

## Summer Operating Events:

1. Earthquake – At 13:51 on 8/23/11 there was a 5.9 magnitude earthquake about 50 miles north of Richmond in just outside of Mineral, VA. As a result of the earthquake PJM RTO lost approximately 3200 MW of generation total. 2700 MW of the 3200 MW total was in the Dominion zone. Effect on the transmission system was minimal.
  
2. Hurricane Irene and resulting flooding conditions – 8/27 to 8/30/11 – Hit eastern US coast at North Carolina travelling up thru the Mid-Atlantic region into New England. Approximately 3.5 million customers without power in PJM. Majority of damage to distribution system.

### Observations and comments:

- a. Communications during natural emergencies tax the existing cell/land line phone capabilities. Suggestions that were implemented in several members were portable emergency satellite phones. Also texting was shown to have success where cell phones could not connect. Internet platforms for emergency personnel contact were also in use.
  
- b. Concern was raised on proper procedure for personnel as to building evacuation during an earthquake. It was seen some members left while others remained in their control rooms.
  
- c. While procedures exist for nuclear station operation in emergencies such as hurricane and potential flooding emphasis should be given to the timeliness and impact of these operations. Coordination was in place to reduce certain stations while others stayed at full output. Coupled with additional scheduled generation resulted in minimum generation and high voltage conditions on the off peak hours.

- d. Lessons learned from operating events in other regions should be reviewed for similarities in the PJM footprint.
- e. Severe weather events such as earthquake, flooding, hurricanes will be training topics in future dispatcher seminars, with stress on existing operating procedures.
- f. Consideration for impact of flooding on the hydro plants but also loss of intake for pumped storage due to debris in reservoirs; also wet coal piles.
- g. Studies should be standard for effect of removing major transmission substations from service prior to flooding.