PJM 2014 SPRING RTO RESTORATION DRILL

Milford, PA

February 10 – 12, 2014

Last Updated: 01/24/2014
COMMUNICATIONS TESTING

PJM will conduct a test of the communication systems on Monday, February 10, 2014. The test will begin with an SOS conference call at 0900 hours EST in which all participants will review their responsibilities and discuss any communication issues. All phone, fax and email systems utilized during the drill will be tested at this time. The communications testing should be completed by 1000 hours EST.

RTO SPRING DRILL OVERVIEW

A WebEx session, beginning at 1030 EST on Monday February 10, will be available for all participants in which PJM will discuss:

- SOS Conference Calls
- Drill WebEx information
- Standards
  - Associated paperwork
- Member Company expectations
  - How to complete and submit Reports
  - Logable Items
- PJM Roles

DRILL COMMENCEMENT AND DURATION

PJM will conduct a two day restoration drill, commencing on Tuesday, February 11, 2014 at 0800 hours EST*. The drill will be initiated via an All-Call message on the Real Time All-Call line by the PJM Supervising Dispatcher. The message will indicate the precipitating event. Drill activities will be suspended at 1400 hours EST. At 1415 hours EST, an SOS conference call will be held to evaluate the first day and discuss second day strategies and objectives. On Wednesday, February 12, 2013 at 0800 hours EST, an all – call message will initiate the continuation of the drill. The drill will end at 1300 hours EST. At 1400 hours EST, PJM will conduct an SOS conference call debrief.

*Note: The drill will begin at 0800 hours EST to allow for time difference across the footprint. The second day’s drill activities will end at 1300 hours EST to allow for SOS all call debrief preparations.

DRILL OBJECTIVES

1) Conduct an RTO wide PJM system restoration drill. Through the course of the drill, incorporate / demonstrate all applicable NERC Standards and requirements. These would include EOP-005-1,EOP-006-1, EOP-007, EOP- 007-RFC-01.

2) PJM will utilize its OTS during the drill. A full complement of system operators will participate in the training exercise. Detailed documentation of the restoration procedures, as well as black start generating units performing intended functions will be logged and archived (EOP-005-1 R6,R7, R8, R10) (EOP-007-RFC-01 R2).
3) Correct any restoration plan deficiencies found during the simulated restoration exercise (EOP-005-1 R2)

4) Utilize both the top-down and bottom-up approach during the drill, understanding that initial actions would have to be bottom-up for companies that are blacked-out and isolated.

5) PJM will coordinate activities with all participating Transmission Owners. Generation owners are encouraged to participate if asked to participate by their transmission owners. PJM will collect system status information and provide restoration status updates to participating members.

6) PJM will be proactive in identifying opportunities to assist the TO’s in the restoration process.

7) Direct the restoration of ALL available 765 / 500kV transmission facilities that had been interrupted by the end of the drill provided an appropriate amount of load and generation had also been restored.

8) Ensure that all nuclear units have been provided with off-site sources for safe shutdown power within 4 hours.

9) PJM will facilitate all interactions and schedules with outside pools / control areas.

10) Coordinate the restoration process with fuel-limited, unavailable generation, and / or possibly damaged transmission equipment.

11) PJM will assume frequency control when appropriate.

12) PJM will calculate an ACE, and return to a centrally coordinated, or normal, operation when appropriate.

13) Evaluate internal / external communication protocols.

14) Evaluate Restoration Drill tools and processes via internal, and PJM committee structure, debriefings. This will include the testing of telecommunication facilities needed to implement the restoration plan (EOP-005-1 R5).

**DRILL SCENARIO**

PJM will have experienced a large system disturbance with a majority of the footprint shutdown. The disturbance would have occurred as follows:

**Valley Hours** The National Oceanic and Atmospheric Administration (NOAA) issued a GMD warning. PJM notified all member companies via the PJM All-Call.

**0530 Hours** Measurements at both Missouri Avenue and Meadow Brook station are exceeding 10 amperes. PJM dispatch confirms the measurements are due to severe geomagnetic storms with PSE&G, Allegheny Power and PECO Transmission Dispatchers and begins implementation of Conservative Operations.

**0745 Hours** During the cold morning pickup, rising SMD activity results in the loss of several EHV generating facilities along with 500kv capacitors in the Eastern portion of PJM. The results of which are low voltages and high transfers.
0750 Hours  These transmission outages caused stability problems with several large units in PJM, ultimately tripping a significant amount of energy. All this resulted in the separation of PJM from the Eastern Interconnection. Further, PJM separated into several islands within the RTO.

0800 Hours  Units in the resulting islands continue to trip due to low frequency and voltage. Ultimately, the island / islands collapse. Although the majority of PJM is blacked out, those units that are capable of load rejection have survived. That would include units / islands in AP and AEP. It is assumed that if load rejection capable units were online as of the drill date and time, those schemes operated as designed and the unit / island survived. PJM neighboring control areas were affected to varying degrees by the disturbance.

INTERCHANGE DETAILS

N/A

GENERATION DETAILS

The drill will utilize generation and transmission system conditions that actually exist on February 11, 2014.

TRANSMISSION DETAILS

The drill will simulate transmission outage conditions that actually exist on February 11, 2014. Transmission that is off for maintenance will be assumed unavailable for use in the drill.

Com Ed will be in a complete system black out condition.

SYSTEM RESTORATION DRILL – INSTRUCTOR SCENARIO DETAILS

Damaged & Outaged Transmission Equipment

DEOK control zone:

- 3885 – from Port Union to Fairfield
- 3886 – from Port Union to Willey

EKPC control zone

- 138kV switches N021-805, N021-815 and N021-825 out of service
Unavailable Generation

EKPC – Laurel Hydro Dam

Outside Assistance

No immediate outside assistance is available.

CEH Distribution

Transmission Owner Operator: If an operator is dedicated to the drill and participates on both days, they will receive 11 CEHs. If the operator participates only on the first day they will receive 6 CEHs. If the operator participates only on the second day they will receive 5 CEHs.

Generation Operators: If the Generation Operator is dedicated full time to support the drill and they participate both days, they will receive 11 CEHs. If a Generation Operator is dedicated full time to support the drill and they participate only on the first day, they will receive 6 CEHs. If a Generation Operator is dedicated full time to support the drill and they participate only the second day, they will receive 5 CEHs. If a Generation Operator supports the drill while also performing real-time duties, and they participate both days, they will receive 4 CEHs. If a Generation Operator supports the drill while also performing real-time duties, and they participate only one day (either day one or day 2), they will receive 2 CEHs.

WebEx Information & Conference Call Information

Below is the information for the WebEx and conference call. For simplicity, the same information will be used for all three days.

Meeting Name: RTO Spring Restoration Drill.
Dates: February 10, 11 & 12, 2014
Starting time: 7:00 am, Eastern Standard Time (New York, GMT-05:00)
Meeting number: 653 974 957
Meeting password: rtopjm

Call-in toll-free number 1-866-546-3377 (US)
Call-in number 1-719-234-7872 (US)
Participant passcode: 587644

To join the online meeting
Go to https://pjm.webex.com/pjm/j.php?ED=228988147&UID=504712032&PW=NNTU4Mzc5NTI5&RT=MiMxM0%3D%3D