

# **eDART Restoration Program**

# System Restoration Reports



- Upload
- Download
- Gen. Tickets
- Trans. Tickets
- Network Model
- TERM
- Reactive Reserve
- Instantaneous Reserve Check
- Minimum Gen. Report
- PJM Status Report
- NERC Data
- Restoration Data

## Transmission Outage Main Menu

Create New  
Outage Ticket

View/Revise  
Outage Ticket

EMS Trip  
Update

## Transmission Reports

Status Report

Trans. Outage  
Tickets Report

Tickets Active  
Tomorrow

Submitted: 22 / 12   Revised: 0 / 3   Received: 4 / 0  
Approved: 0 / 1   Active: 0 / 2

## Generation Reports

Generation Ack.  
Required

Owners Report

D-Curve Report

Notifications: 40

## Notification Reports

Transmission Ack.  
Required

Notifications Report

Notifications  
Request Form

Notifications: 228 / 4

## Facility Outages Reports

Current & Future

Historical

Click on Restoration Data

# System Restoration Reports

The screenshot shows the eSuite web application interface. On the left is a vertical navigation menu with categories like CAM, eData, EES, eFTR, eMKT, eMTR, eRPM, eSchedules, eSuite Messages, Load Response, eLRS, MSRS, OASIS, Non - eSuite Tools, eDART, eGADS, eFuel, Emerg. Procedures, and RPM-ACR. Below the menu is a secondary set of buttons including Network Model, Telemetry Coordination, TERM, Reactive Reserve, Instantaneous Reserve Check, Minimum Gen. Report, PJM Status Report, NERC Data, Restoration Data, Online Help, and Logout. The main content area has a header with '> Login > Upload > E-mail' and a 'Restoration Data' section containing 'Current Drill' and 'Reports' buttons. Two green callout boxes are present: one pointing to the 'Current Drill' button with the text '“Current Drill” button present only if a System Restoration Drill is in progress.', and another pointing to the 'Reports' button with the text 'Click on Reports'. The PJM logo and 'PJM © 2009' are at the bottom left.

> CAM  
> eData  
> EES  
> eFTR  
> eMKT  
> eMTR  
> eRPM  
> eSchedules  
> eSuite Messages  
> Load Response  
> eLRS  
> MSRS  
> OASIS  
Non - eSuite Tools  
> eDART  
> eGADS  
> eFuel  
> Emerg. Procedures  
> RPM-ACR

Network Model  
Telemetry Coordination  
TERM  
Reactive Reserve  
Instantaneous Reserve Check  
Minimum Gen. Report  
PJM Status Report  
NERC Data  
Restoration Data  
Online Help  
Logout

> Login > Upload > E-mail

Restoration Data

Current Drill Reports

“Current Drill” button present only if a System Restoration Drill is in progress.

Click on Reports

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# Restoration Data per Company

- PJM may initialize a drill for one or multiple control areas
- PJM may initialize a drill for one or many types of transmission equipment
- Each company will be allowed to view restored equipment of other companies that are participating in the drill but they will not be able to restore equipment that they do not own.
- Each company will be able to restore transmission equipment that they own

# System Restoration Reports

**Company Ongoing Restoration Report**

User Name: [welcome](#) Initial Timestamp: 01/22/2004 10:04 Company: [Baltimore Gas and Electric Company](#)

[Go to Filter](#)

Type	Station	Voltage	Equipment Name	Restoration Timestamp	Restore	Overwrite
LINE	BRIGHTON	500 KV	BRIGHTON-DONASTON 5011	01/22/2004 17:07	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LINE	BRIGHTON	500 KV	BRIGHTON-WAUGHCHA 5053	01/22/2004 21:31	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LINE	BRIGHTON	500 KV	BRIGHTON 5AB CB	01/22/2004 21:31	<input checked="" type="checkbox"/>	<input type="checkbox"/>
LINE	BRIGHTON	500 KV	BRIGHTON 5BB CB		<input type="checkbox"/>	<input type="checkbox"/>
LINE	BRIGHTON	500 KV	BRIGHTON 6AB CB		<input type="checkbox"/>	<input type="checkbox"/>
LINE	BRIGHTON	500 KV	BRIGHTON 6BB CB		<input type="checkbox"/>	<input type="checkbox"/>
XFMR	CALVERTO	500 KV	CALVERTO 1 GEN XF XFORMER		<input type="checkbox"/>	<input type="checkbox"/>
XFMR	CALVERTO	500 KV	CALVERTO 2 GEN XF XFORMER		<input type="checkbox"/>	<input type="checkbox"/>
LINE	CALVERTO	500 KV	CALVERTO-CHALKPT 5072		<input type="checkbox"/>	<input type="checkbox"/>
LINE	CALVERTO	500 KV	CALVERTO-WAUGHCHA 5051		<input type="checkbox"/>	<input type="checkbox"/>
LINE	CALVERTO	500 KV	CALVERTO-WAUGHCHA 5052		<input type="checkbox"/>	<input type="checkbox"/>
BRKR	CALVERTO	500 KV	CALVERTO 1 GEN ATB		<input type="checkbox"/>	<input type="checkbox"/>
BRKR	CALVERTO	500 KV	CALVERTO 2 GEN ATB		<input type="checkbox"/>	<input type="checkbox"/>
BRKR	CALVERTO	500 KV	CALVERTO 2GEN#72 ATB		<input type="checkbox"/>	<input type="checkbox"/>
BRKR	CALVERTO	500 KV	CALVERTO 5051 ATB		<input type="checkbox"/>	<input type="checkbox"/>

Reporting Company  
Ongoing Restoration  
Report

Yellow highlight indicates equipment that was returned to service, and then removed from service again.

- User may check 'Restore' checkbox and click 'Submit' button to restore equipment.
  - Timestamp will be automatically populated
  - Overwrite checkbox will appear

# Overwriting Timestamp of Restored Equipment

- Once equipment is restored, user may overwrite timestamp by checking the 'Overwrite' checkbox and clicking 'Submit'.
  - Timestamp will be overwritten.
  - Restored checkbox will be checked.
  - Overwrite checkbox will be unchecked.

# Un-Restoring Equipment

- Once equipment is restored, user may unrestore equipment by unchecking 'Restore' and 'Overwrite' checkboxes.
- User may also uncheck 'Restore' checkbox and check 'Overwrite' checkbox to restore equipment.

- More information on restoring, overwriting and unrestoring equipment may be found on the Help Menu

**Company Ongoing Restoration Report**

User Name:      Initial Timestamp: 02/28/2012 07:36      Company: PJM TEST ▼

[Go To Filter](#)   [Refresh](#)   [Apply Filter](#)

1	Type	Station	Voltage	Equipment Name	Restoration Timestamp	Restore	OverWrite
	LINE	02CRESTW	138 KV	02CRESTW-02DARWIN 2		<input type="checkbox"/>	
	LINE	37 NATOM	138 KV	37 NATOM-114 NORT 11417		<input type="checkbox"/>	
	LINE	DEANS	230 KV	DEANS -MINUETAP DEA-MIN		<input type="checkbox"/>	

[Submit Form](#)   [Select All](#)   [Refresh](#)   [Help](#)   [Main Menu](#)

# System Restoration Reports

> CAM [Login](#) **eSUITE** > Login > Upload > E-mail

- > eData
- > EES
- > eFTR
- > eMKT
- > eMTR
- > eRPM
- > eSchedules
- > eSuite Messages
- > Load Response
- > eLRS
- > MSRS
- > OASIS
- Non - eSuite Tools**
- > eDART
- > eGADS
- > eFuel
- > Emerg. Procedures
- > RPM-ACR

Network Model  
Telemetry Coordination  
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Logout

**Restoration Data Report**

Drill ID	Initial Timestamp	Completed Timestamp
<a href="#">45</a>	05/09/2007 14:43	05/09/2007 16:59
<a href="#">25</a>	05/09/2007 14:29	05/09/2007 14:38
<a href="#">5</a>	04/12/2007 10:24	04/12/2007 10:26
<a href="#">4</a>	04/26/2005 07:39	04/12/2007 09:24
<a href="#">3</a>	07/22/2004 14:48	04/26/2005 07:37
<a href="#">2</a>	03/15/2004 16:22	03/15/2004 16:23
<a href="#">1</a>	10/03/2003 11:25	03/15/2004 16:22

[Back](#)


**Click on Previous drill ID #**

# System Restoration Reports

> CAM  
> eData  
> EES  
> eFTR  
> eMKT  
> eMTR  
> eRPM  
> eSchedules  
> eSuite Messages  
> Load Response  
> eLRS  
> MSRS  
> OASIS  
**Non - eSuite Tools**  
> eDART  
> eGADS  
> eFuel  
> Emerg. Procedures  
> RPM-ACR

Network Model  
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NERC Data  
Restoration Data  
Online Help  
Logout

< >

  
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> Login > Upload > E-mail

### Completed Restoration Report

Drill ID: 45 Initial Timestamp: 05/09/2007 14:43  
Company: Dominion Virginia Power (EDC) Completed Timestamp: 05/09/2007 16:59

Go To Filter

Type	Station	Voltage	Equipment Name	Restoration Timestamp
------	---------	---------	----------------	-----------------------

Main Menu

Select zone you would like to view.

# System Restoration Reports

> CAM Login **SUITE** > Login > Upload > E-mail

> eData  
> EES  
> eFTR  
> eMKT  
> eMTR  
> eRPM  
> eSchedules  
> eSuite Messages  
> Load Response  
> eLRS  
> MSRS  
> OASIS  
Non - eSuite Tools  
> eDART  
> eGADS  
> eFuel  
> Emerg. Procedures  
> RPM-ACR

Network Model  
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### Completed Restoration Report

Drill ID: 45 Initial Timestamp: 05/09/2007 14:43  
Company: Dominion Virginia Power (EDC) Completed Timestamp: 05/09/2007 16:59

Go To Filter

Type	Station	Voltage	Equipment Name	Restoration Timestamp
XFMR	3ROCKY	230 KV	3ROCKY BK1 XFORMER	05/09/2007 14:44
XFMR	3ROCKY	230 KV	3ROCKY BK2 XFORMER	05/09/2007 14:44
LINE	3ROCKY	230 KV	3ROCKY -EDGEComb 2058A	05/09/2007 14:47
LINE	3ROCKY	230 KV	3ROCKY -NASH 2056B	05/09/2007 14:44
BRKR	3ROCKY	230 KV	3ROCKY 2056CB CB	05/09/2007 14:44
BRKR	3ROCKY	230 KV	3ROCKY 2056CB2 CB	05/09/2007 14:44
BRKR	3ROCKY	230 KV	3ROCKY 2058CB CB	05/09/2007 14:44
BRKR	3ROCKY	230 KV	3ROCKY 2058CB2 CB	05/09/2007 14:44
BRKR	3ROCKY	230 KV	3ROCKY 69KV_NBUS_2 CB	05/09/2007 14:47
BRKR	3ROCKY	230 KV	3ROCKY 69KV_SBUS_2 CB	05/09/2007 14:47
BRKR	3ROCKY	230 KV	3ROCKY BK1_2 DIS	
BRKR	3ROCKY	230 KV	3ROCKY BK2_2 DIS	
BRKR	3ROCKY	230 KV	3ROCKY BUS_TIE_2 CB	
BRKR	3ROCKY	230 KV	3ROCKY CP1_6 CB	
BRKR	3ROCKY	230 KV	3ROCKY CP2_6 CB	
BRKR	3ROCKY	230 KV	3ROCKY CP3_6 CB	
BRKR	3ROCKY	230 KV	3ROCKY PERS_2 CB	
BRKR	3ROCKY	230 KV	3ROCKY WLSN_2 CB	
LINE	3ROCKY	115 KV	3ROCKY WATTLEBO 123A	
LINE	3ROCKY	115 KV	3ROCKY -ELMCITY RKMT_WLS	
LINE	3ROCKY	115 KV	3ROCKY -SPGHPS SPHP_199	
BRKR	3ROCKY	115 KV	3ROCKY 123CB CB	
			3ROCKY BK1_1 CB	
			3ROCKY BK2_1 CB	
			3ROCKY CP4_1 CB	
			3ROCKY RMT2_1 CB	
			3ROCKY SPHP_1 CB	
			3ROCKY WLSN_1E CB	
			3ROCKY WLSN_1W CB	
XFMR	ACCA	115 KV	ACCA TX1 XFORMER	
XFMR	ACCA	115 KV	ACCA TX2 XFORMER	
XFMR	ACCA	115 KV	ACCA TX3 XFORMER	

Restoration Timestamp will be populated for each piece of equipment that was restored in the previous drill

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# System Restoration Reports

https://dar01wwd.pjm.com/mui/index.htm - Microsoft Internet Explorer provided by PJM Interconnection

File Edit View Favorites Tools Help

Address https://dar01wwd.pjm.com/mui/index.htm

Search for Web Search Popups allowed Rank: 89,844

## eSuite

### Company Ongoing Restoration Report

User Name: **welcome** Initial Timestamp: 01/22/2004 10:04 Company: **PPL Electric Utilities Corp. d/b/a PPL Utilities**

[Go to Filter](#)

Type	Station	Voltage	Equipment Name	Restoration Timestamp
XFMR	ALBURTIS	500 KV	ALBURTIS TR 1 XFORMER	
LINE	ALBURTIS	500 KV	ALBURTIS-BRANCHBU 5016	
LINE	ALBURTIS	500 KV	ALBURTIS-HOSENSAC 5027	
LINE	ALBURTIS	500 KV	ALBURTIS-JUNIATA 5009	
LINE	ALBURTIS	500 KV	ALBURTIS-WESCOSVI 5044	
CAP	ALBURTIS	500 KV	ALBURTIS 1 CAP	
CAP	ALBURTIS	500 KV	ALBURTIS 2 CAP	
	ALBURTIS	500 KV	ALBURTIS BAY_1-E CB	
	ALBURTIS	500 KV	ALBURTIS BAY_2-W CB	
	ALBURTIS	500 KV	ALBURTIS BRAN_E CB	
	ALBURTIS	500 KV	ALBURTIS BRAN_W CB	
	ALBURTIS	500 KV	ALBURTIS CAPP_1 CB	
	ALBURTIS	500 KV	ALBURTIS CAPP_2 CB	
BRKR	ALBURTIS	500 KV	ALBURTIS CAP_1	
BRKR	ALBURTIS	500 KV	ALBURTIS CAP_2	

**Select a different company from the pull down menu to "view only" their restored equipment**

Upload  
Do  
Gen  
Trans  
Reactive  
PJM © 2007

Done Trusted sites 100% 12:16 PM

- User may view completed drills by clicking on the 'Reports' button from Main Menu.
- User will be allowed to view reports for other companies

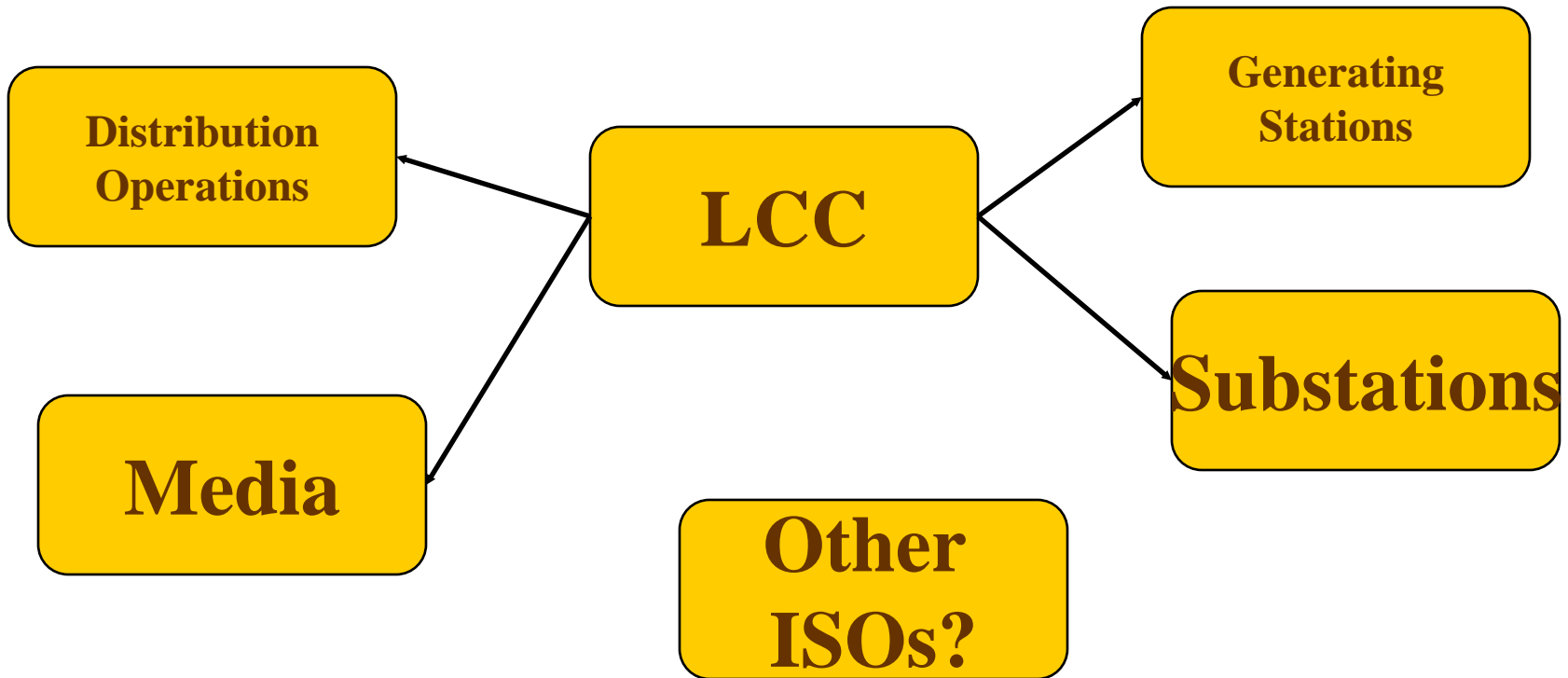
# System Restoration Drills

- System Restoration Drills conducted twice a year (Spring and Fall)
- Various drill scenarios incorporated
  - Partial Blackout
  - Complete Blackout
- Drills range from 8 to 16 hours.



# System Restoration Drills

- You are encouraged to involve as many as possible in System Restoration Drills



# System Restoration Drills

- Differences in Real-time Restoration
  - EMS updates to Transmission and Generation Data
  - More unexpected events
    - Equipment failures
    - High voltage
    - Frequency collapse
    - Overloads (No analysis programs)
  - Restoration time **WILL** be longer than in drills.
    - Personnel to substations, CTs

- Generation control –
  - Currently agreements are in place that the control of generation will reside with the Transmission Owners in a System Restoration.
  - Over time, skill set of Transmission Dispatchers will not include generation control.
  - Coordination between many players.
- Drills are becoming more realistic
  - More use of OTS
  - More realistic timeframes being used



## Disclaimer:

PJM has made all efforts possible to accurately document all information in this presentation. The information seen here does not supersede the PJM Operating Agreement or the PJM Tariff both of which can be found by accessing:

<http://www.pjm.com/documents/agreements/pjm-agreements.aspx>

For additional detailed information on any of the topics discussed, please refer to the appropriate PJM manual which can be found by accessing:

<http://www.pjm.com/documents/manuals.aspx>

## Resources and References

- PJM Manual 36 – System Restoration
- NERC Operating Committee Electric System Restoration Reference Document
- NERC Operating Standard EOP-005