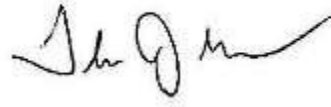


To: NERC Board of Trustees (BOT)
From: Thomas J. Galloway, NATF President and CEO
Date: April 20, 2018
Subject: NATF Periodic Update to the NERC BOT – May 2018
Attachments: 1. NATF External Newsletter – April 2018



The North American Transmission Forum (NATF) mission is to promote excellence in the reliable and resilient operation of the electric transmission system, with the vision of continuous improvement. To augment our strategic goals, the NATF has five 2018 operational/technical focus areas as follows:

1. Resiliency/security (tangible actions to mitigate, respond to, and recover from severe events)
2. Human performance / skilled workforce (reduced error frequency/consequences)
3. Equipment performance and asset management
4. Operating experience exchange (cause analyses, corrective actions, and lessons learned)
5. Continuous performance improvement, mechanisms, processes, training

1. Resiliency/Security

Resiliency Summits

The NATF and EPRI conduct joint resiliency summits (roughly twice per year). The October 2017 summit focused on member sharing regarding tangible actions taken to harden systems. The May 2018 summit will focus on recovery and restoration, including supplemental operating strategies.

Supplemental Operating Strategies

The NATF established a project team to specifically evaluate how to operate the grid “manually” in the face of a significant event impacting energy management systems (EMS) and/or supervisory control and data acquisition (SCADA) systems. This project defined a rank-ordered set of functional capabilities that would have to be emulated and associated actions to do so. This project is moving on to consider impacts on physical assets. Additionally, the team is assessing the optimal industry posture needed to respond to DOE Orders issued in the face of a grid security emergency.

Supply Chain Cyber Controls

NERC’s BOT asked the NATF and North American Generator Forum (NAGF) to “develop white papers to address best and leading practices in supply chain management, including procurement, specifications, vendor requirements and existing equipment management, that are shared across the membership of each Forum, and to the extent permissible under any applicable confidentiality requirements, distribute such white papers to industry.”

The NATF has issued documents related to CIP-005 and CIP-010 to support the NERC request and to serve as guidance for NATF members and the industry (a status update for those is available in the attached external newsletter).

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The NATF is also composing a supply chain risk management framework for more efficient implementation of CIP-013 compliance by industry and its vendors. The NATF is collaborating with the ISO/RTO Council, NAGF, NRECA, and EEI with a goal of producing value-added, industry-supported supply chain risk management guidance.

One aspect of this business-based approach, as used successfully in other industries where cyber security risk must be managed, utilizes common cyber security controls:

- Specify supply chain cyber security requirements for vendors supplying relevant products and services to the industry;
- Request vendors to certify they are compliant with those requirements;
- Specify third-party audits to confirm vendor status.

Open versions of those documents are targeted for completion by the August 2018 NERC BOT meeting.

2. Human Performance / Skilled Workforce

In March 2018, the NATF and NERC completed our second joint human performance workshop. This joint offering is seen as way to leverage complementary strengths—NERC’s deep expertise on the science behind human performance and the NATF’s focus on practical field application of error reduction and consequence-mitigation techniques. In addition, the NATF is continuing work to identify ideal training curricula for all reliability-relevant positions.

3. Equipment Performance and Asset Management

The NATF has systematically worked with members to reduce the number of “unknown” causes for transmission outages, and NATF metrics are used to highlight areas of lagging performance that need added focus through one of our practices working groups (e.g., lines or substations). In addition, the NATF continues close collaboration with EPRI to understand equipment failure outliers and affect improvements.

4. Operating Experience Exchange

A key focus for the NATF is the timely sharing of detailed information among our members. A primary tool for that sharing is our operating experience program. Over that last several years, the NATF has steadily increased the number of operating experience reports (OERs) generated as well as the fraction of the members providing reports. In concert, the scope and depth of the reports has steadily improved. Recently, the NATF Board of Directors approved sharing a subset of these reports publicly as a benefit to the industry. These “Open Distribution” OERs are posted on our [public website](#).

5. Continuous Performance Improvement

The NATF has several mechanisms to support continuous performance improvement, most notably our Peer Review Program. Two years ago, the NATF added a reduced-scope peer review option for smaller members to achieve a comparable performance benefit. This has increased the pool of NATF members engaged in the Peer Review Program. More recently, the NATF has created a range of self-assessment tools for member use during

the interceding period between reviews. In addition, the NATF has augmented our risk/control practices area and added other elements to place further focus on members' capabilities to "find and fix" their own issues.

North American Transmission Forum External Newsletter

April 2018

Redacted Operating Experience Reports

The NATF works with its members to identify and communicate timely and actionable operating experience and other reliability information regarding risks, vulnerabilities, events, adverse trends, lessons learned, and superior practices. NATF “operating experience” can be either positive or negative and span any transmission (reliability, resiliency, or safety) learning opportunity worth sharing or for potential trending—regardless of actual impact or cause. One of the key benefits for sharing operating experience information is the opportunity for members to learn without experiencing those lessons first-hand.

As an added value for NATF members and benefit to the industry, the NATF has begun to develop redacted operating experience reports, which are posted on the NATF public site at: <http://www.natf.net/documents>.

Members and other utilities may use the redacted reports internally and share with their contractors to help improve safety, reliability, and resiliency.

NERC Compliance Implementation Guidance Submittals and Endorsement

On a case-basis, the NATF develops practice or guidance documents related to topics that are associated with NERC Reliability Standards. Below is an update of documents submitted to NERC for consideration as compliance “Implementation Guidance.”

NERC recently posted three NATF documents as “ERO Enterprise-endorsed Implementation Guidance” on its [Compliance Guidance website](#):

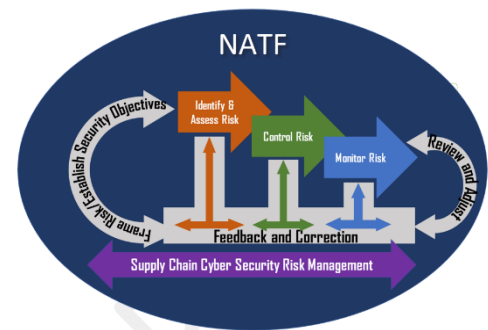
- “CIP-014-2_R5_Developing_and_Implementing_Physical_Security_Plans_(NATF)”
 - On NATF site as “NATF Practices Document for CIP-014-2 R5”
- “CIP-010-3 R1.6 Software Integrity and Authenticity”
 - On NATF site as “NATF Guidance for CIP-010-3 Software Integrity”
- CIP-014-2 R4 Evaluating Potential Physical Security Attack”
 - On NATF site as “NATF Practices Document for CIP-014-2 R4”

As noted, the documents are also posted on our [public site](#).

Cybersecurity Supply Chain Risk Management

A cross-functional NATF project team is working to develop a supply chain risk management framework and practices and guidance for cyber security supply chain risk management and the associated Reliability Standards (CIP-013, CIP-005, CIP-010).

As noted above, NERC accepted one of our CIP-010 documents as “ERO Enterprise-endorsed Implementation Guidance.” The NATF also submitted two other documents (that address supply chain standards



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requirements in CIP-010-2 and CIP-005-6) for consideration as Implementation Guidance that NERC chose not to endorse. The NATF drafting teams and staff are reviewing next steps.

Regarding CIP-013, the NATF supply chain group drafted a white paper describing practices for establishing and implementing a supply chain cyber security risk management plan. The draft is being reviewed by NATF members and by leadership, staff, and designated representatives of select industry organizations/groups with whom the NATF team has been collaborating and coordinating (ISO/RTO Council, NRECA/APPA, EEI, NAGF, NERC CIPC). After review, the NATF plans to develop a version of the white paper for industry use and submit an associated document to NERC for consideration as Implementation Guidance as an approach to comply with CIP-013.

Protection System Misoperations Report

The NATF Protection System Misoperations Analysis Initiative began in 2015. As part of this initiative, the NATF requests Misoperation data from member companies, calculates metrics, and provides an analysis of Misoperation causes. The goals are to support peer-to-peer benchmarking, recommend System Protection Practices Group activities to address significant causes of misoperations, provide information members can use to reduce misoperations, and position NATF as a source of information and insight on protection system performance.

Annual Report

Each year, the Misoperations Analysis Working Group prepares a Protection System Misoperation Analysis Initiative Annual Report to analyze misoperation categories and causes.

Metrics

The NATF calculates three metrics:



A small number of misoperations are failures to trip or slow trips, which are reflected in the dependability metric. The majority of misoperations are unnecessary trips, which drives the security metric lower. The separate metrics provided by the NATF initiative help us understand the nature of misoperations and, in some cases, see how different protection system design philosophies affect the balance between dependability and security.

It is important to calculate separate dependability and security metrics. A focus on improving security without monitoring how those improvements affect dependability could allow negative impacts on dependability to go undetected.

Analysis and Recommendations

The most recent annual report provided 31 recommendations to members, the Misoperation Analysis Working Group, and the System Protection Practice Group, ranging from benchmarking approaches to misoperations reporting and cause analysis.

External Coordination

The NATF interfaces with industry partners and regulatory agencies in a variety of ways, including joint workshops and webinars. Recent and upcoming activities include:

- [Inverter-Based Resource Webinar Series](#)
- [Joint NERC/NATF Human Performance Conference and Workshops](#) (March 27-29)
- [NERC-NATF-EPRI 2018 Power System Modeling Conference](#) (June 20-21)

For more information about the NATF, please visit www.natf.net.