



2020 & 2021 PJM Restoration Drills Summary East and West

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- RTO-wide Spring Restoration Drill normally held ~mid-May
- Individual TO Restoration Drills normally held ~Sept-Oct-Nov
- COVID-19 impacted scheduling
- Developed a new plan that meets NERC compliance obligations (two drills, invite applicable GOPs: EOP-006-3)
- West and East Restoration Drills were born
 - 2020 West: Oct. 6 & 7
 - 2020 East: Oct. 28 & 29

- Provides an opportunity for members to:
 - Validate their individual restoration plan
 - Identify any issues that may need to be addressed
- “Practice makes perfect”
- PJM coordinates the drill via the DTS
- PJM awards NERC CEH’s for drill participants

- 3rd Control Room/Milford Dispatch Training Simulator room
 - Dual function
 - Swapping no small task
- Simulator work stations were set up in the Valley Forge CTC
- 4 PJM Dispatchers at each location + some on site support staff
- Simulator, SOT and SMT support staff worked from home
- PJM Dispatchers utilized the Dispatch Training Simulator to model each TO's progress and provide a wide area overview
- Dispatch Training Simulator DIMA was available* for both drills

- West Drill
 - 136 Participants
 - 1396 CEHs awarded
- East Drill
 - 188 Participants
 - 1877 CEHs awarded
- On-line Refresh (both drills)
 - 344 CEHs awarded



Overall Satisfaction Rating: 4.16/5.0

Participant Company	K&S Level BEFORE	K&S Level AFTER	Confidence Level Restoration	Confidence Level Explain Philo	Importance of Exercise	Effectiveness of Exercise	Overall Rating
	3.43	3.93	4.00	3.93	4.71	4.43	4.07
	4.33	4.67	4.33	4.67	4.83	4.50	4.67
	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	3.00	3.75	3.67	3.50	5.00	4.33	4.00
	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	3.00	4.00	4.00	4.00	5.00	4.50	4.50
	1.00	4.00	3.00	4.00	5.00	3.00	5.00
	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	3.60	4.20	4.40	4.40	5.00	4.60	4.60
	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	3.00	3.00	3.00	4.00	4.00	4.00	4.00
	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	3.50	3.75	3.50	3.25	4.25	3.75	3.75
	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	4.17	4.58	4.67	4.67	4.67	4.67	4.67
	4.00	4.00	3.00	3.00	4.00	5.00	3.00
	3.00	4.00	4.00	4.00	4.00	4.00	4.00
	4.00	4.00	4.00	4.00	5.00	4.00	4.00
	4.00	4.67	5.00	5.00	4.67	5.00	3.33
	4.00	4.00	5.00	5.00	5.00	4.00	3.00
	3.00	4.00	4.00	3.00	5.00	4.00	2.00
	5.00	5.00	5.00	5.00	5.00	5.00	4.00
	5.00	5.00	5.00	5.00	5.00	5.00	4.00
	3.00	3.00	3.00	3.00	1.00	1.00	1.00
	4.00	4.00	5.00	5.00	5.00	3.00	4.00
	3.00	4.00	5.00	5.00	5.00	5.00	4.00
	2.00	4.00	5.00	5.00	4.00	5.00	4.00
	2.67	3.67	3.67	3.67	5.00	5.00	4.33
	4.00	4.00	4.00	4.00	5.00	5.00	5.00
	4.00	4.50	5.00	4.00	5.00	4.00	4.00
	5.00	5.00	5.00	5.00	5.00	4.00	5.00
	4.00	4.00	5.00	5.00	5.00	3.00	3.00
	3.00	4.00	3.00	4.00	5.00	4.00	4.00
	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Grand Average	3.73	4.20	4.24	4.25	4.69	4.38	4.16

- PJM provided a WebEx based meeting to review drill expectations, logistics, and answer any outstanding questions
- PJM performed communication checks with each participant to verify inbound/outgoing calls were received
- PJM requested, if possible, no real-time numbers to be utilized for the drill
 - All TO's were able to comply
 - Various GOP's limitations led to many using real-time numbers

- Minor SharePoint issues on Day 1 of West; quickly resolved
- Overall feedback (Both drills)
 - Great way to keep track of information
 - Enabled (companies) to submit our forms in a timely manner
 - Good way to keep up with restoration
 - Much cleaner than using paper or fax
 - Requested an online training presentation available prior to the drill
 - Majority of feedback was very positive

- WebEx issues for the West Drill
 - Available muting features were not sufficient
 - Poor identification, COVID related
 - Led to no TO reports during conf. call updates
- Corrected for East Drill
 - Working with Cisco
 - Different WebEx environment
 - Requiring Registration*

- COVID-19 again impacted scheduling
- Decided to continue the two Restoration Drill format
 - 2021 West: March 17 & 18
 - 2021 East: April 7 & 8
- By design, these two drills met all PJM and member NERC compliance obligations for the full 2021 year

- Drills require 100% participation from all Transmission Owners between both PJM West and East for NERC compliance (GOP's participated if identified in the TO restoration plan)
- PJM coordinates the drill with input from the DTS membership
- The drill provides an opportunity for members to validate their individual restoration plan and identify any issues that may need to be addressed
- PJM awards NERC CEH's for drill participants

- At Milford, SOT Training area and a conference room off the control room, simulators were set up for 2 PJM Dispatchers at each area
- There were 4 PJM Dispatchers at the simulator work stations in the Valley Forge CTC, with some on site support staff
- Simulator, SOT and SMT support staff worked from home
- PJM Dispatchers utilized the Dispatch Training Simulator to model each TO's progress and provide a wide area overview.

- West Drill
 - 155 Participants
 - CEHs awarded – 1617
- East Drill
 - 208 Participants
 - CEHs awarded – 2063
- On-line Refresh (both drills)
 - 195 CEHs Awarded



Satisfaction Rating

Overall satisfaction rating was 4.30/5.0

Category	2021 East Restoration Drill Average	2021 West Restoration Drill Average	Grand Average
K&S Level BEFORE	3.86	3.80	3.83
K&S Level AFTER	4.35	4.16	4.26
Confidence LevelRestoration	4.38	4.31	4.35
Confidence LevelExplain Philo	4.35	4.25	4.30
Importance of Exercise	4.93	4.75	4.84
Effectiveness of Exercise	4.65	4.31	4.49
Overall Rating	4.36	4.24	4.30

- Comm Check included more demonstrations and walk-throughs as well all of the “classic” agenda items
- SharePoint gains made from 2020 were significant and well-utilized by members
- Positive feedback on the changes to both with additional feedback on how to further improve
- Continued openness toward feedback for all aspects of the drill

- “Target restoration of at least one offsite source for safe shutdown to all nuclear units within 4 hours” – Drill Objective M36
- All drills, 2020 & 2021, West and East, achieved this objective
- Improved tracking of the progress of getting both (two required) offsite sources to each of nuclear units required for start-up via a new SharePoint form
- No issues achieving these objectives were raised

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