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SOUTHERN REGION BACKUP OPERATIONS

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SUMMARY OF REVISIONS: This supplement supersedes Southern Region Supplement 01-2004 dated September 28, 2016.

The following changes were made to this issuance:

1. Moved some Appendices to main body of document.
2. Updated and corrected ADA examples.
3. Corrected tertiary backup for WFO San Juan in the Backup Table of Appendix A.
4. Clarified one-to-one backups in the Backup Table of Appendix A.
5. CWSUs are to use the ADA product for backup notifications instead of the MIS product.
6. Updated that offices can now state reason for backup in ADA product.
7. Added new sections about A2A files and WARNGEN Templates.

　　　　　　<Signed>　　　　　　　　　　　　　　December 21, 2018
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　　　　　Regional Director

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Appendices

1   **Purpose**

Service backup ensures the NWS maintains continuity of operations and facilitates the performance of our mission essential functions for partners and the public. This document provides instructions for the transfer of essential operational responsibilities from one Weather Forecast Office (WFO), Center Weather Service Unit (CWSU), or River Forecast Center (RFC) to another during backup situations.

Offices and their backups <u>will:</u>

a.   Put forth a robust effort to share tools/info that facilitate good backup service,
b.   Conduct meaningful training that maximizes backup readiness, and
c.   Actively accept backup responsibility from each other, unless compelling operational reasons prevent the backup office from doing so.

The [SR Backup Google Site](#) is a valuable resource containing all the documents mentioned in this Supplement, as well as additional links and information.

Written instructions cannot cover every situation and personnel must use initiative and good judgment to ensure the continuity of operations. When invoking service backup, offices should contact Network Control Facility (NCF) for Advanced Weather Interactive Processing System (AWIPS) and Graphical Forecast Editor (GFE) issues impacting the transfer of operational responsibilities. Offices may contact the SR ROC (at 682-703-3747) for other issues during service backup. The SR ROC then will contact the appropriate SRH Program Manager.

2   **Definitions**

a.   <u>Full Backup</u> - All of the requesting office's critical products, services, and responsibilities (e.g., warnings, grids, data collection, etc.) will be backed up by a designated Backup Office (see Appendix A). A list of critical products is included in Appendix A of [NWSI 10-2201](#).

b.   <u>Partial Backup</u> - Some of the requesting office's products, services, and responsibilities (e.g., warnings, grids, data collection, etc.) need to be backed up by their Backup Office. For example, if only RiverPro is down, a Backup Office may only need to backup some hydrological products.

c.   <u>Multiple Backup Responsibility</u> - In many situations, it would be beneficial for the Primary, Secondary, and Tertiary Backup Offices to share partial backup responsibilities of the requesting office.

d.   <u>Primary Backup Office</u> - If an office is rendered inoperative or is requesting backup services, the Primary Backup Office will assume the inoperative office's designated duties, as defined in either Section 2a and 2b above (Full or Partial Backup).

e.   <u>Secondary Backup Office</u> - The Secondary Backup Office will typically assume the designated duties, as defined in either Section 2a or 2b above, when: (1) Both an office

and its Primary Backup Office are rendered inoperative, (2) The Primary Backup Office is unable to assume backup responsibility due to circumstances beyond their control, or (3) It is not feasible for the Primary Backup Office to assume control due to current or anticipated workload.

f. <u>Tertiary Backup Office</u> - The Tertiary Backup Office will typically assume the designated duties, as defined in either Section 2a or 2b above, when: (1) An office's Primary and Secondary Backup Offices are rendered inoperative, (2) Both the Primary and Secondary Offices are unable to assume backup responsibility due to circumstances beyond their control, or (3) It is not feasible for the Primary or Secondary Backup Offices to assume control due to current or anticipated workload.

Note that tertiary backup for WFO hydrologic operations is generally not supported. See Section 3.4 for details.

3   Service Backup Process

The Meteorologist-In-Charge (MIC), Hydrologist-In-Charge (HIC), or designee is authorized to invoke backup operations. The office should communicate their consideration of service backup with the supporting office as far in advance of the actual transfer of services as possible.

Staff at the requesting office remain the best authorities on local hydrometeorology information and as such know best the needs of their partners, customers, and the local public. To the extent possible, the staff at the requesting office should retain as much responsibility as possible during backup situations.

An office may invoke full or partial service backup and will coordinate the distribution of workload during significant weather events for a number of situations including:

- Planned outages due to hardware or software updates
- Unanticipated outages due to hardware or software failures
- Extended power outages or prolonged communications failures
- Violent acts of nature or other hazards to an office that might cause a threat to personnel if they did not seek shelter or evacuate the facility
- Mutual aid (work load sharing) during significant weather events, allowing an office to focus on the most critical services through the use of partial service backup for other services as deemed appropriate
- Service backup training and verification of service backup readiness

3.1   Planned Outages

For planned outages such as an AWIPS upgrade or a drill, follow the same procedures in Section 4 (for WFOs), Appendix C (for RFCs), and Appendix D (for CWSUs), but coordinate with the backup office (or offices) ahead of time (2-3 weeks or more if

possible) so appropriate measures can be taken (e.g., providing for adequate staff and/or to update files on backup Google sites).

3.2 Evacuations

Ensure the safety of local office personnel first. Then, notify SRH as soon as possible upon departure <u>and</u> upon return. Contact the SR ROC at 682-703-3747 immediately. If commercial telephone circuits and cellular phone services are out-of-service, the office staff must become resourceful to make contacts, including the use of the satellite phone, if available.

3.3 Prolonged Outages

To evaluate the need for deployment of personnel or other options, for prolonged outages (normally starting at 8-12 hours or more) a member of the office management should email the SR Deployment Team at sr.deployments@noaa.gov. This email list reaches all relevant personnel within OSD and the SR ROC to ensure awareness and a timely response to the request.

3.4 Tertiary Hydro Support

Tertiary backup for WFO hydrologic operations is generally not supported. The AWIPS hydrologic applications were designed to only support primary and secondary backup. However, during exceptional weather events where planned tertiary hydro support would be needed, WFOs can contact the Office of Central Processing (OCP) Hydrology Support group for assistance and also notify the SRH Hydrologic Services Branch (HSB). Either contact AWIPS NCF, which would then contact the OCP group, or contact the OCP group directly. OCP will then help set up a limited tertiary backup capability that includes product issuance capabilities. Any tertiary hydro support not related to impending weather will be coordinated with HSB first.

3.5 Unable to Invoke Backup

If a primary backup office is unable to back up their paired office, the requesting office should immediately contact the secondary backup office for assistance and then the tertiary office, if necessary.

If no offices can provide support, immediately call the SR ROC for assistance, who will then contact the SRH Service Backup Program Manager to look into options.

It is impossible to dictate instructions for every possible situation, and office staff must use initiative and good judgment. However, if the event involves a life-threatening situation, the requesting office should make this point clear to the backup offices. Partner offices should recognize the importance of the NWS warning mission, and do everything at their practical disposal to maintain high impact services in the requesting office's area of responsibility.

Further, if an office is already backing up an office and gets asked to back up another

office at the same time, explain you are already backing up an office and will not be able to help. If the office who is down cannot be backed up by any of their other pairings listed in Appendix A, contact the SR ROC right away, who then will contact the SRH Service Backup Program Manager to find a solution.

As a reminder about multiple backup responsibilities, there may be circumstances where it is impossible for one office to effectively provide complete backup for another office. In such circumstances, an office requiring backup may need to have its operations divided between the primary, secondary, and/or tertiary offices. This is a common practice and can be very helpful to backup offices.

Offices who have experienced a rejection of service backup by their backup offices will notify the SR ROC as soon as possible. The Hydrologic Services Branch (HSB) Chief or Meteorological Services Branch (MSB) Chief will, in turn, be informed of these events and will review the situation and collaborate on a solution.

3.6   Notification and Coordination Procedures

An Administrative Alert Message (SRHADASRH) is the primary means used by offices to notify SRH, SR ROC, and other surrounding offices when:

   a. backup procedures have been invoked, and
   b. when normal operations are restored.

In cases where an office must seek safer shelter or evacuate, employees will ensure their personal safety first and then complete notification and coordination procedures.

The requirement to send an administrative message applies to planned outages and drills, as well as unplanned outages. The initial ADA will be sent by the office taking over backup operations or conducting backup for the requesting office. After the requesting office is restored, that office will then send an ADA message saying they have taken back over responsibilities. See Section 3.6.1 for the format and set up of the SRHADASRH product.

The office may use other communication channels (e.g., AWIPS Collaboration Tool, NWSChat) to supplement, but not replace, the administrative message.

3.6.1 ADA Format

Offices should use the SRHADASRH text formatter on VLAB which sets up a template and GUI to create ADAs in AWIPS. The formatter will be run by the office doing the backup for the initial ADA, and the office returning from backup will run the final ADA.

SRHADASRH products should be addressed to ALL in the AWIPS header block text window to notify other offices, SRH, and the SR ROC that the backup process has been initiated.

The "TO" line of the ADA will state "All Southern Region Offices" and only use the 3 letter XXX format for office names. The formatter automatically creates this format.

See Appendix F for examples.

Further, every office is to ensure SRHADASRH is locally configured to *alarm audibly* on the AWIPS Text Workstation.

4   Operations for WFOs for Planned or Unplanned Backups

When an office becomes inoperative, the below information must be followed for a smooth backup process.

4.1   Notify the Appropriate Backup Office of the Situation

The office requesting backup will contact the backup office. If phone lines are down, be creative:
   a. Cell phone
   b. National Warning System (NAWAS)
   c. Hurricane Hotline
   d. NWSChat (remember that media can be on NWSChat so be careful not to state the reason for being down)
   e. HAM radios have been used to ask an amateur radio point-of-contact to call the backup office or SRH.

Offices should document all actions taken while invoking backup procedures and note them in the office shift log.

4.2   Actions for Backup Office

The office conducting the backup will assume the operations of the requesting office.

4.2.1   Send SRHADASRH

The office assuming backup will send an Administrative Alert message (SRHADASRH). See Section 3.6.1 for details.

4.2.2   Monitor Weather and Assume Operational Responsibility

Monitor the weather across the County Warning Area (CWA) of the requesting office, issue warnings and other hazardous communications, grids, and other routine products as needed until the office has resumed functions.

If the requesting office uses social media and graphicasts routinely in their operations, the backup office should try to assume that capability to the extent possible. Further, all efforts should be made to emulate the requesting office on NWSChat.

There are some WFO products and services that do not have a robust backup mechanism in place. These products and services include, but are not limited to, web page, climate services, AHPS, and NWR.

As specified in Directive 10-1701, Section 4.2.3, all products issued by a backup office will contain the product identifiers and mass media headers of the office being backed up. For example, if WFO Midland experiences an outage requiring backup, WFO San Angelo will issue the Midland zone forecast using the appropriate Midland product identifier along with "ISSUED BY NATIONAL WEATHER SERVICE SAN ANGELO TX" line. This format will ensure proper dissemination.

4.3   Once Operations are Restored

When the disabled office becomes operable, they will contact the office backing them up.

4.3.1 Send SRHADASRH

The office who is no longer being backed up will send an SRHADASRH to notify that backup has ended. See Section 3.6.1 for details.

4.3.2 Fill out Online SRH Notification Form

The office that assumed backup responsibility will fill out the online notification form, which notifies SRH. The backup will be tracked on the backup drill spreadsheet and SRH can be informed of issues discovered.

The Google form is the only method to track completion of a backup, gather issues, findings, and best practices. Local focal points, ITOs, and NCF should first troubleshoot issues that arise during the backup. If issues persist, include an explanation of the issue and any associated trouble ticket numbers on the form.

Offices must fill out the form after every backup situation (drills, as well as planned/unplanned outages). If it was a mutual backup, each office must complete the form.

After this form is filled out, SRH then receives the information via email. SRH MSB will track all backups and assist offices in resolving any significant issues identified with the help from the SR AWIPS Program Manager and the SR Backup Think Tank (see Section 9).

5   Backup Assignments for Offices

Appendix A details the backup office pairings for WFOs and CWSUs. The SR ROC will coordinate with the other regions when service backup of ROC Operations is required.

During extreme and/or catastrophic events, the pairings may not be feasible due to the event at hand. SRH will discuss (along with input from the affected office's and potential new pairings) plans to potentially alter their backup pairings in those cases.

There have been unusual cases where quaternary backups were planned on-the-fly, set up, and temporarily put in place. When backup pairings go beyond tertiary, MSB works with NWSHQ, NWSHQ AWIPS Program Office, NWSHQ Hydro Division, and affected local offices to configure AWIPS for these type of backup situations. An example would be a far inland office under expected fair weather conditions backing up a coastal site impacted by a hurricane. Preparation, flexibility, and agility are keys to a successful backup program.

If for any reason backup plans cannot be successfully implemented/invoked, such as all backup offices being down or weather impacts, notify the SR ROC at 682-703-3747 immediately and they will notify the SRH Backup Program Manager.

6   Drills

6.1   The Importance of Service Backup Drills

Service backup operations are complex and require the staff at the involved offices to be familiar with each other's programs and responsibilities. Management will ensure an adequate degree of awareness by requiring ALL forecast operations personnel to remain proficient in service backup operations. Staff members should review the backup office resources listed in Section 8 on a regular basis.

It is essential that all forecasters be fully trained to provide service backup. Management should have as many staff members as possible participate in each backup drill. This will ensure office personnel are better prepared, able, and confident to handle these situations and the office maintains the greatest capability to perform service backup successfully.

If your office is backing up another for their AWIPS build AND the services provided cover all the requirements in Section 6.3 below, then it can be counted as a backup drill. Further, if a no-notice outage meets or exceeds all the backup drill requirements, it also can count towards a drill.

6.2   Backup Drills Per Calendar Year

WFOs will conduct *at least* one service backup annually for each of their backup pairings. See the requirements in Section 6.3 below. CWSU and RFCs will conduct two service backups annually.

6.3   Backup Drill Requirements

A formal checklist for the backup drill requirements is located in Appendix B and also on the Google Site. In summary, the following requirements must be met to be counted as a backup drill:

1.   Conducted the backup for *at least four hours*
2.   Included the issuance of routine products or services. For a WFO, service backup will include a complete set of forecast grids and subsequent public,

aviation forecasts, any required WARNGEN products, and routine hydrologic or fire weather/marine products, which would normally be made during the forecast period

3. Verified non-routine product configuration to the extent possible. For example, a WFO would verify SVR and TOR text configuration and check wording of WARNGEN templates
4. Tested Iridium satellite phone by calling the SR ROC (see Section 6.5)
5. Completed online backup notification form

6.4 SRH will Track Drills

SRH MSB will track all backups. MSB, the AWIPS Program Manager, and the SR Backup Think Tank will assist offices with any significant issues identified during the drill (see Section 9).

6.5 Testing Satellite Phone during Drill/Backup (WFO and RFC only)

Testing the satellite phone is a part of the backup drill requirements (see Section 6.3).

7 Testing Iridium Satellite Phones (WFO and RFC only)

a. Test Every 90 Days

Offices with an Iridium satellite phone will test the phone with the ROC at last every 90 days. The SR ROC keeps a log of the satellite tests.

b. How to Test

To initiate a satellite phone test, simply call the SR ROC any day between 9am and 5pm (at 682-703-3747) using your satellite phone. Identify your office and note that you are conducting a test using your satellite phone. Conversely, you can call the SR ROC via landline to have them initiate a test call to your satellite phone.

Note: During a real backup service event (i.e., not a drill), you can call the ROC during the next business day to fulfill the requirement.

Guidance and instructions for the use of the Iridium satellite phone should be included in your local office reference materials. These should be printed out for quick access in case of an Internet outage.

8 Backup Preparations

For service backup to be implemented in an orderly and efficient manner, each office will supply its backup offices with the following items twice a year (at least by January and July or as changes occur):

- Current Station Duty Manual (SDM) and/or office instructions on your local office Google Site.

- Copies of AWIPS configuration files or configuration files for other software or systems needed to create and issue products.
- Contact information for partners and other key customers.

SDM
Each office will post a copy of their SDM on their office Google Site. In addition, each office will maintain a copy of their SDM on a CD or other electronic media, which will be kept at the office and also be provided to office's assigned backup responsibility. This will ensure availability of these resources in the event traditional access points are not available.

Graphical Forecast Editor (GFE) (WFO only)
Backing up WFO grids is a necessary and important function during service backup to provide continued service to our customers. All grids are required to be prepared and disseminated during service backup. This is accomplished by importing the configuration and digital data for the inoperative site from the national Central Backup Server, which offices should keep updated frequently.

Maps/Shapefiles
For service backup to function properly, it is critical that all offices share all changes of any critical maps/shapefiles with their backup offices as soon as possible. If the updates are part of the coordinated/baselined HQ maps, offices can update from there, otherwise, files will need to be shared between offices. Either way, it is important that your backup office is aware of the changes to make the necessary updates. Do _**not**_ wait to share your updated files with your backup office, otherwise valuable time may be lost in an unplanned backup situation to fix those files.

AFOS2AWIPS Localization (a2a file)
The afos2awips localization in AWIPS is essential for service backup to function properly. This is a localization file built from the Localization Perspective in Common AWIPS Visualization Environment (CAVE) (EDEX > AFOS2AWIPS) where all text product PILs with issuing office are listed. If the up office does not have all of the down office's PILs in their afos2awips localization and the up office attempts to issue a text product not in their a2a localization, the office will not be able to issue the product.

AFOS2AWIPS entries are sensitive not only to missing PILs, but also to old unused identifiers and extra letters in PILs. Issues with GFE text product formatters can arise from these problems since the a2a file also is used to create *CONFIGURED* text product formatter files in the localization perspective.

Every office's a2a file should be synced with the national baseline National Dataset Maintenance (NDM) file if sites are keeping the NDM afos2awips.txt updates on their system, or at least ALWAYS shared and manually synced/tested between every backup office.

WARNGEN Templates
Any time a change is made to the WARNGEN templates on a local or national level, the updates need to be shared with the backup offices right away. Changes to the WARNGEN

templates include the products themselves and the configuration for the WARNGEN GUI. Unplanned outages can happen anytime so sharing updated WARGEN templates is a key step in completing the NWS mission of protecting lives and property. Offices need to share every warning template that would be used during a normal warning environment.

Impact-based Decision Support Services (IDSS)
IDSS has become an important means of conveying potential weather impacts to key decision-makers. The amount of resources employed toward IDSS as well as the tools utilized and support provided varies widely from office to office. Offices should, to the extent possible, attempt to mirror the IDSS capabilities of their backup offices and document deficiencies where lack of resources or capabilities precludes them from providing this support. Offices requesting service backup should retain IDSS responsibility as long as possibly; IDSS is founded on the relationships built over time and the office best knows the needs of their partners and customers best.

Social Media, NWSChat, and Graphicasts
Essential non-AWIPS communications such as social media, NWSChat, and graphicasts are an important part of the services NWS offices provides. Since philosophies/content differ substantially from office-to-office, coordination is <u>very</u> important in ensuring that products and services are, to the extent possible, seamless during backup operations. It's important for offices to exchange ideas on how (and under what conditions) these communication platforms will be maintained by the backup office.

This link contains procedures, policies, and best practices on the use of social media, NWSChat, and graphicasts:

GraphiDSS backup information is located here.

9   SR Backup Program

The SR backup program is led by the Communications and Dissemination Program Manager at SRH in MSB (referred to in this document as the Backup Program Manager). The backup to the Backup Program Manager is the MSB Chief.

The backup program also has a "Backup Think Tank," which is comprised of a few voluntary members from SR Forecast Offices, the SR AWIPS Program Manager, and the SR Backup Program Manager. The members are listed on the SR Backup Google Site, and they also maintain the Google site.

The Backup Think Tank tracks all issues the offices report, helps resolves issues, keeps track of action items, prepares instructions, and when necessary, elevates significant backup issues accordingly.

Appendix A
Southern Region Service Backup Assignments

Weather Forecast Offices:

Requesting/Disabled Weather Forecast Office	Primary Backup	Secondary Backup	Tertiary Backup
Albuquerque, NM	El Paso	Amarillo	Lubbock
Amarillo, TX	Lubbock	Albuquerque	Midland
Atlanta/Peachtree City, GA	Birmingham	Morristown	Jackson
Birmingham, AL	Atlanta/Peachtree City	Huntsville	Little Rock
Brownsville, TX	By Lake Charles	San Antonio/Austin	New Orleans
Corpus Christi, TX	San Antonio/Austin	Houston/Galveston	Mobile
El Paso, TX	Albuquerque	Midland	San Angelo
Fort Worth/Dallas, TX	Shreveport	Norman	Tulsa
Huntsville, AL	Jackson	Birmingham	Morristown
Houston/Galveston, TX	Lake Charles	Corpus Christi	Tallahassee
Jackson, MS	Huntsville	Shreveport	Nashville and Atlanta/Peachtree City
Jacksonville, FL	Tallahassee	Key West	Miami, and by San Juan
Key West, FL	Miami	Jacksonville	Melbourne
Lake Charles, LA	Houston/Galveston, and for Brownsville	New Orleans	Tampa
Little Rock, AR	Memphis	Tulsa	Birmingham
Lubbock, TX	Amarillo	San Angelo	Albuquerque
Melbourne, FL	Tampa	San Juan	Key West
Memphis, TN	Little Rock	Nashville	Shreveport
Miami, FL	Key West, and for San Juan	Tampa	Jacksonville
Midland, TX	San Angelo	El Paso	Amarillo
Mobile, AL	New Orleans	Tallahassee	Corpus Christi
Morristown, TN	Nashville	Atlanta/Peachtree City	Huntsville
Nashville, TN	Morristown	Memphis	Jackson
New Orleans, LA	Mobile	Lake Charles	Brownsville
Norman, OK	Tulsa	Fort Worth/Dallas	San Antonio/Austin
San Angelo, TX	Midland	Lubbock	El Paso
San Antonio/Austin, TX	Corpus Christi	Brownsville	Norman
San Juan, PR	By Miami	Melbourne	For Jacksonville
Shreveport, LA	Fort Worth/Dallas	Jackson	Memphis

Tallahassee, FL	Jacksonville	Mobile	Houston/Galveston
Tampa, FL	Melbourne	Miami	Lake Charles
Tulsa, OK	Norman	Little Rock	Fort Worth/Dallas

Center Weather Service Units:

Center Weather Service Unit	Primary Backup	Secondary Backup	Tertiary Backup
Albuquerque, NM	Denver (Longmont)		
Fort Worth, TX	Houston		
Houston, TX	Fort Worth		
Memphis, TN	Atlanta		
Atlanta, GA	Memphis		
Jacksonville, FL	Miami		
Miami, FL	Jacksonville		

Appendix B
<u>Backup Requirement Checklist</u>

Backup drill requirements:

_____**1.** Conducted for *<u>at least four hours</u>*.

_____**2.** Included the issuance of a complete set of forecast grids and subsequent public and aviation text forecasts, any required WWA or WARNGEN products, and routine hydrologic or fire weather/marine products, which would normally be issued during the forecast period.

_____**3.** Verified non-routine product configuration to the extent possible. For example, a WFO would verify SVR and TOR text configuration and check wording of WARNGEN templates.

_____**4.** Tested Iridium satellite phone by calling the SR ROC at 682-703-3747 (see Section 6.5). Note: If this is a real backup services event (i.e. not a drill), you can call the ROC during the next business day to fulfill this requirement.

_____**5.** Completed online <u>backup notification form</u>.

NOTE: <u>All</u> the above requirements must be met to be counted as a drill.

Appendix C
RFC Specific Backup Instructions for Both WFOs and RFCs

a. If an RFC goes into backup, they will send an SRHADASRH product which will notify other offices, SRH, and the SR ROC that the backup process has been initiated. When returning to normal operations, the RFC will send another SRHADASRH for notification. See Section 3.6.1 for ADA format.

b. The requesting RFC will notify affected WFOs immediately that they have hydrologic responsibilities until the RFC can commence backup services on their backup system. RFCs should use the RFC backup system during AWIPS system or communication outages.

c. Until the RFC has established their backup, the WFO staff should be prepared to take over hydrologic responsibilities. During this time, the WFOs will monitor, and adjust existing river forecasts as necessary until the RFC is able to again assume that responsibility. The WFOs will keep the hydrologic forecasts and warnings as accurate as possible. The WFO staff should access any resources practical in this effort, including phone coordination with the servicing RFC.

d. RFCs will ensure that staff is trained in the use of the RFC backup system, including procedures to serve as the "backup dissemination office" to another office.

e. RFCs will determine the best location (off-site if do-able) to store their portable RFC backup system.

f. RFCs will use the RFC backup system to generate and disseminate a core suite of hydrologic products to support WFO hydrologic operations. See Appendix A in NWSI 10-2201 for a list of critical products.

g. RFCs will ensure that the RFC backup system is configured with the latest software (e.g., Community Hydrologic Prediction System (CHPS) to support hydrometeorological operations at the RFC.

h. SRH, in coordination with the Hydrologic Services Branch and the RFCs, will provide information technology support for RFC backup operations.

Appendix D
CWSU Specific Service Backup Instructions

CWSU backup office pairings are documented in Appendix B of <u>NWSI 10-803</u> and also located in Appendix A of this Supplement.

CWSU backup requirements are documented in Chapter 9 of <u>NWSI 10-803</u>.

CWSUs will issue an ADA product for backup notification. This ADA product will notify other offices, SRH, and the SR ROC that you are being backed up.

Backup Preparation:

- CWSUs must have access to their backup site's Station Duty Manual and/or Weather Information Play Book. A copy of your SDM will be located on the office Google Site.
- CWSUs should ensure they are set up to receive the ADA product.
- CWSUs should be able to provide scheduled and on-demand briefings, Center Weather Advisories (CWAs), and Meteorological Impact Statements.

Going into Backup: If a CWSU goes into backup, the requesting CWSU will call their backup office to notify them. The backup CWSU will send an SRHADASRH product to ALL and state which CWSU has backup responsibility.

When returning to normal operations, the previously requesting CWSU will inform the backup office of the return to normal operations and also send out an SRHADASRH product to notify surrounding offices.

Backup Drills: CWSUs will conduct <u>two</u> backup drills a year. The results of backup drills and suggestions for improvement will be submitted via the Google Form located at <u>https://docs.google.com/a/noaa.gov/spreadsheet/viewform?usp=drive_web&formkey=dGp5NEc4TUh2MmxIand5ZDltSWVrdlE6MA#gid=0</u>.

The information will be passed on to the MSB Chief and the Aviation Program Manager. MSB will <u>keep a record</u> of the backup drills each office conducts and assist the office in resolving any significant issues identified.

Appendix E
WFO Specific Instructions

The goal of Service Backup is to ensure the continuation of essential products and services and to ensure the offices are familiar with the programs, products, and customers of their backup partner. Familiarity with each other's programs and responsibilities ensures an effective backup process. The following is a list of mandatory and strongly considered activities for backup offices:

Administration (mandatory):
1) Exchange SDMs or office instructions.
2) Keep current examples of the various products your backup office issues in your SDM.
3) Make sure the Administrative Alert Messages from <u>all</u> affected ISC sites are alarmed on AWIPS.
4) Ensure all minor format differences between your products and your backup office's products are completely understood.
5) Provide your backup office with a list of emergency managers, storm spotters, and media in your CWA along with necessary phone numbers and email addresses.
6) If you have any special NWSChat rooms, share that information with your backup office. Remember that you will need to give backup office personnel permission to enter these rooms (the admins can add all NWS personnel from a specific office through the room management web page). Most office's "EM" rooms are only accessible to that office's staff, not their backup office's staff, as an example.
7) Share web-based capabilities, like intranet webpages or severe weather email links.
8) Share E-19s that provide flood damage information, historical crests, and other hydrological information.
9) Share listings of automated gages, sensors, and Automated Surface Observing System (ASOS) units with associated phone numbers, etc.
10) Share listings of meteorological, hydrological, and RFC products on AWIPS.
11) Share social media practices and recommendations for social media interaction during backup services.

Training (mandatory):
12) Conduct seminars and training sessions with your backup office.
13) Share local climatology, hydrologic, and meteorological nuances that your office has discovered through experience and any rules-of-thumb or local forecasting techniques.
14) Play a vital role in staff training. An example of this may be having a new MIC being assisted by the backup office MIC.
15) Share lessons learned from severe weather or unusual weather events/forecasts with your backup office.

Resources (mandatory):
16) Make sure the office emergency phone/satellite phone is charged and everyone knows where it is located, know how to use it, and that the number is accessible. Ensure necessary phone numbers are preprogrammed into the phone.
17) Test at least once a year transferring your phone lines (VOIP – Voice Over Internet Protocol) to your backup offices.

Appendix E Continued
WFO Specific Instructions

IT (mandatory):
18) Make sure AWIPS is configured to support the duties of your backup office.
19) Share any local applications necessary for operations with your backup offices to ensure consistency of local applications.
20) BEFORE your backup drills, ensure the Graphical Forecast Editor (GFE) service backup works a week or so prior to the backup date. Many times, changes have been made at the backup office but have not been uploaded to the central server.   Doing those checks a week or so prior to the scheduled backup, in addition to the training/drills, can really make the backup process easier.
21) Severe weather backup operations/WARNGEN templates must be shared with backup offices when updated.
22) Make sure to have all the **most-up-to-date** maps and backgrounds for any computer programs, such as WARNGEN shapefiles, localization for Thin Client, etc.
23) Utilize the AWIPS Collaboration Tool and NWSChat during backup events.

Training (strongly recommended):
24) The backup office should do a case study within the primary offices domain and coordinate the results with the SOO/WCM/designee of the primary office.
25) Develop a forecaster exchange program. Forecasters can be exchanged for a day or two to fully experience the programs of their backup office.

Outreach (strongly recommended):
26) Notify emergency managers and other core partners of the backup plan.
27) Introduce your backup office to your emergency managers.
28) Promote staff participation in backup office visitations.
29) Have mutual customer service workshops or customer advisory committee meetings.
30) Coordinate active customer service outreach programs.
31) Coordinate any focal point activity with your backup office (e.g., severe weather, hurricane, hydrology, AWIPS, marine, aviation, radar, weather radio, climatology, etc.).
32) Ensure Amateur Radio operators can help others in other CWAs.

ASOS and Upper Air:
A WFO providing service backup will provide ASOS observation monitoring as described in NWSI 10-1305.

ASOS and the Upper Air systems automatically connect and/or can be dialed manually to transmit the observations per a network configuration plan including redundant dial backup. This network configuration plan is not a part of this Supplement. If the primary and backup automated communication systems fail and/or manual observations are generated, the responsible WFO will contact AOMC if there are missing observations.

Appendix E Continued
WFO Specific Instructions

Broadcast Message Handler (BMH) Preparation:
When an office must evacuate, the automated BMH program will be able to continue broadcasting as normal as long as products come into AWIPS from the service backup office and are automatically transmitted to BMH. For those products that are not fully automated, an office should add a short message to the broadcast cycle stating that only limited updates will be available until further notice.   **Ensure that <u>no</u> public announcement is made that the office has been evacuated.**

Social Media:
Social media is an integral part of operations. Since philosophies/content differ substantially from office-to-office, coordination is <u>very</u> important in backing up these activities to try to emulate that capability to the extent possible during backup. It's important for offices to exchange ideas on how (and under what conditions) these communication platforms will be maintained by the backup office.

A Google Site has been established to house updated procedures and best-practices: https://sites.google.com/a/noaa.gov/nws-sr-stsd/home/project-documentation/graphicasts

GFE:
Backing up WFO grids is a necessary and important function during service backup to provide continued service to our customers. All grids are required to be prepared and disseminated during service backup. This is accomplished by importing the configuration and digital data for the inoperative site from the national Central Backup Server.

For service backup to function properly, it is critical that all offices share any/all changes to their GFE maps/shapefiles with their backup offices <u>at the time those changes are made</u>. Do <u>not</u> wait to share your updated files with your backup office, otherwise valuable time may be lost in a backup situation to fix those files.

WHFS and other Hydrologic Procedures:
The WFO Hydrologic Forecast System (WHFS) support group at NWS HQ will provide system support for the transfer of critical information from the initiating site to all backup offices. Critical information includes RiverPro Templates, Product Content Control (PCC) files, and key information in the WHFS database. This file transfer should be performed whenever significant changes are made to critical hydrology information. For coastal and first tier inland offices, this process needs to be performed prior to the start of hurricane season. This process will be initiated by the office opening a trouble ticket with NCF requesting the file transfer to support service backup.

Appendix E Continued
WFO Specific Instructions

Other important hydrologic information that needs to be shared by the local office with the backup offices:

- Relevant parts of the Hydrologic Services Manual (HSM) (including detailed maps, examples of products issued by your office, explanation of special cases or conditions at river points in your HSA, etc.).
- Current E-19s.
- Templates or pre-formats for hydrologic products, along with instructions.
- Current rating curves.
- List of hydrologic customers, including their phone numbers and what products they use.
- WHFS and HYDROMET at the backup sites needs to have access to all hydrometeorological data needed to perform hydrologic backup operations, as well as the forecasts generated by the RFC.

The backup office will ensure that AHPS web page service backup is invoked/terminated, as required. Instructions for invoking/terminating AHPS web page service backup support are available at this link:

https://drive.google.com/a/noaa.gov/file/d/0B2lyCy0W8LW7Mm1KVEZEN2pPRkE/view?usp=sharing

Radar Data Dissemination Backup:
It is now possible to reliably provide service backup for an inoperative office's radar products. The assumptions are that the inoperative office is still on the AWIPS WAN and that the WSR-88D is still functional. If a site has a scheduled, or non-scheduled, outage expected to last for several hours or more, a site's radar backup can act as the transmission site for the downed office's radar data.

More detailed information regarding the setup of radar backup can be found in your site's Radar File Help Sheet maintained by the Radar Operations Center. Each office's Radar Focal Point and ESA should have access to this documentation. Appendix G indicates the radar backup sites for the Southern Region and Appendix H provides WSR-88D data backup options.

Before entering into or terminating radar backup, site(s) should contact the NCF for support.

Appendix F
Administrative Message Examples

Backup Implementation Example.
Issued by the office conducting the backup.

NOUS74 KEHU 081321
ADASRH

Alert Administrative Message
National Weather Service Southern Region Headquarters
721 AM CST Thu Nov 8 2018

To: All Southern Region Offices

From: WFO OHX

Subject: WFO OHX providing Service Backup for WFO MRX

WFO OHX has assumed full service backup for WFO MRX due to a
service backup test.

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Resumption of Service Example.
The offices who resumes operations will send the ADA message.

NOUS74 KEHU 262017
ADASRH

Alert Administrative Message
National Weather Service Southern Region Headquarters
317 PM CDT Fri Oct 26 2018

To: All Southern Region Offices

From: WFO MRX

Subject: WFO MRX is resuming normal operations

WFO MRX has returned to service following backup due to a service
backup test. Special thanks to WFO JAN for providing service
backup.

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Appendix G
NWS Southern Region Radar Backup Assignments

WFO System	Provides Primary "radar" backup for…	and Secondary "radar" backup for …
ABQ	KEPZ & KHDX	KAMA
AMA	KLBB	KABX & KFDX
BMX	KFFC & KJGX	KHTX
BRO		KEWX & KDFX
CRP	KEWX & KDFX	KHGX
EPZ	KABX & KFDX	KMAF
EWX	KCRP	KBRO
FFC	KBMX & KMXX	KMRX
FWD	KSHV	KTLX, KFDR & KVNX
HUN	KDGX & KGWX	KBMX & KMXX
HGX	KLCH & KPOE	KCRP
JAN	KHTX	KSHV
JAX	KTLH & KEOX	KBYX
KEY	KAMX	KJAX & KVAX
LCH	KBRO & KHGX	KLIX
LIX	KMOB & KEVX	KLCH & KPOE
LUB	KAMA	KSJT & KDYX
LZK	KNQA	KINX & KSRX
MAF	KSJT & KDYX	KEPZ & KHDX
MEG	KLZK	KOHX
MFL	KBYX & TJUA	KTBW
MLB	KTBW	TJUA
MOB	KLIX	KTLH & KEOX
MRX	KOHX	KFFC & KJGX
OHX	KMRX	KNQA
OUN	KINX & KSRX	KFWS & KGRK
SJT	KMAF	KLBB
SJU		KMLB
SHV	KFWS & KGRK	KDGX & KGWX
TAE	KJAX & KVAX	KMOB & KEVX
TBW	KMLB	KAMX
TSA	KTLX, KFDR & KVNX	KLZK

Appendix H
WSR-88D Data Backup Options

Type of Backup	OTR	RMR	WAN Based ORPG Backup Scenario A	WAN Based ORPG Backup Scenario B	VSAT (Total Outage)
When to use	To supplement data received via the SBN on a one-product, one-time basis (i.e., Reflectivity Cross-Section).	To supplement data received via the SBN in larger quantities over a set period of time.	To replace data received via the SBN with data retrieved via RPS List.	If the primary AWIPS that normally transmits the WSR-88D data to the radar central server, SBN, etc., is down (i.e., during hardware or software installs), this capability enables an adjacent WFO AWIPS to restore WSR-88D data transmission to the radar central server, SBN, etc.	Long term outages greater than 48 hours. Can be configured at the WFO or the RDA depending upon outage conditions and location of RDA.
Limitations	While this can add additional products to what is already received via the SBN, it requires the user to issue repeatedly if more than one product is required or a product is required more than one time.	Manipulating RMR Lists is time-consuming and tedious and not easy to do on-the-fly.	Initiating a WAN Dedicated connection will terminate the SBN feed, which means that RPS Lists must be generated for each VCP mode and must include all products required for operations. Accessibility and bandwidth restrictions also apply during this form of backup limiting the size and number of products that may traverse this line.	Same as ORPG Backup Scenario A. In addition, this Scenario will utilize the national baseline RPS lists, so you will be limited to just the products on that list plus a smaller subset of the products on your local lists; the maximum number of products is 65.	Takes time to deploy from the ROC in Norman and takes time to set up and configure.
Support level needed	User	User	FXA or NCF	FXA or NCF	Regional HQ and ROC

ORPG – Open Radar Product Generator
RMR – Radar Multiple Request
ROC – Radar Operations Center
VSAT – Very Small Aperture Terminal (Satellite)
RPS – Routine Product Set
RDA – Radar Data Acquisition unit

OTR – One Time Request
NCF – Network Control Facility
WAN – Wide Area Network
SBN – Satellite Broadcast Network
VCP – Volume Coverage Pattern