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WESTERN REGION WFO BACK-UP PLAN

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SUMMARY OF REVISIONS: This supplement supersedes NWS Western Region Supplement 18-2003, dated January 4, 2004.

The following changes were made in this issuance:

1. Name change of certifying official.
2. Updated technical nomenclature, i.e. NOAAnet to OPSnet etc.
3. Includes added guidance on notifying Regional Operation Center in Section 2.6 Service Backup.

Signed 09/02/11
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1. Purpose: This regional supplement provides general guidance for service and system back-up of Western Region WFOs. **System back-up** is defined as action required to restore/back-up or for either partial or total loss of capabilities of the WSR-88D, WFO computer systems including AWIPS, telephone systems, or other hardware and software. Service back-up involves the assumption of grid preparation, dissemination of products and decision support activities of one office by another. For purpose of this supplement, "disabled" site is defined as the site requesting back-up or assistance. The term "back-up" site is defined as the site providing service back-up, (which may not be the closest office).

NOTE: This supplement cannot address every situation. Responsibility for the success of any system or service back-up resides with the operational team involved, exercising good judgment and common sense. Final responsibility resides with the Meteorologist in Charge (MIC) and, ultimately, with the Regional Director.

a. Local instructions. Each WFO is required to have local back-up plans. These plans will include preparing grids, maintaining decision support activities, disseminating products such as public, fire weather, marine, hydrologic, and aviation warnings, forecasts, statements, and continuing NOAA Weather Radio broadcasts, etc., for occasions when their offices are being backed up.

2. System Back-Up:

2.1 AWIPS: The AWIPS system architecture provides redundancy, if individual system components fail. In the event the Satellite Broadcast Network becomes inoperative, either at the Master Ground Station or at a WFO, OPSnet provides for limited data and product transfer between WFOs and the Network Control Facility (NCF), or between WFOs if the WFO downlink is inoperative. In addition, the NCF can dial into a WFO if a portion of OPSnet is inoperative to allow the WFO to disseminate products.

2.2 WSR-88D: Partial or total failure of the WSR-88D shall NOT be cause to request service back-up. If a WFO's will use adjacent WFO's WSR-88D's to monitor weather via AWIPS. The disabled WFO should request adjacent office's to monitor its WSR-88D's significant storms in the disabled WFO's area. The adjacent office (s) will provide the disabled office "advice" as to any possible significant or severe weather indicated on the WSR-88D and provide disabled office information such as storm structure etc. that cannot be received by assessing the adjacent WSR-88D via an AWIPS request.

2.3 Norstar Telephone System: In the event of a failure of land line telephone service, WFOs are equipped with cellular and satellite telephones for back-up purposes.

2.4 CRS: CRS is redundant system with dial processors. There is no nationally-established back-up of the CRS in the event of a complete failure of the system including the "fail-over" processor. In such a case WFOs should work with WRH/NWSH to take whatever actions necessary to restore/replace the equipment as soon as practicable. In the event of a partial failure of the CRS operational staff must be prepared to broadcast live, especially in an emergency. When an office must evacuate the automated CRS program will be able to continue broadcasting as normal as long as products come into AWIPS from the service back-up office and are automatically transmitted to CRS. 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 (do not announce the office has been evacuated). The Voice Improvement Processor (VIP) is not redundant in itself; however if it fails, products will automatically be voiced by the synthesized system with CRS itself.

2.5 Grids/Graphic Forecaster Editor: When service back-up is requested, IFPS software has been designed to provide a current set of grids covering the backed up office's CWA and a local configuration of their formatters. The assuming office will have all necessary configured software to maintain both grids and text based products via formatters. Every effort will be made to maintain a complete and current set of grids for the backed up offices service area.

When the failed office can resume ownership of their warning and forecast responsibilities, the backing up office will transfer the latest set of edited grids to their data base. At a minimum each office is responsible to provide their back-up offices with the latest standard IFPS local configuration via the national back-up server. For any non standard configurations or local scripts needed to produce products and service, it is the responsibility of that office to provide those additional configurations and scripts and provide training on how to use them.

3. WFO Service Back-Up:

PERSONNEL AT THE DISABLED SITE REMAIN THE BEST AUTHORITIES ON LOCAL WEATHER. THEY SHOULD RETAIN AS MUCH RESPONSIBILTY AS POSSIBLE DURING BACK-UP SITUATIONS.

When requested to perform service back-up, the back-up office will make every effort to fulfill the request. Except in rare circumstances, no office will perform service back-up for more than one WFO at any one time. Appendix A contains service back-up assignments for Western Region sites.

3.1 Preparation: MICs are expected to develop local service back-up strategies, particularly to support unique Decision Support activities. Several steps must be taken to prepare for a service back-up. These include:

a. Station personnel will develop and maintain a basic working knowledge of the climatology, terrain and hydrology of the sites (primary and secondary) for which they provide back-up. WFOs will provide their primary and secondary back-up sites with any unique forecast studies and climate and hydrology information (refer to Appendix E.

b. Each WFO will post on the WR Intranet (sharepoint or equivalent), a copy of their Station Duty Manual (SDM). This will provide a list of Weather Service products/services and copies of product format/files, transmission times, forms, current warning call-up lists, key media telephone numbers, and spotter call lists used by the disabled (primary) office to the appropriate back-up (primary and secondary) offices. These must be kept current; all affected back-up offices should be notified promptly of any changes. In addition, each WFO will maintain a copy of their SDM on a CD or other electronic media which will be provided to WFOs assigned back-up responsibility. This will ensure WFOs providing back-up have access to important information in the event they cannot access the WR Intranet. This will also enable the disabled WFO to have access to their SDM in the event they relocate to an EOC to assist the WFO providing back-up.

c. Each WFO will prepare a prioritized list of duties to follow when it is receiving service back-up but still is able to provide some local services. A sample list is included in Appendix B.

d. Each WFO will prepare a prioritized list of duties to follow when it is providing service back-up. This list will be used when it becomes impossible for the back-up office to issue products at the required times and decisions must be made to delay, shorten, or eliminate some products or services. Guidance with regard to prioritization of products at WFOs is provided by the Regional Supplement entitled "Prioritizing Products and Associated Activities for Western Region WFOs".

e. Following major storms, offices are required to conduct post-storm damage surveys. Often times, it is difficult to conduct damage surveys in a timely manner following the event due to continuing weather, numerous media inquires, or other higher priority concerns. In such an event(s), the office MIC should contact its primary or secondary back-up office for assistance in conducting a survey. In addition, Western Region Headquarters can also assist in surveys as appropriate.

3.2 Back-Up Execution:

There is no "one-size fits all" fast rule for service back-up. The weather situation, station staffing, and types of communication available will be factors in deciding whether to request service back-up. These same factors will also determine the extent of support the disabled site(s) can offer.

In a warning situation, or when there is reason to believe a warning situation is imminent, a station should request service back-up as soon as it becomes apparent that there may be a problem in disseminating warnings. The decision to transfer other forecasts may be delayed until the scope of the problem and the amount of back-up service required may be better assessed.

3.3 Regional Operation Center Notification:

The disabled WFO or its backup should notify the Regional Operations Center (ROC) as soon as possible via email that an unscheduled service backup has been activated. AWIPs can be set up to notify the ROC via its email function. When service backup is activated during a "high profile" weather/human caused event or when an office has sustained major damage or been evacuated, the ROC should be immediately contacted by phone. "High profile" is defined as but not limited to an event that has widespread national news attention, threatens or has caused damage to regional or national infrastructure, has caused significant loss of life, or during a weather caused High Impact Event (HIE).

3.4 Service Back-up Scenarios:

Scenario 1: The most common form of back-up involves a short-term transfer of function(s) to one or more back-up offices. When the FIC or MIC determines that service back-up is needed, the back-up site for each affected program should be contacted immediately. Depending on the situation, not all programs may need to

be transferred to service back-up sites. In addition, depending upon workload at the primary back-up WFO, FIC or MICs may wish to request secondary sites assume aviation responsibility to more evenly balance the impact upon back-up sites.

Scenario 2: If a catastrophic event, such as a fire, flood, release of toxic substances which could cause a station to be disabled for an extended period, it may be necessary to detail personnel from the disabled site to the service back-up site(s). In those cases, it is the responsibility of the back-up office's MIC to determine whether such long term assistance will be necessary and it's the responsibility of the disabled office MIC to determine the availability of staff for detail. **If an MIC decides that a personnel transfer would be useful, he/she should contact the Western Region Headquarters via the Regional Operation Center**. The decision to detail personnel to perform service back-up will be made by the MICs involved and the appropriate WSH personnel on a case-by-case basis.

4. Product Header Identification:

Back-up products shall be prepared using the AWIPS Product id (WMO header on the first line, followed by the NNNxxx second line) of the office being backed up. An extra line shall be added in the mass media header indicating the office that actually prepared the product, as per the following example:

FPUS56 KSEW 241140
ZFPSEW

WESTERN WASHINGTON ZONE FORECAST
NATIONAL WEATHER SERVICE SEATTLE-TACOMA, WA
ISSUED BY NATIONAL WEATHER SERVICE PORTLAND, OR
415 AM PDT TUE APR 24 2001

5. Back-Up Tests:

Tests of service and system back-ups are necessary. One test of each back-up assignment (**including both primary and secondary assignments**) for all offices will be performed each year. Actual back-ups meeting test criteria may be substituted. The test should be conducted for at least four hours and include the issuance of a complete set of forecast grids and subsequent public, and aviation forecasts and test warnings, any routine hydrologic or fire weather/marine products which would normally be made during the forecast period. The tests should be conducted using the primary service back-up system. During the test, the WFO should emulate a complete AWIPS failure (or more likely prepare for an event which requires the office to be evacuated). A brief report from the back-up office documenting the test including results and suggestions for improvement shall be forwarded to ROC upon completion of the exercise with a copy to the secondary or primary site, as appropriate. Please follow the outline provided in Appendix D.

APPENDIX A – WFO SERVICE BACK-UP

The following list shows primary and secondary back-up assignments for each Western Region Weather Forecast Office (WFO).

	Office To Be Backed Up	Primary Back-up	Secondary Back-up
1.	Glasgow	Billings	Great Falls
2.	Billings	Glasgow	Riverton
3.	Great Falls	Missoula	Glasgow
4.	Missoula	Great Falls	Spokane
5.	Pocatello	Boise	Salt Lake City
6.	Boise	Pocatello	Pendleton
7.	Spokane	Pendleton	Missoula
8.	Pendleton	Spokane	Seattle
9.	Seattle	Portland	Medford
10.	Portland	Seattle	Medford
11.	Medford	Eureka	Portland
12.	Eureka	Medford	San Francisco
13.	Sacramento	San Joaquin Valley	Reno
14.	San Francisco	Los Angeles	Eureka
15.	San Joaquin Valley	Sacramento	San Diego
16.	Los Angeles	San Diego	San Francisco
17.	San Diego	Los Angeles	San Francisco
18.	Phoenix	Tucson	Las Vegas
19.	Tucson	Phoenix	Flagstaff
20.	Flagstaff	Las Vegas	Phoenix
21.	Las Vegas	Flagstaff	Reno
22.	Reno	Elko	Sacramento
23.	Elko	Reno	Boise
24.	Salt Lake City	Grand Junction	Pocatello

Notes:

WFO Salt Lake City, Utah, is assigned as primary back-up to WFO Grand Junction, Colorado. WFO Billings Montana is assigned as secondary back-up to WFO Riverton Wyoming. WFO San Francisco Bay area is assigned primary back-up to WFO Honolulu for public, marine, and aviation.

APPENDIX B –SAMPLE PRIORITIZED DUTY LIST FOR DISABLED SITE

This is provided as a guideline for creating individual station lists outlining duty priorities while receiving service back-up. As long as staff has access to the office and telephone contact with the back-up site(s), these items are expected to be performed.

A. Based on observations and reports coming in from the spotter network, prepare and disseminate warnings

(1) to the back-up site for dissemination.
(2) over NOAA Weather Radio, if possible.
(3) over NAWAS.
(4) to warning call list offices and key media sources.

B. Disseminate watches - same order as item A.

C. Solicit information on potentially hazardous weather conditions in the area; relay to back-up site.

D. Answer questions as well as possible from local media or agencies on hazardous or potentially hazardous weather in the area.

E. Disseminate the local forecast via NOAA Weather Wire (as possible), and calls to the local media.

F. Update NOAA Weather Radio. In many cases, this will be limited to the local forecast, local climate data, the local observation, watches or warnings for the area, the station I.D., and a short statement to the effect that "due to computer problems, weather information outside of the immediate area is not available. We will resume normal programming as soon as possible."

G. Depending on the weather regime, some routine decision support briefings and public requests may be attempted, particularly during the first few hours of the back-up situation..

H. Handle public requests for information. For forecasts and general weather briefings outside the local area, most requests will need to be referred to another NWS office.

I. Write and disseminate climate summary, weather stories, etc. Dissemination will be via the NOAA Weather Radio and telephone calls to local Media.

APPENDIX C – WFO READINESS CHECKLIST

Has your WFO developed up-to-date instructions both for requesting implementation of service back-up and for the assumption of service back-up responsibilities?

Does the back-up instruction contain, or electronically link to an up-to-date versions of applicable parts of the SDM from WFO(s) your office may be required to back-up?

Does the back-up instruction contain a checklist of step-by-step instructions of when and how your office can request service back-up including alternate request methods in the event of a major telephone communications failure?

Does the back-up instruction contain a checklist of step-by-step instructions of actions to be taken when your office is requested to assume service back-up for another WFO?

Does the back-up instruction contain a checklist of step-by-step instructions of actions to be taken by your WFO after your WFO has been inoperable and is now resuming normal operations?

Does your WFO have 24 hour capability to configure and AWIPS workstation to emulate a workstation at a WFO for which you need to provide back-up?

APPENDIX D – WFO BACK-UP TEST RESULTS (OFFICE PROVIDING BACK-UP)

Was your staff able to reconfigure and AWIPS workstation to provide back-up products as required?

Was the workstation reconfiguration accomplished in a timely manner, i.e., less than 15 minutes for long term back-up and less than 5 minutes for short term?

Did the reconfigured workstations have the proper software and could it be properly configured for generating forecast and warning products for the area requiring back-up?

Was your office able to obtain data (as deemed necessary) both from the area to be backed up and pertaining to the area to be backed up to support service back-up? (i.e., had AWIPS been properly configured to acquire and store the data necessary to support back-up operations?)

Was the staff successful in preparing draft back-up products with proper communications headers and coding for all product types which might be required during back-up operations?

Was the staff successful in establishing contact with a random selection of individuals/entities on the back-up notification lists who would need to be notified in the event service back-up was implemented for their area?

Did the AWIPS properly disseminate the back-up products prepared by your office? (i.e., products were disseminated by the AWIPS SBN and the NWWS?)

Was your office able to notify appropriate officials; instructions; organizations in the area being backed up that service back-up was being provided?

Was your office able to maintain contact with appropriate officials; instructions; organizations in the area being backed up during the period of back-up operations?

APPENDIX E – GUIDELINES FOR WFO HYDROLOGIC SERVICE BACK-UP

The Western Region Back-up plan described in this supplement also applies to hydrologic services in the WFOs. The back-up assignments are the same as in Appendix A with the following exceptions:

Office To Be Backed Up	Primary Hydrology Back-Up	Secondary
Glasgow	Great Falls	Billings
Billings	Great Falls	Glasgow
Great Falls	Billings	Glasgow
Missoula	Spokane	Boise

The above assignments are for backing up hydrologic services for river flooding only (does not include flash flooding).

Local knowledge of hydrology in each office's HSA is an important part of providing quality hydrologic services to customers. It is difficult for back-up offices to maintain the same level of local knowledge of the hydrology of the HSAs they provide back-up services to. Basic information to allow them to issue critical hydrologic products during a back-up situation needs to be documented and made available to the back-up offices. This should include:

- Relevant parts of the HSM (including detailed maps, examples of products issued by your office, explanation of special cases or conditions at river points in your HSA, etc.).
- Up-to date E-19s.
- Templates or preformats for hydrologic products, along with instructions.
- Current rating tables.
- List of hydrologic customers, including their phone numbers and what products they use.

WHFS and HYDROMET at the back-up sites needs to have access to all hydrometeorological data needed to perform hydrologic back-up operations, as well as the forecasts generated by the RFC.

Any changes to the above documentation and databases need to be coordinated with the back-up sites. Automated procedures can be developed (or already exist) to do some of this coordination and updating. Currently there is no easy way to coordinate changes to WHFS databases with other offices. Some tools already exist in WHFS that provide some help for back-up. For example, a filtering system allows the user to display select groups of data points (for instance,

one may choose to display forecast points for the office being backed up instead of the usual display). In addition, Riverpro has an option which will allow you to create Riverpro products for the office under the settings menu.

If a WFO is expected to be disabled for more than 24 hours during a hydrologic event, it is strongly encouraged for staff from the disabled WFO to travel to the back-up site and help out with the back-up operations, since they have the hydrologic expertise of the HSA. In addition, RFC(s) are expected to provide more specialized support to offices that have been tasked to provide back-up services to another office, in the form of explaining forecasts, monitoring conditions, and assisting in situation assessment.

In back-up mode, higher priority shall be given to warnings and watches (refer to the WR supplement filed with 10-503, "Prioritizing Products and Associated Activities for Western Region WFOs"). Routine (non-flood related) hydrologic products may be dropped if the workload becomes too great. It is not expected for the back-up office to provide the same level of services as the disabled office would have.