent from my very first day. Recognizing and embracing the distinctions between working at a Regional Transmission Organization and a Regional

Entity has actually been an asset. My unique perspective has allowed me to approach opportunities and issues from a different standpoint, and that has been to everyone's benefit.

I'm also happy to report that I accomplished the goal I shared in last year's article of exploring Cleveland's thriving micro-brewery scene.

Looking ahead to your second year as General Counsel, what are you most excited about for 2020?

Although we're just getting started in 2020, there was such great positive momentum from 2019 that I'm already confident it will be the ERO's best year yet. As it relates to the security and reliability of the BPS, I'm excited about Continuous Improvement (CI). It can feel much easier to stay in the comfort zone of solely focusing on compliance, but CI is an important item in everyone's toolbox that can add value to each department at your organization – from O&P to HR and everything in between. Preparation instead of reaction is at the heart of CI, and it encourages me to know that our industry recognizes the significant benefits of employing CI best practices.

The second thing I'm excited about is developing my knowledge of RF and how we interact with our different audiences and stakeholders. By understanding the nuances of our various relationships, we can grow and develop our impact in new areas. Building new connections, both within and outside our industry, can be instrumental in furthering our mission and vital work.

Watt's Up at RF



Congratulations to the 2019 Innovation Award Winners!

New Innovation:

Sam Ciccone, Senior Reliability Consultant, and Dwayne Fewless, Principal Analyst, Event Analysis & Situational Awareness, for their Risk Register project to create a database of risks underlying the NERC Reliability Standards.

Continuous Improvement:

Tony Freeman, Principal Analyst, Risk Analysis & Mitigation, for his project to create an internal SharePoint dashboard making entity risk factors easily accessible to the Compliance team.



RF Hosts Third Annual Innovation Awards and Retreat

After receiving positive feedback from staff and guests the past two years, ReliabilityFirst again hosted its Innovation Retreat. The winning projects were announced at the RF staff meeting in December where the innovators were recognized for their exceptional work.

The purpose of the off-site Retreat day is to give the group of finalists access to peers, management and experts who can help them refine their innovations in order to bring them to fruition.

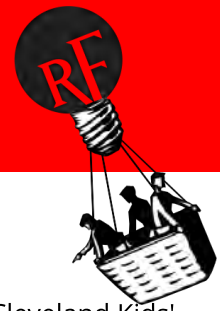
This year's Retreat was held at Cleveland's Topgolf location on Feb. 12 and was attended by nearly 30 people. The inspiring day kicked off with highly informative and relevant presentations from guest speakers Dinesh Kumar, Founder of Mitovia, and Dr. Rebecca Slayton, Cybersecurity and Infrastructure Advisor from Cornell University.

In addition to the distinguished speakers, we were thrilled to welcome Lam Chung, VP and Engineer for Strategy, Innovation and Finance at MRO; Mark Lauby, Senior VP and Chief Engineer at NERC; Brent Greene, RF Independent Director; and Bob Mattiuz, RF Transmission Sector Director.

The winning projects are chosen from a group of finalists – 11 in total this year – that were selected from an even larger pool of projects which can be submitted by any RF staff member. This year was the first time that two projects were recognized as winners because an additional award was created for the best continuous improvement innovation of routine work.



Watt's Up at RF



RF Day of Giving and Community Involvement

According to GuideStar, a highly respected source of financial information and ratings for U.S. nonprofits, corporate volunteerism is not just on the rise – it's good for business. While it may seem counterintuitive that giving employees time off to volunteer benefits employers, research shows it actually reduces costs (i.e., recruiting and training new staff) and boosts employee engagement.

Last year, we committed to taking an active role in bettering our communities, and we had a terrific time doing it!

In September, a group of 20 RF team members spent the day building storage sheds for Lorain County Habitat for Humanity.



In October, we celebrated our first annual RF Day of Giving. A group of 41 employees split into teams to donate their time at four different charitable organizations: Shoes and Clothes for Kids, Laura's Home Women's Crisis



Center, Cleveland Kids' Book Bank, and Wigs for Kids. With a total of 117 hours volunteered, it was a great success that we look forward to doing more of in the future.

In December, employees volunteered at the Greater Cleveland Food Bank to support their Hunger-Free Holidays campaign.



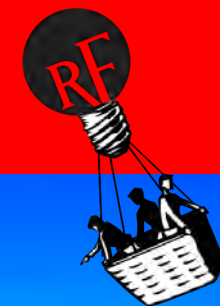
RF team members who work remotely also pitch in to help their own communities and beyond:

Derek Kassimer, Principal Technical Auditor, volunteers at his church to deliver fish to local businesses and schools on Fridays during Lent.

Curtis Crum, Senior Technical Auditor, travels to third world countries each year for mission trips.

Lew Folkerth, Principal Reliability Consultant, donated his photography skills (also seen in his Lighthouse articles) at his local fire department to take portraits of the firefighters to be displayed in the township's meeting hall in recognition of their dedication and service.

Watt's Up at RF



Protection System Workshop for Technical Personnel

August 18-19, 2020

ReliabilityFirst is hosting its sixth annual protection system educational workshop for technical personnel on August 18-19, 2020 at the ESC Conference Center in Cleveland, OH. There is no fee to attend, and it is open to anyone who is interested.

This workshop will cover a diverse range of topics and discussions relative to Protection Systems tailored to the needs of technical personnel and will feature speakers from RF, industry subject matter experts and others. Topics slated for discussion include capacitor bank protection, protection simplicity, and IEC 61850 regarding communication in substation. This will be a highly interactive experience with an opportunity to share ideas, successes, questions and stories. There will also be vendor presentation and displays available during the event.

Intended Audience

- Substation Electricians/Supervisors
- Substation Field/Commissioning Engineers Relay Technicians
- Relay Engineers and others who work directly with this equipment
- Communications Engineers/Technicians
- Company Trainers on this subject
- Others interested in these topics

[Register](#)

Human Performance Workshop for Technical Personnel

August 19-20, 2020

ReliabilityFirst is hosting its third annual Human Performance workshop on August 19-20, 2020 at the ESC Conference Center in Cleveland, OH. There is no fee to attend this workshop, and it is open to anyone who is interested.

This workshop will focus on practical application of human performance techniques and concepts for front-line activities that attendees can use in transmission reliability-related work areas such as operations, asset management, design, protection, maintenance and others. Confirmed speakers include Dr. Jake Mazulewicz, Knowledge Vine, and Wes Harvard of Luminant Energy.

There will be an interactive session and industry speakers sharing ideas, successes and stories.

Intended Audience

- Substation and Transmission maintenance
- Protection and Controls
- Operations Control Rooms, including tools support personnel for EMS, SCADA, etc.
- Asset Design groups (substation and transmission)
- Asset Management groups
- Other leaders interested in these topics

[Register](#)

2020 HP Improvement Overview

August 19, 2020

New this year, the HP Improvement Overview is a pre-workshop educational session taught by Dr. Jake Mazulewicz. There is no fee to attend this session, and it is open to anyone who is interested. Space will be limited to 35 attendees.

[Register](#)

RF Spring Workshop April 21-23, 2020



Mark your calendars to join us at ReliabilityFirst's 2020 Spring Workshop in Detroit, MI. The workshop is scheduled for April 21-23, 2020 at The Westin Detroit Metropolitan Airport.

Day One:

Reliability Workshop Theme: Modeling

Day Two:

CUG and CICPC Meetings

Day Three:

CIP Workshop Theme: Supply Chain and CIP-013

We hope to see you there!

[Register](#)

Calendar of Events



The complete calendar of RF Upcoming Events is located on our

Date	RF Upcoming Events	Location
March 16	Reliability and Compliance Open Forum Call	Conference Call
March 18	Board of Directors and Committee Meetings	Cleveland, OH
March 19	Board of Directors and Committee Meetings	Cleveland, OH
April 20	Reliability and Compliance Open Forum Call	Conference Call
April 21-23	Spring Workshop	Detroit, MI
May 18	Reliability and Compliance Open Forum Call	Conference Call
June 15	Reliability and Compliance Open Forum Call	Conference Call
July 20	Reliability and Compliance Open Forum Call	Conference Call
August 17	Reliability and Compliance Open Forum Call	Conference Call
August 18-19	6th Annual Protection System Workshop for Technical Personnel	Cleveland, OH
August 19	HP Improvement Overview	Cleveland, OH
August 19-20	3rd Annual Human Performance Workshop	Cleveland, OH

Industry Events:

Date	Industry Upcoming Events
March 03	Technical Conference regarding Ship Shoal Pipeline Company (Docket No. IS20-83-000) (Washington, DC)
March 19	FERC Open Meeting
March 26	Eastern Interconnection Reliability Assessment Group Workshop
April 1	Industry Webinar Project 2016-02 Modifications to CIP Standards
April 16	FERC Open Meeting
April 28-29	GADS Wind Training
May 21	FERC Open Meeting
June 18	FERC Open Meeting
June 23-25	Technical Conference regarding Increasing Market and Planning Efficiency and Enhancing Resilience through Improved Software (Docket No. AD10-12-011) (Washington, DC) (Free Web Cast)
June 25	Technical Conference regarding reliability of the Bulk-Power System (Docket No. AD20-7-000) (Washington, DC) (Free Web Cast)

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