NENA Drills and Exercises Information Document

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Prepared by:
National Emergency Number Association (NENA) PSAP Operations Committee, Contingency Planning Subcommittee, Contingency Planning Document Review Working Group

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Reason for Issue/Reissue

NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

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<th>Approval Date</th>
<th>Reason For Issue/Reissue</th>
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<tr>
<td>NENA 53-504</td>
<td>04/22/2008</td>
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<td>NENA-INF-026.2-2018</td>
<td>04/05/2018</td>
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1 Executive Overview

This document is provided to assist PSAPs with the development of a drill and exercise program to enhance their existing contingency plans. Drills and exercises should be developed and used as tools to improve contingency plans.

Purpose and Scope

This document is intended as a guide for PSAP staff to develop a drill and exercise program to test the effectiveness of the contingency plan. Drills and exercises are tools to enhance contingency planning and to better prepare for issues which may impact service. This document is not intended as a template, but as a process guide.

Reason to Implement

PSAPs are critical for the safety and security of the public. The possibility for manmade or natural occurrences that prevent the PSAP from receiving, processing, dispatching and monitoring incidents places the public and first responders at risk. It is therefore incumbent on PSAP administrators to prepare for such occurrences. Planning, however, is only part of the process; to best prepare for critical events, contingency plans need to be tested and refined.

2 Operational Description

This list includes the major components that should be considered when developing a comprehensive drill and exercise program. An effective drill and exercise program should evaluate: staff, infrastructure, systems, jurisdictional support personnel, alarm and monitoring systems, and contractors which provide support to PSAP operations. Overall drills and exercise should assess, evaluate and test your continuity of operations plan. REF: [NENA-INF-017.2-2015 PSAP Disaster & Contingency Plans Model Recommendation and FEMA Continuity Guidance Circular 1 (CGC1) Continuity Guidance for Non-Federal Entities]

2.1 Infrastructure

2.1.1 Emergency Power Systems

An emergency power system typically consists of a standby power generator, an Uninterruptible Power System (UPS), as well as a power switch panel (e.g. autosensing power transfer switch or smart switch. The power switch panel, upon detecting the failure of the commercial power supply, activates the standby power generator. The UPS keeps critical PSAP systems operating until the standby power generator has come to full power, at which time the switch panel connects the generator to the PSAP electrical system. The UPS should be designed to remain in circuit regardless of the source being commercial or generator, doing so allows for the UPS to prevent spikes or low voltage drops from damaging mission critical components that should sit behind the building UPS unit. All critical systems should be supported by emergency power systems.

2.1.1.1 Building Generators

Generators should be load tested periodically.

In addition, at least once per year:
• Generators should be tested for a minimum of eight hours of continual load operation.
• Emergency refueling of generators should be tested. It is recommended that refueling be performed after normal business hours.
• Automatic switchover from street power to generator should be tested annually by disconnecting the street power external to the facility
• Automatic switchover between generators should be tested.
• Preventative maintenance should be performed on a semiannual basis by the vendor.
• The vendor should develop operational guidelines for the generator and train PSAP staff on monitoring the building power condition and steps to take in case of system anomalies. Training should include monitoring and the manual transfer to emergency power.

2.1.1.2 Uninterrupted Power Supplies (UPS)
PSAPs should periodically test their UPS to ensure functionality at their PSAP, expected load capacity as well as how long it must function before the standby power is activated.

• The 9-1-1 authority should investigate any needs or benefits of an UPS bypass capability. Critical failure within a site’s UPS system could render the site inoperable even with a full complement of commercial electricity and an operational generator. The bypass ability would allow for the site to run without the protection of a UPS.
• Testing should evaluate the seamless transfer between UPS to Generator.
• Preventative maintenance should be performed on a semiannual basis by the vendor.
• The UPS vendor should develop operational guidelines for the UPS and train PSAP staff on monitoring the building power condition and steps to take in case of system anomalies

2.1.2 Facility Security
All critical electronic security systems should be supported by backup power systems.
Facility security should be randomly tested on a yearly basis to include facility access by unauthorized personnel and security procedures after unauthorized access.
An audit of your security access should be done on a regular basis to ensure terminated employees and vendors are removed and active employees and vendors credentials are current.
Plans and procedures should be in place to address any breach of facility security.

2.1.3 Water Supply
Critical facilities should have the ability to remain operational without primary, outside water supply for at least seventy-two (72) hours. The ability to operate without outside water should be tested at least every five years. The test should include water necessary for drinking, cooking and sanitation.
2.1.4 Heating, Ventilating and Air Conditioning Systems (HVAC)
Critical facilities should have a secondary means of providing for HVAC. This backup should be tested at least once per year. If a facility does not have the means to operate without primary HVAC this test should include the efficient evacuation of the facility and operating at an alternate facility.

2.1.5 Systems Alarms and Monitoring
Alarm and monitoring systems are utilized to notify support personnel and contractors of a system’s condition. These alarm and monitoring systems and their components should be tested to ensure both internal and external notifications are sent and received at the PSAP expected service level. Each alarm and monitoring system external/internal notification list should be reviewed and updated annually.

2.1.6 Network
Primary network redundancy testing and diversity validation should be conducted in the manner that tests the ability for systems that rely on network connectivity to remain fully operational with limited impact during a switch from the primary to the backup network. REF: [CSRIC Best Practices Document 9-9-0532, 9-9-0760, 9-9-3228, 9-9-8068, 9-9-8727]

2.2 Communications Systems

2.2.1 Call-Taking Systems
Call-taking systems support both emergent and non-emergent calls for service.

2.2.1.1 Incoming Calls
An exercise and drill should test the alert mechanism that notifies of any system condition which may adversely impact the ability of the PSAP to receive incoming calls, regardless of the delivery method.

An exercise and drill should evaluate the process of utilizing the alternate call-taking system. The process of call transfer should be conducted annually by each shift. It is recommended that this test be done in conjunction with the evacuation drills.

Contingency plans for rerouting 9-1-1 calls should be developed based on the PSAP and 9-1-1 service provider(s) capabilities. There are several options to re-route 9-1-1 calls which may include; automatic default routing, 9-1-1 trunk re-routing to a backup location, CPE rerouting via the non CLEC owned network to a backup site. If the PSAP does not have a back-up center and calls would be routed to another PSAP then at least yearly, the PSAP administrator should verify with the 9-1-1 service provider(s), as well as physically test, that the routing is correct and that all service technicians and PSAP employees are aware of any procedures necessary to complete alternate routing. REF: [NENA Document 03-501 Network Quality Assurance Information Document] The PSAP should have a plan for outages which prevent citizens from placing calls into the PSAP. This plan should be scalable to meet the need and include notification of the public regarding alternate reporting methods. This plan should be tested no less than twice per year. REF: [CSRIC Best Practice Document 9-9-8068]
2.2.2 Computer Aided Dispatch (CAD)
CAD down procedures should be tested bi-annually by each shift. Testing should include correct procedures for reporting CAD failure and receiving, processing and dispatching calls for assistance.
PSAPs with designated backup facilities should perform CAD down drills at the back-up facility as well where applicable.

2.2.3 Voice Radio
Each PSAP has various layers of redundancy. These layers should be periodically tested to ensure they work, and that telecommunicators and responders continue to function when a failure occurs. Procedures should be in place for personnel to report radio failures.

2.2.3.1 Backup Radio Systems
Field testing of all backup systems should be conducted at regular intervals to ensure proper performance by all PSAP personnel; when feasible, include field personnel. It is recommended that testing be done at a minimum, on an annual basis.

2.2.3.2 Interoperable Communications
It is highly recommended that jurisdictions utilize NIMS guidelines for interoperable communications. Any interoperable communications plan should include a testing process.

2.2.3.3 Voice Paging / Tone Out
It is recommended that PSAPs utilize a backup paging system in the event of a primary system failure. This may include alpha numeric pagers, text messaging, etc. Testing of any backup system should be done on a regular basis.

2.2.4 Mobile Data Systems/Automatic Vehicle Location
Procedures should be tested annually by each shift in the event of a failure of the mobile data system. It is not necessary to take the system off the air to perform this test. All telecommunicators and responders should use the voice radio system as their means of communications during the test. Each PSAP should review their voice dispatch procedures to ascertain what additional information should be voiced during dispatch to provide appropriate information dissemination. Responders should voice all status changes and requests during this test.

2.2.5 Mapping/GIS
Each PSAP should have procedures in place to locate Phase II wireless calls in the event of a primary mapping/GIS failure. Backup mapping should be achievable by plotting a call by using the 3 forms of Lat/Long coordinates (Decimal Degrees, Degrees/Decimal Minutes, and Degrees/Minutes/Dec. Seconds) and processing the call using the mapped information. The method of achieving this level of redundancy is less important than the need to test each staff member’s ability to actually locate a caller. PSAP authorities should identify and test backup mapping resources on annual basis.
It is recommended that all telecommunicators are tested bi-annually on this procedure. This test should include plotting a call by using latitude and longitude and processing a call using the mapped information.

2.3 Public Alerting Systems
For those PSAPs with the ability to activate alert systems from their location, it is suggested that the system(s) and personnel be evaluated at least quarterly on the activation procedures and notification requirements. PSAP personnel who may be required to draft notifications should be trained on creating effective notification messages with those skills evaluated during drills.

2.3.1 Emergency Alert Systems
This should include how and under what circumstances Emergency Alert Systems are activated.

2.3.2 Mass Notification System
Mass notification systems notify the public via Voice, Text Messaging, Email, Web Page notification and other pre-planned methods of communicating with citizens. This should include how and under what circumstances the system is activated.

2.3.3 Siren Alert System
This should include how and under what circumstances Siren Alert Systems are activated.

2.3.4 National Weather Service
This should include how and under what circumstances the National Weather service is contacted and what resources and information may be provided.

2.3.5 Media Notifications
It is suggested each PSAP review and update their media contact information and notification procedures annually or as required.

2.4 Recording Devices
All supervisory personnel should show proficiency regarding the recognition, troubleshooting, and procedures for device failure. Testing procedures of system failure notification should be in place, including review of technical support/maintenance agreements and response.

2.5 Backup/ Alternate PSAP Implementation
All associated personnel should show proficiency at least twice per year on the procedures for activating the backup PSAP. This should include all notifications that are required and all activities to prepare to begin operations at the backup site(s).

2.6 Backup/ Alternate PSAP Activation Exercise
All associated personnel should show proficiency and be tested at least once per year on the operations of the backup PSAP. This should include actual transfer of operations from the primary
site to the backup. It is recommended that each shift be tested at different times and days of the week to best understand points of failure.

2.7 Service Level Agreement (SLA)/Memorandum of Understanding (MOU)
As part of PSAP drills and tests, PSAP Authorities should review, update and verify that their service level agreements are still valid and operational with their service providers and partner agencies. REF: [CSRIC Best Practice Document 9-9-8068]

2.8 Notifications

2.8.1 Drill & Exercise
During any exercise, all messages must be preceded by and followed by the statement “THIS IS AN EXERCISE” to preclude the perception that an actual major incident is in progress.

2.8.2 Actual Event
PSAPs should have readily accessible lists of notifications to be made, especially in cases of extraordinary events. Such lists should have PSAP related personnel, vendors, suppliers and additional persons who may have a need to know or who should be informed to avoid confusion if they hear of the event from another source. The lists may be segmented to specific events or event types. PSAP supervisors should be practiced at formulating notification to elected officials and others to assure that the message delivered is appropriate to the need of that individual to have knowledge of the event. The contact information on the notification list must be verified on a regular basis.

3 Hosted /Managed Environments
Hosted/managed environments are considered shared environments at the network level. This includes and is not limited to 9-1-1 CTI, CAD, logging/recording, ESInet, and radio functions. The PSAP Authority should take into account the network infrastructure, operation, processes, the functions and determine the applicable drills and exercises that should and could be done.

- PSAP Authorities should involve and coordinate with all stakeholders including equipment providers and vendors when planning and conducting any exercise to ensure the proper resources are available. Drills and exercises should not impact or interfere with regular operations. PSAP Authorities should ensure that capabilities to revert back are always available. PSAP Authorities should develop test scenarios highlighting process and procedures and expected results.

4 Impacts, Considerations, Abbreviations, Terms, and Definitions

4.1 Operations Impacts Summary
PSAP Authorities should plan, document and regularly coordinate and practice drills and exercises. PSAP Authorities should consult their service providers, network operators and equipment suppliers when developing drills and exercises. Some drills and exercises may require assistance from service providers, network operators and equipment suppliers. Exercises should vary in type; natural and
manmade disasters (e.g. hurricane, earthquake, flood, nuclear, biological and chemical). An exercise and drill that test the PSAP operational mechanisms of any system condition may adversely impact the ability of the PSAP to receive and process calls. Drills and exercises should be authentic as possible, scripts should be pre-planned. Team members should play their roles as realistically as possible. Your staff should be well prepared. Call out resources should be validated regularly. It’s the PSAPs discretion to conduct drills and exercises unannounced. Drills and exercises should be conducted outside of high call volume time or a PSAPs busy season shift to allow all staff to participate or be tested. If a PSAP conducts an unannounced drill and exercise they need to immediately inform their staff the incident is a drill. A fall back process should be built into the drill and exercise procedures.

4.2 Technical Impacts Summary
The intent of a drill and exercise is to test the PSAP contingency plans to verify that they operate as expected. Depending on what specifically the PSAP is testing, there could be technical impacts to CPE, network connectivity, and functionality of any PSAP applications. This will include testing alternate facilities, backup PSAP and alternate routing. Given the wide variety of equipment, suppliers, systems and procedures the technical impacts could vary widely in different PSAP environments and how the drills are conducted.

4.3 Security Impacts Summary
Drills and exercises should test physical and legacy PSAP systems, and should include NG9-1-1 core services. Security impacts should take into consideration any technical, functional and operational elements. The PSAP Authority should document and mitigate any gaps in security that are exposed during an exercise. PSAPs should consider any security risks that are created during a drill or exercise when transferring or relocating their daily operations outside their center. Conducting a drill or exercise may highlight a security impact unknown to the PSAP.

4.4 Recommendation for Additional Development Work
Additional work assessment is required for new technologies, NG9-1-1, ESInet, call flow, data flow, and virtual environments as they materialize.

4.5 Anticipated Timeline
Drill and exercise planning is an ongoing process. Implementation timeline would be dependent on the scope of the planning, and type of drills and exercise. Timelines will vary depending on the complexity and extent of the exercise. Drills and exercise should occur with regular intervals as further detailed in the document.

4.6 Cost Factors
- PSAPs that prepare for anticipated and unanticipated events may incur expense in executing drills and exercises. These expenses will vary based upon the individual needs of the PSAP. The successful execution of drills and exercises may mitigate the cost of recovery during a critical event.
4.7 Cost Recovery Considerations
PSAP Authorities should research what cost recovery options are available to them from local, state and federal funding to conduct drills and exercises. PSAP Authorities should consider participating in FEMA or state sponsored drills to help reduce costs.

4.8 Additional Impacts (non-cost related)
The information or requirements contained in this NENA document are expected to have potential 9-1-1 Center operations and technical impacts, based on the analysis of the authoring group. At the date of publication of this document, development had not started. The primary impacts may include:

- Retain compliance with expected testing requirements due to;
  - equipment procurement
  - migration to new environment
  - upgrade to existing technology
  - transition to new technology
  - implementation of new procedures
  - personnel changes
- PSAP personnel should be better prepared to handle unexpected events as they occur in the PSAP environment.

4.9 Abbreviations, Terms, and Definitions
See NENA Master Glossary of 9-1-1 Terminology, NENA-ADM-000 [1], for a complete listing of terms used in NENA documents. All abbreviations used in this document are listed below, along with any new or updated terms and definitions.

5 Recommended Reading and References
[1] NENA Master Glossary of 9 1 1 Terminology, NENA-ADM-000
[3] NENA-INF-017.2-2015 PSAP Disaster and Contingency Plans Model Recommendation

### Exhibit A – Typical Test/Drill Schedule

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Periodic Test/Drill</th>
<th>Semiannual Test/Drill</th>
<th>Annual Test/Drill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Generator</td>
<td>Load Tested</td>
<td>Preventive Maintenance by Vendor</td>
<td>Generators should be tested for a minimum of eight hours of continual load operation. Emergency refueling of generators should be tested. It is recommended that refueling be performed after normal business hours. Automatic switchover from street power to generator should be tested. Automatic switchover between generators should be tested.</td>
</tr>
<tr>
<td>Uninterrupted Power Supplies (UPS)</td>
<td>Periodically test your UPS to ensure functionality at your PSAPs expected load capacity as well as how long it must function before the standby power is activated. Testing should evaluate the seamless transfer between UPS to Generator.</td>
<td>Preventive Maintenance by Vendor</td>
<td></td>
</tr>
<tr>
<td>Facility Security</td>
<td></td>
<td></td>
<td>Facility security should be randomly tested on a yearly basis to include facility access by unauthorized personnel and security procedures after unauthorized access. An audit of your security access should be done annually to assure terminated employees and/or vendors credentials are current.</td>
</tr>
<tr>
<td>Water Supply</td>
<td></td>
<td></td>
<td>The ability to operate without outside water should be tested at least every five years. The test should include water necessary for drinking, cooking and sanitation.</td>
</tr>
<tr>
<td>Heating, Ventilating and Air Conditioning Systems (HVAC)</td>
<td></td>
<td></td>
<td>Backup HVAC should be tested at least once per year.</td>
</tr>
<tr>
<td>Systems Alarms &amp; Monitoring</td>
<td></td>
<td></td>
<td>Each alarm and monitoring system external/ internal notification list should be reviewed and updated annually.</td>
</tr>
<tr>
<td></td>
<td>Periodic Test/Drill</td>
<td>Semiannual Test/Drill</td>
<td>Annual Test/Drill</td>
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</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
<td></td>
<td>PSAP testing plan conducted annually</td>
</tr>
<tr>
<td><strong>COMMUNICATION SYSTEMS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incoming Calls</strong></td>
<td></td>
<td>Alternate Routing</td>
<td>The process of call transfer should be conducted annually by each shift</td>
</tr>
<tr>
<td><strong>CAD</strong></td>
<td></td>
<td>CAD Down Procedures</td>
<td></td>
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<tr>
<td><strong>Voice Radio</strong></td>
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<td></td>
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<tr>
<td>Each PSAP has various layers of redundancy. These layers should be periodically tested.</td>
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<tr>
<td><strong>Backup Radio Systems</strong></td>
<td></td>
<td>Field testing of all backup systems should be conducted at regular intervals</td>
<td></td>
</tr>
<tr>
<td><strong>Interoperable Communications</strong></td>
<td></td>
<td>PSAP plan should be tested annually</td>
<td></td>
</tr>
<tr>
<td><strong>Voice Paging/Tone Out</strong></td>
<td></td>
<td>Testing of any backup system</td>
<td></td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
<td>PSAP testing plan conducted annually</td>
<td></td>
</tr>
<tr>
<td><strong>Mobile Data System/AVL</strong></td>
<td></td>
<td>Procedures should be tested annually by each shift</td>
<td></td>
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<tr>
<td><strong>Mapping GIS</strong></td>
<td></td>
<td>PSAP Authorities should identify and test back-up mapping resources on annual basis</td>
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<tr>
<td><strong>Public Alerting Systems</strong></td>
<td>System and personnel be evaluated quarterly on the activation procedures and notification requirements</td>
<td></td>
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<tr>
<td>Service Test/Drill</td>
<td>Semiannual Test/Drill</td>
<td>Annual Test/Drill</td>
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<tr>
<td>• Mass Notification Systems</td>
<td></td>
<td>PSAP should review their media contact information and notification procedures</td>
<td></td>
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<tr>
<td>• Media Notifications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recording Devices</td>
<td></td>
<td>Testing procedures of system failure notification. Personnel proficiency regarding recognition, troubleshooting and procedures for device failure</td>
<td></td>
</tr>
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<td>Backup-Alternate PSAP Implementation</td>
<td>All associated personnel should show proficiency at least twice per year on the procedures for activating the backup PSAP</td>
<td></td>
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<td>Service Level Agreements (SLA) Memorandum of Understanding (MOU)</td>
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</table>
7 Exhibit B – Generator Test

<table>
<thead>
<tr>
<th>Date</th>
<th>Run Time</th>
<th>Reason</th>
<th>On load</th>
<th>Non-load</th>
<th>Name</th>
<th>Amp Reading if on load</th>
<th>Fuel</th>
</tr>
</thead>
</table>

* Generator to be run on load for at least 8 hrs. first Monday in March
ACKNOWLEDGEMENTS


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NENA recognizes the following industry experts and their employers for their contributions in development of this document.

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The Contingency Planning Document Review Working Group is part of the NENA Development Group that is led by:

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