NASPI Control Room Solutions Task Team Monthly Meeting

Presenters: Mike Cassiadoro & Jim Kleitsch

May 17, 2017

Agenda

I. Introductions

II. Review Status of CRSTT Work Products
   - Focus Area Documents
   - Video Event Files
   - Use Case Documents

III. Provide Update on CRSTT Industry Outreach Efforts

IV. Review feedback received on *GEN-05 – Nuclear Plant Voltage Oscillations* and determine next steps

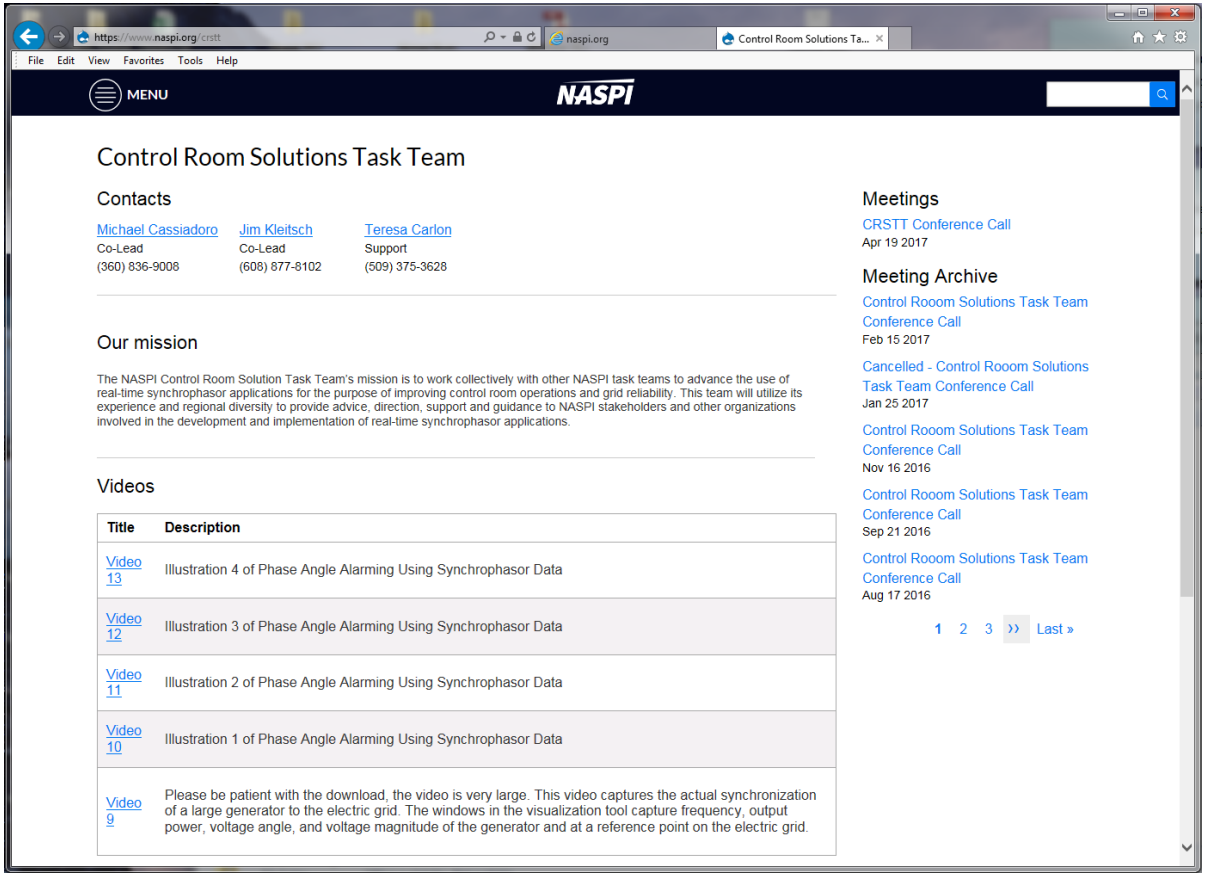
V. Adjourn

Focus Area Documents

1. **System Islanding Detection and Blackstart Restoration –Posted in June 2015**
   - (Kleitsch –ATC, Cassiadoro –TRS)
2. **Using Synchrophasor Data for Voltage Stability Assessment –Posted in Nov. 2015**
   - **(Farantatos** –EPRI, Vaiman –V&R Energy)
3. **Using Synchrophasor Data for Phase Angle Monitoring –Posted in May 2016**
   - (Cassiadoro –TRS, Nuthalapati -ERCOT)
4. **Enhanced State Estimation Survey –Preliminary responses received, more analysis needed.**
   - (Vaiman –V&R Energy, Kleitsch –ATC)
5. **Oscillation Detection**
   - (Nuthalapati –Peak, Dyer –EPG, Blevins and Rjagopalan –ERCOT, Patel -EPRI)
6. **Determining Disturbance Locations**
   - (Dyer –EPG, Zweigle –SEL Inc., Cassiadoro –TRS)
7. **Using Synchrophasor Data to Monitor Reactive Power Balancing**
   - (Cassiadoro -TRS, SCE –A.J, Peak RC –Zhang, Vaiman –V&R Energy)

Video Event Files

- Objective: continue to expand video library of events to demonstrate the value of synchrophasor data when analyzing disturbances



Use Case Documents

Event ID	Event	Event Category	Entities Involved	Event Description	Extended Description in Related NASPI Technical Paper	Safety Impact	Reliability Impact	Budgetary Impact
TE02	Failing potential transformer	Transmission Equipment	ATC	Abnormal voltage signature found while reviewing PMU data led to discovery of a failing potential transformer which was subsequently isolated and replaced.	p.38	The utility avoided safety risk to personnel that might have been in close proximity to the PT during its failure.		Utility avoided costs associated with customer minutes of interruption that would have resulted from the potential transformer's failure had the condition not been identified and a mobile transformer placed in service to facilitate the outages necessary for its replacement.
TE03	Loose connections in potential circuits	Transmission Equipment	OG&E	Fluctuations observed in positive sequence voltage data collected from PMUs led to discovery of a loose fuse connection in a CCVT safety switch. PMU data has been used in a similar fashion to reveal faulty terminations, animal-damaged conductor and contact corrosion.	p.40			Utility avoided costs associated with equipment damage and customer minutes of interruption that might have resulted had the issues not been addressed.
TE04	Failing voltage transformer	Transmission Equipment	Dominion	Sporadic voltage dips and fluctuations observed on a 500 kV line led to discovery of a failing CCVT which was subsequently isolated prior to its imminent failure.	p.42	The utility avoided safety risk to personnel that might have been in close proximity to the CCVT during its imminent failure.		Utility avoided costs associated with equipment damage that might have resulted from the CCVT's failure.
TE05	Identifying 69 kV arrester failure	Transmission Equipment	ATC	The details of a 69kV customer impact event were identified within two minutes by control room engineers reviewing PMU data. The fault could not be observed with SCADA data.	p.44		Utility able to identify and isolate the failed lightning arrestor shortly after relay operation occurred.	

- **Develop 1-2 page summary docs to educate end users.**
- **Expand effort to other use cases once format has been agreed upon.**

Industry Outreach – IEEE ISGT

Dan, Marianna, and Mike participating in a panel for **"Industry Best Practices in Using Synchrophasor Technology"** during the **IEEE Innovative Smart Grid Technologies (ISGT) Meeting** in Washington, D.C**.**, on April 23-26, 2017.

Conference website is http://sites.ieee.org/isgt-2017/

This session was organized jointly by IEEE PES Cascading Failure Working Group (CFWG) and NASPI CRSTT in collaboration with other Task Teams.

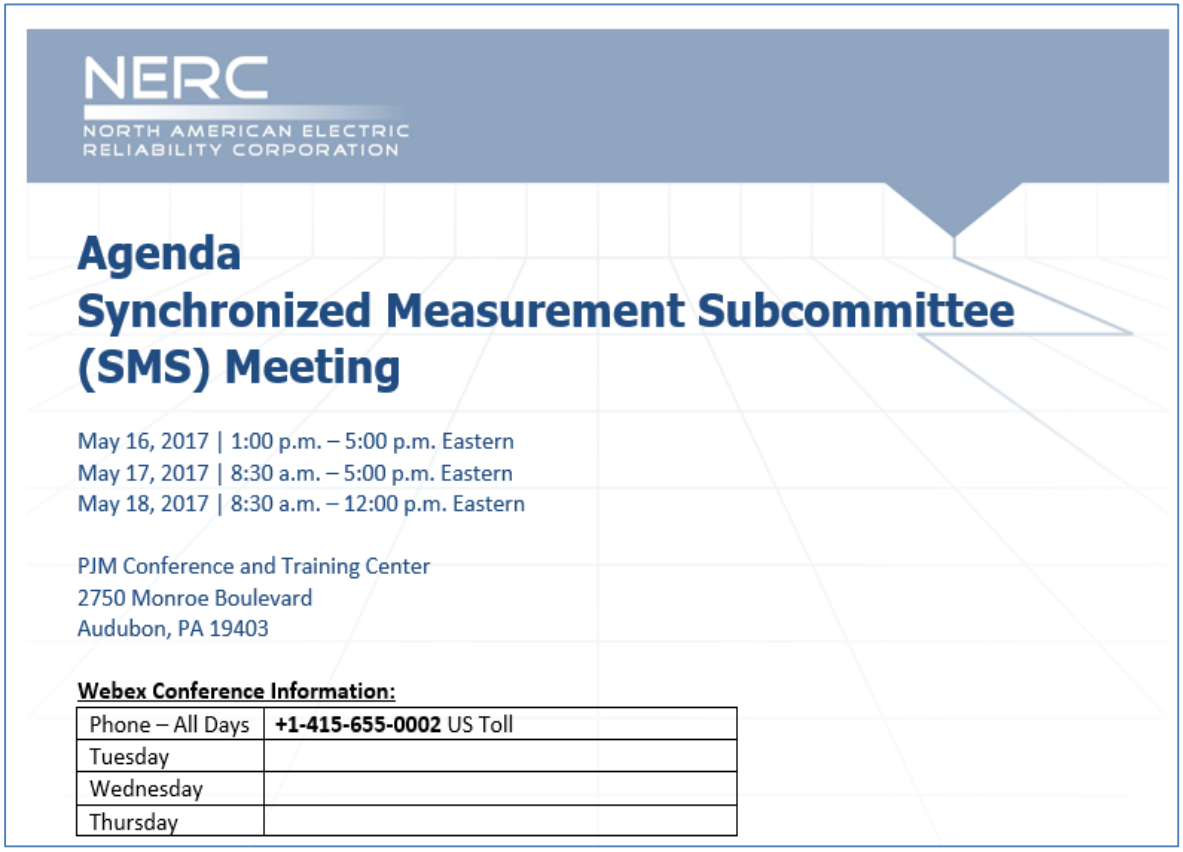
Agenda:

Using Synchrophasors for Detection and Prevention of Major System Blackouts: Framework and Recommendations of **IEEE PES CFWG.**

1. **NASPI Task Teams** – Advancing the Use of Synchrophasor Data in the Operations Horizon
2. Synchrophasor Deployment and Synchrophasor Based Applications at **SDG&E**
3. Integrating Synchrophasors in the Control Room at **PJM**
4. **ERCOT** Post Smart Grid Regional Demonstration Project Roadmap
5. **BPA** Experience with Synchrophasors: From Wide-Area Measurements to Wide-Area Control
6. Q&A session and discussion

Details on the panel session are available from http://sites.ieee.org/isgt-2017/panels/. Presentations will also be posted or made available through the NASPI website.

Industry Outreach – NERC SMS



NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda
Synchronized Measurement Subcommittee (SMS) Meeting

May 16, 2017 | 1:00 p.m. – 5:00 p.m. Eastern
May 17, 2017 | 8:30 a.m. – 5:00 p.m. Eastern
May 18, 2017 | 8:30 a.m. – 12:00 p.m. Eastern

PJM Conference and Training Center
2750 Monroe Boulevard
Audubon, PA 19403

Webex Conference Information:

Phone – All Days	**+1-415-655-0002** US Toll
Tuesday	
Wednesday	
Thursday	

Key topics being discussed include:

- **Cybersecurity issues**
- **Recent forced oscillation examples**
- **Linear state estimation**
- **System model validation**
- **Recent PPMV examples**

GEN-05 – Nuclear Plant Voltage Oscillations

Placeholder: Share latest copy of use case document to review proposed changes and determine next steps.

CRSTT – Primary Contacts

Name: Michael Cassiadoro

Email: mcassiadoro@totalreliabilitysolutions.com

Phone: 360-836-9008

Name: Jim Kleitsch

Email: jkleitsch@atcllc.com

Phone: 608-877-8102

Next NASPI CRSTT Conference Call: June 21, 2017
Next NASPI WG Meeting: September 26-27, 2017 in Springfield, MA