

***NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 3-2004  
APPLICABLE TO INSTRUCTION 10-1710  
APRIL 14, 2004***

***Operations and Services  
Dissemination Policy, NWSPD 10-17  
NOAA Weather Radio (NWR) Dissemination, NWSI 10-1710***

***WESTERN REGION PROCEDURES FOR INCORPORATING DIRECT AUDIO  
ACCESS ALL-HAZARDS MESSAGES ON NOAA WEATHER RADIO***

**OPR:** W/WR1x2 (C. Schmidt)  
**Type of Issuance:** Initial.

**Certified by:** W/WR1 (R. Douglas)

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***SUMMARY OF REVISIONS:*** New issuance.

Signed

03/22/04

Vickie Nadolski

Date

Director, Western Region

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1. Description: Western Region Meteorological Services Division (MSD), working with our partners in the Emergency Management (EM) community and our associated Weather Forecast Offices (WFO), is committed to disseminating all-hazard emergency messages on NOAA Weather Radio quickly and accurately through automated means. The ability to send messages on NWR is strongly desired by many of our partners in the Emergency Management community, serves to enhance the overall hazard warning system in the west, and improves the visibility of the NWR program.

One automated solution, described in this Supplement, is to integrate commercially available Emergency Alert System (EAS) equipment with the NWR system to allow designated state and local EM officials to quickly and efficiently interrupt the NWR audio stream with an all-hazards emergency broadcast. This method is known as “direct audio access”. Direct audio access will supplement any nationwide efforts by the NWS to disseminate all-hazard emergency messages.

All projects under this Supplement will be closely coordinated between the affected WFO(s) and WR MSD.

2. Local/State Plans: Direct audio access networks should be implemented at the state level (as part of state EAS plans) where possible rather than at local levels. This will help ensure uniform management and equipment on a larger scale, and limited access to the system. Local projects may be approved by WR MSD as necessary, if a statewide plan does not exist or meet local needs.

3. Conditions: WR will allow EAS equipment to be placed into the NWR broadcast network for the purpose of directly transmitting all-hazard emergency messages provided the following conditions are met:

- a. Execute a Memorandum of Agreement (MOA) between the NWS WR and the external government agency(s), hereafter referred to as the DES. The MOA should be adapted from the template approved by General Counsel in appendix A. This MOA lists

acceptable hazardous messages and outlines communications procedures for direct audio broadcast.

- b. The extreme urgency and nature of the information make direct audio access to the NWR system more desirable than external agency access through AWIPS Local Data Acquisition and Dissemination (LDAD) system or other text entry methods.
- c. Only Federal Communications Commission (FCC) type-accepted EAS encoder/decoder devices, able to (or adapted to) transmit the 1050 Hz NWR warning alarm tone, may be used.
- d. Allow only a limited number of access points to the EAS equipment for each transmitter. Normally this should include no more than a total of two points, preferably from the state government level. An exception is access points will exist for each special facility, such as nuclear power plants or Chemical Stockpile Emergency Preparedness Program sites for which an approved MOA exists.
- e. For state government access points, generally the State Liaison WFO (SLO) should serve as the point of contact with the appropriate state agency. However, direct audio access may be set up with any and all WFOs that serve the state.
- f. The EAS equipment will not interfere with the operation of the NWR system, except for its intended purpose. If the EAS equipment fails, it will not interfere with the NWR broadcast. The EAS equipment's installation, design, and operation should have minimal impact on WFO workload. Audio output from the EAS equipment should be physically inserted between the NWR system and the transmitter, preferably near the operational console at the WFO rather than at the transmitter.
- g. The DES assumes all costs associated with the EAS equipment. This includes any infrastructure to deliver messages to the EAS equipment, installation, maintenance, and training for the DES and NWS staff.
- h. The DES agrees to maintain the EAS equipment and other related equipment so that its operational availability conforms to the operational availability of the NWR system.
- i. Unauthorized users must be prevented from physically and electronically accessing the EAS device and related equipment.
- j. The DES provides full documentation on the operations and troubleshooting of the EAS equipment to the WFOs involved. All NWS staff will know the procedure for turning off the EAS equipment if it malfunctions.
- k. The DES agrees that any emergency message interrupting the routine NWR broadcast is limited to 2 minutes or less (standard EAS procedures).

- l. The DES agrees that most follow up, non-alerting, or informational messages are not authorized for NWR broadcast via direct audio access.
  - m. The DES agrees to attempt to notify the NWS before a message is to be sent, if time is available. The notification can also be performed by the use of an electronic reader board or similar device installed at the WFO.
  - n. Tests of the system will be conducted according to the following: a) with the frequency stipulated by the applicable local or state EAS plan; b) by the applicable regulatory authority for the special facility; or, 3) if not stipulated, at a minimum, quarterly. The DES agrees that any tests of the system interrupting the routine NWR broadcast will be coordinated with the responsible WFO in advance. Tests normally will be canceled or postponed if there is a threat of hazardous weather or flood conditions in or close to the area served by the NWR transmitter.
4. Implementation Guidelines: If a WR WFO is approached by the EM community to begin an automated all-hazard warning program, they will use the following implementation guidelines.
- a. For statewide plans, the SLO office (or designee) should serve as the main point of contact with the state EM office. Each affected WFO will have to be involved in local details, however.
  - b. Submit written documentation and schematic diagram to WR MSD. The WFO should use the operations validation checklist in Appendix B to help evaluate the planned system. Submit this checklist to WR MSD; MSD will review request and discuss details of the project with the WFO(s).
  - c. If MSD approves, work with cooperator and MSD to draft an MOA and work out the details as specified in section 3.
  - d. Obtain cooperator signature on MOA.
  - e. After NWS signature, oversee the installation and testing of the equipment at the WFO. The WFO should use the testing procedures in Appendix C to fully test the system. Submit test results to WR MSD for approval.
  - f. Ensure that adequate documentation is provided, and that the WFO staff is well-trained on the use and troubleshooting of the system.
  - g. Upon receiving WR MSD approval, place the direct audio access system on line.

5. System Operation: Once a direct audio access system is operational, the WFO will make sure that it is operated as intended at all times. Report all instances of operational system use (except tests) to the WR MSD Dissemination Manager via email; include any feedback received by both the EM community and NWR listeners.

Any misuse of the system by the DES or other parties can result in an immediate shutdown of the system.

APPENDIX A – Memorandum of Agreement template



**AGREEMENT FOR THE INSTALLATION AND OPERATION  
OF  
EMERGENCY ALERT SYSTEM EQUIPMENT IN THE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
(NOAA) WEATHER RADIO SYSTEM  
AND  
CONDITIONS FOR DIRECT AUDIO ACCESS TO BROADCAST NON-WEATHER  
EMERGENCY MESSAGES**

I. PURPOSE

This Agreement between the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) and the [INSERT NAME OF AGENCY] (Cooperator), sets forth the terms and conditions for the installation and operation of an encoder/decoder device on the audio program communication link to a NOAA Weather Radio (NWR) transmitter system. It also covers the conditions under which the Cooperator is permitted to directly broadcast critical messages related to the safety of the public or reducing property damage as the result of locally declared emergencies as defined in Attachment 2 of this Agreement.

II. LOCATION AND BROADCAST SERVICE AREA

The encoder/decoder device covered by this Agreement is authorized to be installed at the NWS office in the audio program line downstream of the NWR Console Replacement System (CRS) for the NWR transmitter located at [INSERT CITY, STATE] and referred to as the [INSERT CITY, STATE] NWR. Additional encoder devices able to control the device at the transmitter site are authorized to be installed at locations defined in Attachment 3 of this Agreement. The broadcast service area of the NWR station covered by this Agreement for which messages classified as watches, warnings, statements, and emergencies may be broadcast are listed in Attachment 1.

III. AUTHORITIES

A. The NWS enters into this Agreement pursuant to:

1. 15 U.S.C. § 1525, the Joint Project Authority, which provides that the Department of Commerce may enter into joint projects with nonprofit, research, or public organizations on matters of mutual interest, the cost of which is equitably apportioned;

2. 15 U.S.C. § 313, the NWS organic authority; and
3.
  - a) 42 U.S.C. § 5132(c), which provides for the utilization of any Federal communications system for the purpose of providing warnings;
  - b) 42 U.S.C. § 5196(d), which provides that it is within the authority of the Director of Federal Emergency Management Agency (FEMA) to make appropriate provision for necessary emergency preparedness communications and for warnings to the civilian population of a hazard; and
  - c) Letter from Joe M. Allbaugh, Director, FEMA, to John J. Kelly, Jr., Director, NWS (June 11, 2002), supporting the use of NWR for civil emergency messages involving all hazards.

B. The Cooperator enters into this Agreement pursuant to:

1. [State authorities.]

#### IV. EQUIPMENT PROCUREMENT AND INSTALLATION

The Cooperator is only authorized to install and operate equipment that is type-accepted under Federal Communications Commission (FCC) Rules, 47 C.F.R. Part 11, Emergency Alert System (EAS), or as specified by the NWS in an Attachment to this Agreement.

If an EAS encoder/decoder device is used, it must be configured to transmit all of the local geographic codes in the broadcast service area of the NOAA Weather Radio transmitter(s) served by the EAS equipment.

The Cooperator is solely responsible, under the supervision of the NWS, for all aspects of equipment installation and operation. The Cooperator agrees to the prompt removal of all equipment at the termination of this Agreement.

The NWS reserves the right to perform random checks on the equipment covered by this Agreement along with any signals, codes, or other output and controls to ensure compliance with the specifications and the terms of this Agreement. The NWS agrees to coordinate with the Cooperator prior to any inspection of equipment located at a transmitter site; equipment located within a NWS office will be inspected routinely.

#### V. LICENSE AND MISSION PRIORITY

The Cooperator agrees: the NWR license is the property of the NWS; the primary objective of the NWR transmitter system is to meet the NWS' needs for forecast and warning operations; and the NWS retains final authority over the priority or suitability of messages to be broadcast over the NWR.

In addition to its primary objective of providing weather and flood related watches, warnings, and statements to the public, the NWR station covered by this Agreement will also serve as a

primary emergency notification system; in the event of a locally declared emergency as defined in Attachment 2.

The Cooperator agrees to operate the encoder/decoder equipment solely within the terms of this Agreement.

## VI. OPERATING REQUIREMENTS

The Cooperator agrees that the broadcast content will originate solely from the NWS, except as outlined by the following terms.

A. The NWS will operate this station, as defined by NWS Instruction 10-1710. The broadcast service area of this station is defined in that NWS Instruction and Attachment 1.

B. Messages not normally broadcast by the NWS as part of its NWR program as defined in NWS Instruction 10-1710, but authorized for broadcast under the terms of this Agreement by the Cooperator, are listed in Attachment 2.

C. The organization(s) authorized to directly broadcast messages over the NWR, under the terms of this Agreement, are listed in Attachment 3.

D. To the extent allowed by **[INSERT STATE]** law and Section VIII of this Agreement, the Cooperator assumes full responsibility for the actions of the Emergency Operations Centers (EOC) or ancillary units listed in Attachment 3 and agrees to help ensure full compliance with the terms of this Agreement; by providing training to and supervision of the personnel at these EOCs and ancillary units. If an EOC or ancillary unit fails to comply with the terms of this Agreement, the NWS shall provide verbal and/or written notice of this noncompliance to both the non-complying EOC or ancillary unit and the Cooperator. NWS will allow the Cooperator 15 days to bring the EOC or ancillary unit into compliance, before the NWS denies access to the encoder/decoder equipment at the NWS facility and removes it from the list authorized to broadcast messages as listed in Attachment 3. If the noncompliance is so grievous, as determined by the NWS, that it would jeopardize the integrity of the NWR system or safety of the public, access will be denied immediately.

E. If an emergency event occurs as defined in Attachment 2, the Cooperator is authorized to interrupt NWR routine programming to insert critical event information. The Cooperator will notify the NWS office responsible for programming the NWR covered by this Agreement anytime an unscheduled interruption of routine broadcasts occur.

F. Dates and times of any tests of the system by the Cooperator that would result in an interruption of the normal broadcast from the NWR programming office must be coordinated with the NWS programming office in advance. Tests will normally be canceled or postponed any time there is the threat of hazardous weather or flood conditions in or close to the area served by the NWR covered under this Agreement.



G. If time permits and safety of the public will not be at risk, the Cooperator will attempt to notify the NWS office that controls the transmitter that an interruption of the routine broadcast is necessary.

H. The Cooperator agrees that any message classified as a watch, warning, or emergency that interrupts the routine NWR broadcast shall be limited to 2 minutes or less to comply with the requirements under FCC Rule 47 C.F.R. Part 11. Any digital codes that precede and follow any verbal message must conform to the standards, as published in the FCC Rule 47 C.F.R. Part 11. Any special adaptations to these standards must be agreed to in advance between the Cooperator and the NWS and shall be documented as an Attachment to this Agreement.

I. The Cooperator agrees that any follow up, non-alerting, or informational type messages are not normally authorized for remote interruptions under section V, subsection B. Any non-alerting or informational type messages requiring repeated or systematic broadcast shall be provided to the NWS office controlling the NWR either in advance or through other data or text communications means. The NWS office controlling the NWR will record these messages for playback as part of the broadcast cycle. Non-alerting or informational type messages to be broadcast in the routine cycle normally shall not exceed 2 minutes. The Cooperator agrees to develop alternative and/or supplemental means to disseminate follow up or non-alerting informational messages, such as broadcasting these messages through the commercial broadcast and cable television media.

J. The NWS agrees that, should the NWS office programming the NWR under this Agreement become non-operational or lose communications with the NWR and/or the authorized EOC or ancillary units, the primary EOC may broadcast any messages as necessary over the NWR to provide the best possible protection of the public in the area at risk.

K. If the transmission of digital or textual data over the NWR becomes a requirement for the protection of life and property, the Cooperator agrees that the format of the data, header, and end-of-message codes must be coordinated with and agreed to by the NWS prior to use. If possible, the basic format shall comply with FCC Rules and Regulations (see 47 C.F.R. Part 11 and as defined in Section I). The agreed to standard shall be documented as an Attachment to this Agreement.

L. The Cooperator agrees to monitor the NWR or other sources to stay aware of weather and flood conditions that may potentially threaten public safety and avoid, if possible, any actions that might result in reducing the quality of the NWR broadcasts.

## VII. UTILITIES, SUPPLEMENTAL AGREEMENTS, LEASES, AND COMMUNICATIONS SERVICES

The Cooperator is responsible for all service related costs for the operation of the encoder/decoder devices and associated equipment including, but not limited to, site lease, power, and communications links to bring the emergency message audio to the encoder/decoder device connected to the transmitter defined in Section II. The NWS agrees to provide, within the limits of available resources, at sites under its direct control, space and electrical power for Cooperator-owned ancillary equipment such as a UHF/microwave transmitter and/or receiver and antenna or telephone interface equipment to communicate the program audio to the Cooperator-

owned encoder/decoder device. The NWS reserves the right to require the Cooperator to use commercially available communications services if the space is required for other NWS operational needs, power consumption exceeds an NWS determined limit, or otherwise interferes with the needs of the NWS.

VIII. MAINTENANCE

The Cooperator is responsible for all aspects of maintenance of encoder/decoder devices and related equipment. Any maintenance performed on encoder/decoder devices or related equipment located at NWS owned or controlled facilities will be under the supervision of NWS technicians.

The NWS is responsible for ensuring that transmitter emissions and operations meet specifications. The NWS, particularly when made aware of a radio frequency interference (RFI) problem, may request an immediate technical checkout of encoder/decoder devices and related equipment covered by the terms of this Agreement be performed by the Cooperator. The Cooperator hereby agrees to comply with said request. If an RFI or other problem persists and is caused by the encoder/decoder or related equipment that would jeopardize the integrity of the NWR system or safety of the public, the encoder/decoder and/or related equipment will be shut down by the Cooperator until the problem is solved.

The NWS shall retain the right to remove, disconnect, disarm, or otherwise deactivate an encoder/decoder device or related equipment covered by this Agreement and connected to the NWR transmitter or audio program line without prior notice or coordination if it interferes with the operation of the NWR system to which it is connected in such a manner as to jeopardize the safety of the public or the performance of another local, state, or Federal organization that would place the safety of the public at increased risk. The NWS agrees to notify the Cooperator as soon as possible of any action that would prevent the Cooperator from being able to use the encoder/decoder and/or related equipment. The NWS agrees to provide as much time as possible for the Cooperator to correct the problem or activate backup notification systems or plans.

IX. PUBLICITY

The NWS office(s) responsible for the NOAA Weather Radio service area and the Cooperator will coordinate and jointly issue any public announcement covering the new service. If the service is terminated for any reason, the two parties will also coordinate a public statement explaining the reason(s) for the termination.

X. UNITED STATES GOVERNMENT HELD HARMLESS

The Cooperator shall hold and save the United States Government, its officers, agents, and employees, harmless from liability of any nature or kind, including costs and expenses, for or on account of any suits or damages of any character whatsoever resulting from injuries or damages sustained by any person, or persons, or property by virtue of this agreement. Notwithstanding anything contained herein to the contrary, any liability of the Cooperator hereunder shall be subject to the limits of liability set forth in applicable state law.

The NWS agrees to promptly consider and adjudicate any and all claims which may arise out of this agreement and to pay for any damage or injury as may be required by Federal law. Such adjudication will be pursued under the Federal Tort Claims Act, 28 U.S.C. § 2671 *et seq.*, or such other legal authority as may be pertinent. The NWS also agrees to consider and adjudicate any claims for damage or injury sustained by NOAA/NWS personnel in the performance of their official duties under the terms of this Agreement. Such adjudication will be made pursuant to the Federal Employees Compensation Act, 5 U.S.C. § 8101 *et seq.*, or other such Federal law as may be pertinent.

XI. FINANCIAL RESPONSIBILITY

All costs associated with the installation, operation, and maintenance of encoder/decoder devices or equipment shall be borne by the Cooperator. The NWS' responsibility for costs incurred under this Agreement are limited to those necessary to make available the audio program at the NWS programming office or as otherwise defined in Section VI.

XII. AMENDMENTS AND TERMINATION

This Agreement may be amended or modified at any time by mutual consent of the parties hereto. This Agreement may be terminated at any time by mutual consent of the parties or terminated by either Party upon giving at least 120 days advance written notice. Failure to comply with the terms of this Agreement will serve as cause for termination of this Agreement.

XIII. EFFECTIVE DATE

IN WITNESS WHEREOF, the NWS and the **[AGENCY NAME]** have, through duly authorized representatives, entered into this Agreement. The Parties having read and understand the terms of the Agreement do by their respective signatures dated below hereby agree to the terms thereof. This Agreement is effective as of the last date shown below when signed by both Parties, and shall remain in effect until terminated by either Party.

AGREED TO AND BY:

*NATIONAL WEATHER SERVICE (NWS),  
National Oceanic and Atmospheric Administration*

Signature: \_\_\_\_\_  
Printed Name: Vickie Nadolski  
Title: Regional Director  
NWS Western Region  
Date: \_\_\_\_\_

**[INSERT AGENCY NAME]**

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Date: \_\_\_\_\_

**ATTACHMENT 1**

NOAA Weather Radio Transmitter Broadcast Service Areas

NWR Station \_\_\_\_\_ (Station ID)

(List all counties in the NWR Broadcast Service Area; include other locations such as cities or towns as desired)

## ATTACHMENT 2

Events Authorized For Broadcast Via Direct Audio Access

<u>Event Description</u>	<u>NWR-SAME/EAS Event Code</u>
Child Abduction Emergency	CAE
Civil Danger Watch	CDA
Civil Danger Warning	CDW
Civil Emergency Message	CEM
Earthquake Warning	EQW
Emergency Action Notification	EAN
Emergency Action Termination	EAT
Evacuation Immediate	EVI
Fire Warning	FRW
Hazardous Materials Warning	HMW
Law Enforcement Warning	LEW
Local Area Emergency	LAE
911 Tel. Outage Emergency	TOE
National Periodic Test	NPT
Nuclear Power Plant Warning	NUW
Practice/Demo Warning	DMO
Radiological Hazard Warning	RHW
Required Monthly Test	RMT
Required Weekly Test	RWT
Shelter in Place Warning	SPW
Volcano Warning	VOW

**ATTACHMENT 2 (continued)**

DESCRIPTION OF EVENT CODE CATEGORIES

**WARNING:** Those events that alone pose a significant threat to public safety and/or property, probability of occurrence and location is high, and the onset time is relatively short.

**WATCH:** Meets the classification of a warning, but either the onset time, probability of occurrence, or location is uncertain.

**EMERGENCY:** An event that by itself would not kill or injure or do property damage but indirectly may cause other things to happen that result in a hazard. Example, a major power or telephone loss in a large city alone is not a direct hazard but disruption to other critical services could create a variety of conditions that could directly threaten public safety.

**STATEMENT:** A message containing follow up information to a warning, watch, or emergency.

Special Event Code: The third letter in special event codes are generally limited as follows:

**W** for **WARNINGS**  
**A** for **WATCHES**  
**E** for **EMERGENCIES**  
**S** for **STATEMENTS**

ATTACHMENT 3

Emergency Operations Centers Or Ancillary Units Authorized Direct Audio Access  
(if multiple WFOs affected, use separate attachment for each WFO)

**Location 1**

[INSERT AGENCY NAME]  
[INSERT AGENCY'S ADDRESS]  
[INSERT CITY, STATE, ZIP CODE]

Connection Between EOC and EAS Device attached to NWR system:

(Description of connection, ex: Dedicated direct line, 800 MHZ Radio System)

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**Location 2**

[INSERT AGENCY NAME]  
[INSERT AGENCY'S ADDRESS]  
[INSERT CITY, STATE, ZIP CODE]

Connection Between EOC and EAS Device attached to NWR system:

(Description of connection, e.g., Dedicated direct line, 800 MHZ Radio System)

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Appendix B - Operations Validation Checklist for Direct Audio Access to NWR

WFO: \_\_\_\_\_

Checklist Completion Date: \_\_\_\_\_

Cooperating Agency: \_\_\_\_\_

Impact on WFO Operations

a. What is the impact of the proposed system on:

- \* Forecast shift workload?
- \* Office space?
- \* Electronics Technician staff workload?

b. How is the system expected to be more efficient than the current method of disseminating all-hazards messages?

c. What potential adverse effects could direct audio access have for your office?

d. If the system interrupts a NWS warning in mid-broadcast, how will the WFO respond?

e. Capabilities of the system

- \* What type of EAS equipment is proposed?
- \* How many NWR transmitters can be supported by each device?
- \* How many EM partners can access each device?
- \* In what ways can partners access each device?

f. If an A/B switch is used in the WFO to control user access to the device, what will be the procedure to ensure the switch is in the correct position to permit user access in all specified automatic direct audio access situations?

g. System Failure (ie, EAS equipment does not function)

- \* How will the WFO know if the equipment has failed?
- \* What will be staff procedures to deal with equipment failures?
- \* Will NWR signal continue uninterrupted if EAS equipment fails?

h. Security: Will the system be configured to verify activation is from authorized source, and how will the system be configured to prevent unauthorized access?

## Appendix C - Test Procedures

**Objective:** To assess the impact of a direct audio access system on the overall NWR program at a WFO, evaluate the following parameters. The general testing procedures in this attachment should be used to determine whether the system may be placed in operation. Copies of the test results will be forwarded to WR MSD for final approval.

Parameters to be evaluated:

- Impact on WFO
  - Space
  - Operations

- Impact on Broadcast
  - Signal levels
  - Audio Quality
  - Program interruption
    - During SAME (if possible)
    - During Message

- Impact on Transmitter
  - Effect of switching/interruption
  - Dead air
  - ROAMS

- Impact on Receivers
  - SAME activation
    - WFO broadcast
    - DES broadcast

- EAS equipment failure

### General Test Procedures:

1. Plan tests for a Wednesday when no adverse weather is expected.
2. Prior to test, perform alignment on all test transmitters using approved Engineering Note.
3. One or two days before test date, send message via PNS and broadcast on NWR that testing will be occurring and that SAME messages/tones may be heard by listeners.
4. Assign test monitor at WFO to observe and record events resulting from tests. Advise the designated "LP1" and "LP2" radio stations NWS will be testing direct audio access from an emergency management office, and ask them to provide copies of their EAS box logs to confirm receipt of associated test messages at their station.

5. Set up a “remote” test site for monitoring the the NWR broadcast and SAME transmission for each transmitter that will be affected. Obtain a representative set of NWR SAME receivers (include as many major models as possible, including Radio Shack, Oregon Scientific, Uniden, Reecom, Sharecom, First Alert, etc.; a mix of older and newer models is recommended). Also utilize electronic signal measuring equipment if available.
6. Before beginning tests, access ROAMS to verify normal operation and check contents of NWR SAME message buffer.
7. The on air evaluation should include the following tests:
  - A. A broadcast test message (RWT or DMO) from CRS
  - B. A broadcast test message (RWT or DMO) from the DES that interrupts the audio broadcast
  - C. (If possible) A broadcast test message (RWT or DMO) from the DES that interrupts a SAME message being broadcast by CRS.
  - D. Disconnect power from EAS equipment while normal CRS programming is occurring
  - E. Disconnect power from EAS equipment while test message (RWT or DMO) is being broadcast from DES.

For each of the tests:

- a. Note NWR SAME activation of each receiver
- b. Listen to and evaluate quality of broadcast
- c. Save output of measurement system (if available)
- d. Call ROAMS to check status of station parameters and contents of NWR SAME message buffer
- e. Note any impact on transmitters, other than the loss of CRS broadcast audio

If any of the tests above result in significant impacts to WFO operations or NWR performance other than the temporary loss of audio, the tests will be considered failed and the system may not be implemented without rectifying negative results.