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NATIONAL WEATHER SERVICE INSTRUCTION 10-2201

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Operations and Services
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BACKUP OPERATIONS

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SUMMARY OF REVISIONS: This directive supersedes NWSI 10-2201, dated February 5, 2004. This directive includes the following changes:

1. Updated wording in section 2.2 to indicate that specific backup plan information for NWS Regions can be found in the associated regional supplements, applicable to NWSI 10-2201. Also changed "primary and secondary backup sites" to just "backup sites"

2. Added wording to section 2.7 to account for the possibility of additional local observational data being ingested through LDAD which can be used to initialize GFE gridded data.

3. Updated Appendix A for additional wording to account for "RVA" as a critical product issued by RFC's during flooding situations.

4. Updated Appendix A to update wording for "coastal/lakeshore" WFO Critical products.

5. Updated Appendix A for removal of "Atlantic strike probabilities" from TPC critical products.

6. Updated Appendix A to add "Tropical cyclone wind speed probabilities (text only)", "Tropical cyclone aviation advisory (ICAO)" and "Tropical weather outlook (text only)" to the list of TPC and CPHC/WFO Honolulu Critical Products.

7. Removed wording "WFO Guam" in Appendix A-2, due to the fact that they are no longer a Meteorological Watch Office (MWO) and updated Appendix A-4, and G-3,4 to change wording of "Tropical Cyclone Summaries" to "Tropical Cyclone Summaries - fixes for both north and south Pacific" for CPHC/WFO Honolulu.

8. Removed wording in Appendices A-2, G-3 and G-4 to remove "Tropical Weather Discussions for north and south Pacific", as WFO Honolulu no longer issues those products.

9. Updated Appendix A for addition of "Day 3 Categorical Convective Outlook text and graphic" to SPC Critical products.

10. Updated, added and/or removed wording for list of products in Appendix A to be compliant with valid product names throughout the NWSI's.

11. Updated wording in Appendix G-6 to indicate the AWC will provide abbreviated Route Forecasts (ROFOR) during service backup.

12. Updated wording in Appendix B-1 to indicate AWIPS local configuration files are also necessary at the initiating and backup site and to indicate examples of manuals that could be useful for an initiating office to provide to their backup site.

13. Updated Appendix C for new RFC backup information in Table 1.

14. Removed wording in Appendices D-1, G-3 and G-6 indicating that Honolulu is the backup for Guam's SIGMET's. Honolulu is now the primary source of these SIGMETs.

15. Updated wording in Appendices D-2, G-1 and G-3 to indicate that the UK Meteorological Center is now called the London World Area Forecast Center, has moved from Bracknell to Exeter, England and also now issues Medium Level Significant Weather Charts.

16. Removed/updated wording in Appendix G-1, G-2 and G-5 to indicate how the NCEP Central Computing Facility (CCF) primary and backup operations have changed.

17. Updated wording in Appendices G-2 and G-3 to indicate that the Space Environment Center (SEC) is now known as the Space Weather Prediction Center (SWPC).

18. Updated Appendix H-1 and H-2 to add information regarding Continuity of Operations (COOP) and the NOAA employee check-in service for evacuations.
19. Modified/updated wording in Appendix I-3, RADAR (WSR 88-D) section, to accurately reflect the current technology used for radar service backup functions.
20. Updated Appendix A-4 to change AAWU to read "Anchorage Volcanic Ash Advisory Center (VAAC)" and added "Volcanic Ash Graphic" as a critical item under VAAC.
21. Updated Appendix D-3 to reflect current procedures and backup operations indicated in the OFCM Volcanic Ash National Operations Plan, dated August 2007.
22. Updated section 2.1 to define AWIPS.
23. Updated Appendix I-2, AWIPS section
24. Updated Appendix I-3, Weather Surveillance Radar, Aeronautical Fixed Telecommunications Network/Meteorological (AFTN/MET) and Hydrometeorological Automated Data System sections.
25. Updated section 4 to indicate that testing results must be documented and how.
26. Updated Appendix A for SWPC additions to Critical products list.
27. Updated Appendix I for complete update to the NWSTG section from the Office of the Chief Information Officer (OCIO).

Signed by 12/23/09

David Caldwell Date
Director, Office of Climate, Water,
and Weather Services

Backup Operations

Table of Contents: Page

1. Introduction. This Instruction describes procedures by which Weather Forecast Offices (WFOs), Weather Service Offices (WSOs), Center Weather Service Units (CWSUs), Centers/Offices with National Level Responsibilities, and River Forecast Centers (RFCs) will provide backup products and services. Backup is defined as the assumption of service responsibilities of an office, when it becomes unable to carry out its assigned responsibilities.

2. Responsibilities.

2.1 National Weather Service Headquarters (NWSH). NWSH will develop and maintain guidelines to govern field office backup when communications or system failures impact critical products, when an emergency or planned move leads to an office closing, or when operations must be transferred because information technology upgrades take place, such as upgrades to the Advanced Weather Interactive Processing System (AWIPS).

2.2 Regional Headquarters. Regional Headquarters, through their continuity of operations plan and/or Regional Supplements applicable to Backup Operations, will ensure each field office (i.e. WFO or WSO) documents plans for transferring or assuming operational responsibility during failures and emergencies. In addition, Regional Headquarters will review these plans routinely and coordinate site backup assignments within their region, consistent with the guidelines provided by NWSH. Backup Regional Supplements will provide concept of operations on the backup of products not covered in this directive, will designate each county's backup WFOs, and should provide guidance to local offices for internal and external coordination during backup situations.

2.3 Field Offices. Each field office will develop specific plans to respond to disruption of critical products, and for assuming functions of their assigned site backup office(s). Plans, procedures, and priorities for backup and evacuation will be reflected in the local procedures.

2.4 Center Weather Service Units. The initiating CWSUs will contact the designated backup office to coordinate and invoke backup activities.

2.5 River Forecast Centers. Responsibility for an RFC's products and services will remain with that center regardless of either the site at which computational backup is being performed or the failure scenario. Personnel may be transferred from the affected RFC to another location to provide RFC products and services.

2.6 Centers/Offices with National Level Responsibilities. Each Center providing operational products and each office with national responsibilities will develop specific plans to respond to the disruption of critical products, and for assuming the functions of assigned offices/centers.

2.7 Backup Data Collection. Offices providing data collection in backup mode will collect data in the same style (parameters, frequency of collection, dissemination) as the backed up office. This may also include quality-controlled observational data ingested locally through LDAD for use in the initialization of GFE gridded parameters. Backup office(s) will collect

sufficient data to support critical products listed in Appendix A. Once backup is no longer needed, the office will follow the guidance in the Regional supplement to resume responsibility

3. Instruction. Critical products (as defined in Appendix A) should remain accurate, reliable, and timely. Service backup will be invoked and responsibility for critical functions transferred to one or more pre-determined offices when a local office determines services can no longer be maintained. Whenever possible, the servicing office should transfer responsibility in a logical and efficient manner.

4. Backup Plan Testing. Testing of Backup plans will be conducted at least annually in accordance with the concept of operations. Results of the test will be documented in a memo for the Record.

Appendix A- Critical Products List

Critical Products. Watches, warnings, advisories, and supporting statements issued for the protection of life and property.

WFO Critical Products include:

- -watches
- -warnings
- -advisories
- -terminal aerodrome forecasts
- -red flag warning/fire weather watch
- -watch county notification statements
- -severe weather statements
- -hurricane local statements
- -flash flood statements
- -flood statement/urban and small stream flood advisories
- -river flood statements (FLS)
- -marine weather statements
- -coastal flood/lakeshore hazards
- -Great Lakes storm summaries
- - non-weather related Emergency messages
- -public information statements
- -marine weather warnings, watches and advisories
- -local storm reports

Products which should be provided, with minimal break in service:

- -Gridded data sets used to populate the NDFD and also to produce legacy text products derived from these grids, such as:
  - -zones/state forecast product
  - -Coded Cities Forecast
  - -Point Forecast Matrices
  - -coastal waters forecasts
  - -nearshore forecasts
  - -open-lake forecasts
  - -Marine Verification Forecasts
  - -fire weather forecasts
- -area forecast discussions
- -daily climate summaries
- -river statements
- -short term forecasts
- -flood potential outlooks
- -Hazardous Weather Outlooks

-Hydrologic Summary
- Daily River and Lake Summary
-winter weather and non-precipitation weather outlooks

Products which should be provided, with a break in service possible, include:
-area weather summary
-hourly weather roundup
-state/area temperature and precipitation table
-monthly climate summary
-record reports

CWSU Critical Products are:
- Meteorological Impact Statements
- Volcanic Ash Meteorological Impact Statements
- Center Weather Advisory

RFC Critical products are:
- river stage and flow forecasts (product category RVF and/or RVA as necessary) issued during flood situations.

RFC Products which should be provided with minimal break in service include:
- river stage and flow forecasts
- headwater guidance (product category FFH)
- flash flood guidance for basins and counties (product category FFG)
- gridded flash flood guidance
- Hydrometeorological coordination message (HCM), and
- RFC Quantitative Precipitation Forecasts (QPF).

Centers/Offices with National Level Products and Services:

Aviation Meteorological Watch Offices (MWOs) - Aviation Weather Center (AWC), Alaska Aviation Weather Unit (AAWU), Weather Forecast Office (WFO) Honolulu.

Products Which Will Be Provided Without A Break In Service:
- Significant Meteorological Information (SIGMETs)
- Airman's Meteorological Information (AIRMETs)

Products Which Will Be Provided With No More Than One Missed Scheduled Issuance:
- Area Forecast (FA)

Products Which Will Be Provided As Soon As Resources Permit:
- Route Forecast (ROFOR) (Temperatures and Winds only)
- Graphical Products

National Centers for Environmental Predicion (NCEP) Central Operations (NCO):

- NCEP Global model forecasts
- NCEP World Area Forecast System (WAFS) fields and charts
- NCEP mesoscale model forecasts
- NCEP Rapid Update Cycle (RUC) model forecasts
- NCEP wave models
- Critical Weather Day statements
- Senior Duty Meteorologist status messages
- Atmospheric Dispersion (VAFTAD/HYSPLIT) model output, and
- GFDL model forecasts.

Air Weather Center (AWC):

- WAFS Significant Weather Charts

Storm Prediction Center(SPC):

- Public Tornado/Severe Thunderstorm Watches
- Aviation Tornado/Severe Thunderstorm Watches
- Watch County List
- Day 1 Categorical Convective Outlook text and graphic
- Day 2 Categorical Convective Outlook text and graphic,
- Day 3 Categorical Convective Outlook text and graphic, and
- SPC Administrative message.

Ocean Prediction Center (OPC):

- Atlantic Offshore Waters Forecast
- Atlantic High Seas Forecast
- Pacific Offshore Waters Forecast and
- Pacific High Seas Forecast.

Tropical Prediction Center (TPC):

- Tropical cyclone public advisories
- Tropical cyclone forecast/advisories
- Tropical cyclone discussion
- Tropical cyclone wind speed probabilities (text only)
- Tropical cyclone aviation advisory (ICAO)
- Tropical weather outlook (text only)
- High Seas Forecasts -
    - 1) northeast Pacific,
    - 2) southeast Pacific, and
    - 3) Atlantic, Caribbean Sea, and Gulf of Mexico
- Offshore Waters Forecast –
    - 1) Gulf of Mexico,
    - 2) Caribbean Sea, and southwest and tropical north Atlantic

Central Pacific Hurricane Center (CPHC):

- Tropical cyclone public advisories
- Tropical cyclone forecast/advisories
- Tropical cyclone discussions
- Tropical cyclone summaries - fixes for both north and south Pacific
- Tropical cyclone wind speed probabilities (text only)
- Tropical cyclone aviation advisory (ICAO)
- Tropical weather outlook (text only)

WFO Honolulu:

- Hawaii offshore waters forecast
- North and South Pacific High Seas Forecast
- Satellite Interpretation Messages

WFO Guam:

- Tropical cyclone public advisories

Anchorage Volcanic Ash Advisory Center (VAAC):

Critical

- Volcanic Ash Advisories
- Volcanic Ash Graphic

Tsunami Warning Centers

Critical

- Tsunami Watches
- Tsunami Warnings
- Tsunami Advisories
- Tsunami Information Bulletins

Space Weather Prediction Center

Critical

- Space Weather Alerts
- Space Weather Watches
- Space Weather Warnings
- 3-hourly Space Weather Conditions and Forecast (WWV/WWVH)
- Daily Space Weather Forecast
- GEOALERT (WWA) and GEOADVICE (RWC)
- Solar Region Summary
- Solar Geophysical Activity Summary

Appendix B- Preparatory Activities for Service Backup

Both the site and backup office(s) will ensure all preparations for a smooth transfer are complete prior to invoking backup.

Weather Forecast Offices and Center Weather Service Units.

Initiating Site. An office will provide to its designated backup site(s):

a. examples of products and specific instructions and other information necessary for their creation or amendment, such as a Station Duty Manual (SDM) and/or specialized Forecast manual;

b. preformats, AWIPS configuration files and applications programs necessary to create these products;

c. important telephone numbers in the event there is a total communications outage;

and

d. references, case studies, and other documentation giving knowledge of the climatology and terrain of the forecast area.

Backup Site. A backup site will ensure:

a. necessary products, preformats and AWIPS configuration files are stored in their data base;

b. data and applications programs necessary for the creation of the products are available to the extent possible;

c. other information listed under c, above, are documented in the local procedures; and operational staff maintain knowledge of the climatology and terrain of the sites for which they provide backup.

Each WFO should be able to provide critical hydrological services without RFC river forecasts (RVF) and flash flood guidance (FFG and related digital guidance) for a day or more in the event of an RFC failure.

River Forecast Centers. Each RFC will store current critical data and software files used in their forecast operations in preparation for the possibility of an operational failure. At a minimum, these data and files include local and national hydrologic models, analysis techniques, parametric data, station information, as well as observed/forecast data.

Appendix C- Implementation of Backups for WFO, RFC, and Offices with National Level Responsibilities

All offices will notify the backup office of possible or requested backup operations as soon as it is apparent that backup may be required. All offices should document actions taken while invoking backup procedures. Once normal operations are restored, the office receiving backup support will contact each office providing backup to indicate backup support no longer is required.

WFO. WFOs will contact the appropriate offices to request service backup by whatever communications lines are available. The WFOs will send notification via AWIPS if possible.

A total site failure requires full service backup. The designated WFO will initiate and coordinate backup activities if the failed WFO is unable to request backup.

CWSUs. The initiating CWSUs will contact the designated backup office to coordinate and invoke backup activities.

River Forecast Centers (RFCs). RFCs will maintain site-unique backup plans which address the unique operational requirements and environment of each RFC. Advance arrangements will be made with supported WFOs to ensure continuity of basic WFO hydrologic services in the absence of the normal stream of RFC forecasts and guidance, when the interruption is caused by failures lasting less than 24 hours. For failures longer than 24 hours, arrangements will be made for the transfer of RFC operations to an alternate location to provide river forecasts and guidance. The National Headquarters Operations-RFC (NHOR) system is available as an alternate location for any RFC. Current arrangements for the alternate locations for RFC backup operations are shown in Table 1.

Table 1.

RFC Name	**Backup Arrangement and/or Office**
Middle Atlantic RFC (MARFC)	WFO PIT, Pittsburgh, PA
Northeast RFC (NERFC)	WFO ALY, Albany, NY
Ohio RFC (OHRFC)	WFO CLE, Cleveland, OH
Southeast RFC (SERFC)	Mobile backup [1]
Lower Mississippi RFC (LMRFC)	Mobile backup [1]
Arkansas-Red Basin RFC (ABRFC)	Mobile backup [1]
West Gulf RFC (WGRFC)	Mobile backup [1]

Missouri River Basin RFC (MBRFC)	Central Region HQ
North Central RFC (NCRFC)	WFO ARX, LaCrosse, WI
Colorado Basin RFC (CBRFC)	Remote Site
Northwest RFC (NWRFC)RFC	Remote Site
California-Nevada RFC (CNRFC)	Remote Site
Alaska/Pacific RFC (APRFC)	WFO Fairbanks

[1] Mobile backup is a portable system with the capability to execute RFC hydrologic modeling system, produce the required forecasts and guidance, and distribute them to NWS offices via the Internet. See the Southern Region supplement to 10-2201 for more details.

When failure does occur, the failed RFC will be responsible for ensuring the products required by supported WFOs are disseminated. When necessary, personnel from the failed RFC will travel to the alternate location to execute models and procedures used to provide the RFC's hydrologic forecasts and guidance. Supported WFOs will be notified of any changes affecting the timing and content of products produced by switching to the back-up mode.

Centers/Offices with National Level Responsibilities. Backups for the individual Centers/Offices will be implemented as defined in Appendices F and G.

Appendix D- Special Services Backup

Hurricane Forecast Centers. Responsibility will be transferred as listed below in the event of an operational failure of a hurricane forecast center.

HURRICANE FORECAST CENTER	BACKUP CENTER
TPC/National Hurricane Center (NHC) (Atlantic, Caribbean Sea and Gulf of Mexico, East Pacific)	Hydrometeorological Prediction Center (HPC)
CPHC (Central Pacific)	TPC/NHC

Tsunami Warning Centers. Responsibility will be transferred as listed below when there is an operational failure of a tsunami warning center. The Richard H. Hagemeyer Pacific Tsunami Warning Center (RHH PTWC) is in Ewa Beach, Hawaii, and the West Coast Alaska Tsunami Warning Center (WC ATWC) is in Palmer, Alaska.

TSUNAMI WARNING CENTER	BACKUP CENTER
WC ATWC (Alaska and west coasts of U.S. and Canada)	RHH PTWC
RHH PTWC (Hawaii and the rest of the Pacific)	WC ATWC

International SIGMET. Responsibility for international SIGMETs will be transferred as follows when operational failures occur (The Alaska Aviation Weather Unit is listed as AAWU, WFO Fairbanks is listed as AFG, and WFO Juneau is listed as AJN):

OFFICE	PRIMARY BACKUP	SECONDARY BACKUP
AWC (Atlantic)	TPC (KZNY FIR)	
AWC (Pacific)	Honolulu (KZOA FIR)	
AWC (Atlantic, Caribbean, Gulf of Mexico)	TPC (TJZS, KZHU, KZMA FIRs)	
AAWU (Above FL250)	AWC (PAZA FIR)	..... AJN, AFG
AAWU (Below FL250)	AJN, AFG	
AAWU (all VA)	AWC	
Honolulu	AWC	

Backup tests of these products will be conducted on an annual basis.

CONUS SIGMET and AIRMET. The production and issuance of CONUS SIGMETs and AIRMETs will be transferred to the AFWA when an operational failure occurs at NCEP AWC.

Alaska AIRMETs. The production and issuance of Alaska AIRMETs will be transferred to AJN and AFG when operational failure occurs at AAWU.
Backup tests of these products will be conducted on an annual basis.

World Area Forecast System (WAFS) Significant Weather Charts (SIGWX). WAFS Significant Weather Charts (SIGWX) will be transferred to the London World Area Forecast Center in Exeter, England when an operational failure occurs at the NCEP AWC. These charts meet the ICAO responsibility of the United States.

International Aviation Forecast Offices. The responsibility for international area and route forecasts will be transferred as follows when an operational failure occurs.

FORECAST CENTER	BACKUP FORECAST CENTER
AAWU	AFG AJN
AWC	TPC (Atlantic, Caribbean, and Gulf of Mexico) WFO Honolulu (Pacific)
Honolulu	AWC

International Flight Documentation Office. AWC currently provides flight documentation to specified airports within the United States, its territories, and possessions.

AWC has redundant equipment to provide backup. In the event of a catastrophic failure at the AWC, there is no backup to the flight documentation program.

Pilot Briefing. All requests and inquiries for pilot weather briefings are referred to the appropriate Automated Flight Service Station (AFSS) in the conterminous United States (CONUS).

Hawaiian AIRMETs, Route Forecasts, and Aviation Area Forecasts. The production and issuance of Hawaiian AIRMETs, Route Forecasts, and Aviation Area Forecasts will be transferred to AWC when an operational failure occurs at WFO Honolulu.

Marine Service Offices. Backup assignments for all national center or national level marine products are indicated below.

OFFICE	BACKUP OFFICE
OPC(Atlantic Offshore Waters and High Seas Forecasts)	TPC
OPC (Pacific Offshore Waters and High Seas Forecasts)	WFO Honolulu
TPC (Atlantic* Offshore Waters and High Seas Forecasts)	OPC
TPC (Northeast Pacific High Seas Forecast)	WFO Honolulu
TPC (Southeast Pacific High Seas Forecast)	WFO Honolulu
WFO Honolulu (North Pacific High Seas Forecast)	OPC
WFO Honolulu (Offshore Waters Forecast)	OPC

WFO Honolulu (South Pacific High Seas Forecast) TPC

*The TPC "Atlantic" basin includes the Caribbean Sea and Gulf of Mexico.

Volcanic Ash Advisory Centers (VAAC): United States VAACs are responsible for issuance of volcanic ash advisories (VAA) and the Volcanic Ash Graphics (VAG). At the request of the VAACs, the NCEP Senior Duty Meteorologist group is responsible for initiating and distributing products for the emergency response model (VAFTAD/HYSPLIT) to support forecasting the track of volcanic ash after an eruption. The Alaska Aviation Weather Unit (AAWU) is the VAAC at Anchorage AK and NCEP Central Operations/NESDIS Satellite Analysis Branch (NCO/SAB) runs the Washington VAAC at Camp Springs, MD. This information is referenced from the latest OFCM Volcanic Ash National Operations Plan, dated August 2007.

Volcanic Ash Advisory: The production and issuance of the VAA and VAG from the AAWU (Anchorage VAAC) will be transferred to NESDIS SAB (Washington VAAC) when operational failure occurs at the AAWU. The production and issuance of the VAA from the NESDIS SAB will be transferred to the Air Force Weather Agency (AFWA) when operational failure occurs at the NESDIS SAB. When functioning as the backup for the NESDIS SAB, AFWA will issue the VAA and produce a Volcanic Ash Forecast Transport and Dispersion model format graphic look-alike based on the Puff volcanic ash dispersion model. The VAG is not provided in backup mode. This information is referenced from the latest OFCM Volcanic Ash National Operations Plan, dated August 2007.

Appendix E- Product Identifiers and Mass News Disseminator Formats

The product identifiers from the office being backed up will continue to be used when service backup has been invoked. See NWSI 10-1701 for instructions on product headers and NWSI 10-1702 for examples.

Appendix F- Backup Among Operational Processing Centers

The Federal Plan, FCM-P14, covers the Cooperative Support and Backup Among Operational Processing Centers.

Appendix G- Emergency Backup Processing Centers

WFO. Service backup responsibility for long- and short-fuse products and services will be described by a Regional Supplement to this NWSI.

NCEP Central Operations (NCO)/Central Computing Facility (CCF). NCEP has two fully identical Central Computing Systems (CCS). The primary is located in Gaithersburg, MD. The back up is located in Fairmont, WV. With these two systems, all of the products created on the primary can be created on the back up machine, so there is no degradation or loss of service. When invoked, operational production can be switched from one location to the other in under 10 minutes.

AWC. AFWA, the TPC, the NWS Honolulu Forecast Office (PHFO), and the London World Area Forecast Center in Exeter, England will provide backup when requested by the AWC. AFWA will issue SIGMETs as required and AIRMETs every six hours for the CONUS, the Tropical Prediction Center will issue SIGMETs for the Atlantic, Gulf of Mexico and the Caribbean Sea and WFO Honolulu will issue SIGMETs for the Pacific. AFWA will send their products to NCO, who will then relay them to NWSTG. Exeter will issue High and Medium Level Significant Weather Charts every six hours to the NWSTG for distribution in the WAFS system.

SPC. AFWA will backup SPC watches and categorical outlooks if the SPC requests backup (see Federal Plan, FCM-P14).

TPC. HPC, OPC, and the Central Pacific Hurricane Center (CPHC)/WFO Honolulu will backup the TPC when TPC requests backup. The primary products which require backup are the tropical cyclone watch/warning products and marine forecasts.

OPC. The TPC will backup the Atlantic Offshore Waters and High Seas Forecasts, but not graphical products, if the Ocean Prediction Center (OPC) requests backup. WFO Honolulu will provide backup support for Pacific Offshore Waters and High Seas Forecasts.

HPC. The HPC is developing a backup plan in which short-term backup will be provided by another NCEP center and long-term backup will be accomplished by relocating appropriate personnel to one or more NCEP remote service centers.

Space Weather Prediction Center (SWPC – formerly the Space Environment Center). AFWA will produce SWPC space environment products if the SWPC requests backup. For an extended outage personnel from the SWPC will be flown to AFWA to resume SWPC operations.

CPHC/WFO Honolulu. TPC, OPC, AWC, and WFO Monterey will assume backup operational support for CPHC/WFO Honolulu once backup is initiated, until notified by CPHC/WFO Honolulu that they are prepared to resume normal operations. The CPHC/WFO Honolulu will

also notify the NCO, and the NCO will issue a notification of a change in status. CPHC/WFO Honolulu will notify all parties when the emergency has ended.

WFO Guam. WFO Honolulu will assume backup operational support for WFO Guam once backup is initiated, until notified by WFO Guam that they are prepared to resume normal operations. The WFO Guam will also notify the NCO, and the NCO will issue a notification of a change in status. WFO Guam will notify WFO Honolulu and NCO when the emergency has ended.

Implementation of the Backup Plans:

NCO CCF. The switchover from the primary to the back up Central Computing System (CCS) is performed by NCEP's Senior Duty Meteorologist.

AWC. The AFWA will provide the CONUS backup operational support for the AWC when backup is initiated until notified by the AWC either 1) they are prepared to resume normal operations or 2) AWC forecasters arrive at the AFWA. The AWC will also notify the NCO, and the NCO will issue a notification of a change in status.

The AFWA will issue CONUS AIRMETs and SIGMETs (Thunderstorms, Turbulence, Icing, etc.). The AWC will also call 1) the Honolulu Forecast Office to notify them that backup is required for the Oakland Oceanic FIR, 2) Tropical Prediction Center for the New York, Houston, Miami, and San Juan Oceanic FIR's, and 3) the London World Area Forecast Center, Exeter, England, for backup of the High and Medium Level Significant Weather Charts. The AWC will notify all parties when the emergency has ended and then issue a new Area Forecast (FA) with the VALID UNTIL time of the FA regularly scheduled for issuance prior to the time operations resumed will be issued, with any exceptions outlined in the AWC local procedures.

SPC. The AFWA will assume backup operational support for the SPC once backup is initiated until notified by the SPC that they are prepared to resume normal operations. The SPC will notify the NCO and AFWA when the emergency has ended, and the NCO will issue a notification of a change in status.

OPC. The TPC/Tropical Analysis and Forecast Branch (TAFB) and WFO Honolulu will assume backup operational support for the OPC once backup is initiated, until notified by the OPC that they are prepared to resume normal operations. The OPC will also notify the NCO, and the NCO will issue a notification of a change in status. The OPC will notify all parties when the emergency has ended.

TPC. TPC personnel will be sent to the HPC in Camp Springs, Maryland once backup is initiated. The HPC will assume backup operational tropical cyclone support for the Atlantic, Caribbean Sea, Gulf of Mexico, and for the east Pacific until TPC personnel arrive on-site at HPC in Camp Springs, Maryland. The OPC will produce the High Seas Forecast for the Atlantic, Caribbean Sea, Gulf of Mexico. The OPC will also backup the Offshore Waters

Forecast for Gulf of Mexico, Caribbean, and the southwest and tropical North Atlantic. WFO Honolulu will prepare the northeast Pacific tropical weather discussion and the high seas forecasts for northeast and southeast Pacific. The TPC will notify all parties when the emergency has ended.

HPC. HPC backup is internal. In the event of a prolonged outage at the HPC, appropriate personnel will be flown to one of the NCEP's remote forecast centers to resume production of HPC products.

SWPC. The AFWA will backup operational support for the SWPC once backup is initiated until notified by the SWPC that normal operations have resumed. The SWPC will notify the NCO and AFWA when the emergency has ended, and the NCO will issue a notification of a change in status.

CPHC/WFO Honolulu. The AWC should provide operational support for international SIGMETs, Hawaiian AIRMETs, Aviation Area Forecasts, and Route Forecasts once backup is invoked for WFO Honolulu, and TPC should assume support for the south Pacific High Seas Forecast, tropical cyclone responsibilities, Satellite Interpretations Messages and Tropical Cyclone Summaries - fixes for both north and south Pacific. The OPC will assume backup support for the offshore forecasts, and the north Pacific High Seas Forecast. The CPHC/WFO Honolulu will notify all parties when the emergency has ended and they are prepared to resume normal operations

WFO Guam. WFO Honolulu will assume backup operational support for the transfer of public tropical cyclone advisories once backup is invoked for WFO Guam. The WFO Guam office will notify WFO Honolulu when the emergency has ended and they are prepared to resume normal operations.

Role of Backup Processing Centers:

OPC as Emergency Backup Processing Center for TPC. The OPC will provide backup for the High Seas forecasts and the Offshore Waters Forecasts for the southwest and tropical north Atlantic, Caribbean, and Gulf of Mexico once backup is initiated. No High Frequency (HF) radio facsimile products will be produced or disseminated by OPC.

Personnel will immediately be flown to OPC to assist in backup operations if TPC is not able to return to full operations within 12 to 24 hours of transfer. The TPC will notify the OPC when the emergency has ended.

TPC as Emergency Backup Processing Center for OPC. The TPC will provide backup for the Atlantic Offshore Waters Forecasts and High Seas Forecasts once backup is initiated. No HF radio facsimile products will be produced or disseminated by TPC.

TPC backup will require additional personnel to cover the degraded mode of operation for protracted periods. Personnel will immediately be flown to TPC to assist in backup operations if OPC is not able to return to full operations within 12 to 24 hours of transfer. There is no backup for OPC graphical product generation and distribution by TPC. The OPC will notify the TPC when the emergency has ended.

TPC as Emergency Backup Processing Center for AWC. The TPC will provide backup for international SIGMETs for the New York, Houston, Miami, and San Juan FIRs once backup is initiated. The TPC will also provide backup for the International Aviation Area Forecast (FACA20 KKCI) and the northern Gulf of Mexico Area Forecast (FAGX20 KKCI). The AWC will notify TPC when the emergency has ended.

TPC as Emergency Backup Processing Center for CPHC/WFO Honolulu. The TPC will provide backup for the south Pacific High Seas Forecast once backup is initiated. No Honolulu HF facsimile products will be disseminated by TPC. TPC will provide tropical cyclone products for the north central Pacific and Satellite Interpretation Messages once backup is invoked. CPHC/WFO Honolulu will notify TPC when the emergency has ended.

OPC as Emergency Backup Processing Center for CPHC/WFO Honolulu. The OPC will provide backup for the offshore forecast product for Hawaii, and also the north Pacific High Seas Forecast once backup is invoked. CPHC/WFO Honolulu will notify OPC when the emergency has ended.

HPC as Emergency Backup Processing Center for TPC. The HPC will provide tropical cyclone products for the Gulf of Mexico, Caribbean Sea, Eastern Pacific and Atlantic Ocean once backup is invoked, until either TPC personnel arrive at NCEP in Camp Springs, Maryland to take over their responsibilities or the emergency has ended. TPC personnel will remain on-site until the emergency has ended.

AFWA as Emergency Backup Processing Center for AWC. The AFWA will transmit SIGMETs (Thunderstorms, Turbulence, Icing, etc.) and AIRMETs for the CONUS once backup has been invoked. The AWC will notify the AFWA when their emergency has ended.

AFWA as Emergency Backup Processing Center for SPC. The AFWA will transmit Tornado/Severe Thunderstorm Watches and Convective Outlooks once SPC backup is invoked, as specified in Federal Plan, FCM-P14. The SPC will notify the AFWA when their emergency has ended.

CPHC/WFO Honolulu as Emergency Backup Processing Center for AWC. WFO Honolulu will provide International SIGMETs for the Pacific Ocean in the Oakland FIR once backup for AWC is invoked, as specified in Federal Plan, FCM-P14. The AWC will notify WFO Honolulu when the emergency has ended.

CPHC/WFO Honolulu as Emergency Backup Processing Center for TPC. WFO Honolulu will provide TPC's northeast Pacific High Seas Forecast, and southeast Pacific High Seas Forecast once backup is invoked. The TPC will notify WFO Honolulu when the emergency has ended.

CPHC/WFO Honolulu as Emergency Backup Processing Center for OPC. WFO Honolulu will provide OPC's east Pacific Offshore Waters and High Seas Forecasts once backup is invoked. The OPC will notify WFO Honolulu when the emergency has ended.

AWC as Emergency Backup processing Center for CPHC/WFO Honolulu. AWC should provide backup for international SIGMETs for the Oakland FIR. AWC should also provide backup for the Hawaiian AIRMETs and Aviation Area Forecasts, as well as abbreviated Route Forecasts, which will include only temperatures and winds. CPHC/WFO Honolulu should notify AWC when the emergency has ended.

CPHC/WFO Honolulu as Emergency Backup Processing Center for WFO Guam. CPHC/WFO Honolulu will provide Public Tropical Cyclone Advisories for the northwest Pacific Ocean once backup is invoked. The WFO Guam will notify CPHC/WFO Honolulu when the emergency has ended.

Testing of the Backup System: Testing of each phase of the backup system will be conducted at least once a year. The duration of these tests will be agreed upon by the parties involved. Advance notification will be given to all customers whenever such tests take place.

Appendix H- Office Evacuation

Station management will be notified immediately by the operational staff of the evacuation and actions taken, in accordance with the office's Continuity of Operations, or COOP, Plan (reference NWSI 10-2202 – Continuity of Operations) The station's backup office and regional headquarters will be notified, as soon as possible via the most appropriate means.

Where possible, notify

a. Offices on local dissemination systems (Enter a message stating the nature of the emergency, probable duration, and any pertinent information on missed observations and other data. Indicate time of entry, usual NWS identification symbols, and sender's initials).

b. Users of NOAA Weather Radio, very high frequency radios, and of automatic telephone recordings via announcements on these systems (i.e., "updates will not be available until further notice.") Never announce the office is being evacuated due to a bomb threat or fire.

The regional headquarters should notify National Headquarters.

All involved offices and parties should be advised and messages on broadcast systems updated when the office is re-occupied.

Safety of employees will take precedence over the saving of records; however each office should try to protect valuable records and equipment. Each station will determine in advance which records, equipment, etc., are of greatest importance and should have a priority list in the local procedures.

Employees who are directed or forced to evacuate their current location to an alternate site as part of a long-term evacuation (more than 24 hours), please contact the NOAA Employee Check-in Service as soon as possible to advise us that you are safe and with a means of contacting you.

There are two ways of using this service:

Call Toll-Free: **1-888-NOAA-911 or 1-888-662-2911**

or via the Web:

https://ops13web.nws.noaa.gov/noaachkin

The toll free number can also be used by employees, their families, contractors and friends to report the whereabouts of another NOAA employee or contractor.

The web based check in system should only be used by NOAA Employees, Contractors and NOAA Associates. It requires your NOAA username and password to access.

Information on the employees' check-in status will then be passed along by the NWSHQ Office of Operational Services (OOS) to the affected employees' Regional Operations Center (ROC) or Regional Director as appropriate.

Appendix I- Communications Backup

This section identifies communications facilities and operational procedures used to back up critical communications capabilities.

Network Control Facility (NCF). The NCF serves as the control center for the entire AWIPS system. The NCF is interfaced to the NWSTG and NESDIS to receive the primary content of the NOAAPORT broadcast and retransmit the data over the Satellite Broadcast Network (SBN). The NCF monitors the AWIPS Communication Network (ACN) and provides 24-hour technical support to field sites. In addition, the NCF identifies, diagnoses, and corrects system faults and outages; monitors site equipment operations; and alerts users at each site when malfunctions or degradations occur. The NCF will send out an administrative message indicating an office has lost AWIPS communications.

The NCF serves as a data archive for field sites. This archive is made available to field sites to replenish data purged from local systems or lost in the course of system outages.

A back-up facility for the NCF (BNCF) at the NASA IV&V Center in Fairmont, WV, which replicates all of the functionality of the primary NCF, is co-located with a back-up MGS (BMGS) for the AWIPS SBN. Both the BNCF and BMGS can be remotely activated to become the WAN and /or SBN hub. This is an unstaffed site and the help desk function would require dispatching a staff from the Washington metro area to activate that function.

National Weather Service Telecommunication Gateway (NWSTG). Also known as the "Gateway", the NWSTG operates and ensures continuous acquisition and dissemination of NWS and other domestic and foreign hydrometeorological data and products. The Gateway's principal functions include central communication switching, operations and maintenance service for the Automated Surface Observing System (ASOS), performance monitoring and technical support. The Gateway operations are protected at its primary site by redundant computer systems and emergency power.

The central switching function supports data exchange among the switching network including the specialized modeling centers (NWS and others), the FAA (via its Weather Message Switching Center Replacement ,"WMSCR") , AWIPS (via its NCF), the commercial meteorological community (via Family of Services), and major international communication switching centers.

The international switching centers are on the Main Trunk Network (MTN) of the WMO's Global Telecommunication System. This system also operates the Operational Meteorological (OPMET) data bank containing Meteorological Air Reports (METAR), Terminal Aerodrome Forecasts (TAF), and Significant Meteorological Information (SIGMET) data. The OPMET data bank supports the International Civil Aviation Organization (ICAO) World Area Forecast Center

(WAFC). Gateway monitoring and maintenance of its switching system and communications links are provided by its technical support staff.

The ASOS Operations and Monitoring Center (AOMC) provides surveillance over the nearly 1,000 ASOS remote sites via a system of self-tests which alerts the Center to possible system malfunctions resulting in a dial-in diagnosis before contacting the local maintenance point of contact for repair. The AOMC also maintains the master database of ASOS site configuration information.

- Back-up Capabilities

  NWSTG Continuity: NWSTG failure for any reason will be immediately assessed as to the nature of the failure and the estimated time to return to full operational service. If the assessment results in a decision to invoke the NWSTG Continuity of Operations Plan (COOP) then the NWSTG Back-up Center (BTG) will be activated. The BTG is capable of restoring some of the critical functions of the NWSTG such as the main message switching system and the collective message generation functions. Both the inbound and outbound data exchanges with NCEP are always in parallel run mode and can be activated quickly. The AWIPS NCF and the backup NCF are connected and services will be available. NOAANet communication circuits are being put in place where in a catastrophic failure, data communications will be automatically switched to the warm backup site that will takeover all computer and telecommunication functions.

  In addition, Federal Plan FCM-P14 documents the agreements among other Federal operational processing centers (NCEP, Navy and Air Force) to provide limited data to some of the NCEP/NWSTG's users. This Plan can also be invoked during any delay in activating the BTG.

  FAA Continuity - Normally the path between the NWS and the FAA is via the NWSTG. When that communications path is no longer accessible, then mission critical information is lost. To insure that both the FAA and the NWS continue to receive data, the Alphanumeric Backup Replacement System (ANBURS) has been integrated with the AWIPS at the Aviation Weather Center in Kansas City, MO. ANBURS ensures the continuous delivery of surface observations, terminal aerodrome forecasts (TAFs), Meteorological Air Reports (METARS) and state pilot reports.

NOAANET. The NOAAnet wide area network interconnects with and provides secure transport services to various NOAA line offices, programs and external NOAA partners. The NOAAnet Network Operations Center serves as the central location to perform daily operational support for the NOAAnet WAN. A tiered staffing structure provides for tier one, two and three support on a 24/7/365 basis. The NOC is supported by a network management toolset that provides the operational staff with proactive monitoring services of all NOAAnet customer edge devices and their associated connections. In the event of an unplanned event or a customer problem report,

the staff will follow procedures to document and manage the event to resolution. The advanced engineering staff is also responsible for developing design solutions in support of the ongoing expansion of NOAAnet WAN services.

At this time, a backup NOAAnet NOC has been designed and is in an acquisition and development phase and expected to be complete in FY10. Upon completion, the backup NOC will provide for a backup toolset for dynamic failover of all monitoring capabilities. Currently, the tier three engineering staff is capable of providing remote operational support. All NOAAnet system device configurations are backed up on a daily basis, to include an offsite backup rotation.

AWIPS. The AWIPS backup is provided through internal redundant components, except for the Satellite Broadcast Network (SBN) and the Local Data Acquisition and Dissemination (LDAD) component of AWIPS. The SBN is backed up via the terrestrial Wide Area Network (WAN). LDAD is backed up by service backup sites, which would provide data collection and dissemination functions. The regional headquarters chooses the sites to provide LDAD service backup, and local office management determines whether it is necessary to invoke LDAD backup, based on criticality of the data.

The WAN cannot provide a full backup, because of bandwidth. Therefore, each forecast office will develop a list of products it needs to provide a degraded service, based on the amount of data available over the WAN.

If both the SBN and WAN are down at a particular office, then the backup office procedures are put into action, including the use of the dial-in WAN, which is initiated by the NCF when a site drops off the WAN. If both the SBN and WAN networks are down, the forecast offices will continue to use the latest model output as guidance until the system(s) return to operation.

The NOAA Weather Wire Service can provide limited backup for watches, warnings and other text messages.

AWC. Selected alphanumeric products (Surface Aviation Observations, TAFs, and State Pilot Report Collectives) are made available on the existing AWC to WMSCR link when communications between NWSTG and WMSCR are interrupted. These products are then forwarded to AWIPS. When the NCF goes down, the AWC transmits aviation products to the FAA (TAFs and TWEBs) and transmits FAA products (observations) to the NWS through the WAN to AWIPS.

NOAA Weather Radio (NWR). Every effort should be made to ensure that watches and warnings are broadcast on NWR even during general computer system or communications failures. A failed site normally should receive watch/warning information for its NWR area by backup communications. The failed site should attempt to make arrangements to receive the watch/warning information from the backup site if backup communications are out.

Programming may be reduced to reflect information received by backup communications, other than critical products.

NOAA Weather Wire Service (NWWS). NWWS backup is accomplished by routinely uplinking identical products from paired AWIPS WFOs/RFCs. An additional level of backup is provided for watch and warning products via the NCF. Additionally, many coastal WFO's have NWWS uplink hardware in place in the event of an emergency that will allow those sites to transmit text products if NWWS backup is deemed necessary. The Storm Prediction Center and Tropical Prediction Center back each other up, with NCF as the tertiary backup. The West Coast Alaska Tsunami Warning Center is backed up by the Anchorage WFO/RFC AWIPS and the Richard H. Hagemeyer Pacific Tsunami Warning Center is backed up by WFO Sacramento via the AWIPS WAN from HFO.

Weather Surveillance Radar (WSR-88D). A backup office will be able to employ One Time Request, Radar Multiple Request, or a WAN Dedicated connection across the AWIPS WAN into the failed site's Radar Product Generator and provide service backup for the failed site. Should the radar or the NWS telecommunications to the radar become nonoperational, the back up office will send a free text message notifying users of the outage and expected time of return to service. In this case, the backup office will use neighboring radars, including supplemental WSR-88Ds (Air Force) and FAA Terminal Doppler Weather Radars (TDWRs) where applicable, which have overlapping coverage to cover the shortfall.

Radar data can be sent to the NCF via the backup office's AWIPS WAN, a dial in WAN, or Very Small Aperture Terminal (VSAT) satellite communications backup, should the dedicated WAN to a site go down.

Aeronautical Fixed Telecommunications Network)/Meteorological (AFTN/MET). Pacific Region WFOs, Weather Service Offices (WSOs), Data Collection Offices (DCOs) and the Richard H. Hagemeyer Pacific Tsunami Warning Center, as well as the Alaska Region's WC/ATWC, who utilize the FAA's AFTN/MET circuit to transmit their products, should utilize the NWS Telecommunications Operations Center (NWSTOC) Weather Web Page Entry to transmit their products to the NWSTOC when there are outages on the AFTN/MET circuits, and when these offices are providing backup support.

United Kingdom Meteorological Office (UKMO). Backup products can be created on the NWSTG system using UKMO data in the event of an operational failure involving the NOAA Center Computer Facility. See Federal Plan, FCM-P14 for details.

Hydrometeorological Automated Data System (HADS). HADS provides 1.3 million point surface observations per day from over 10,000 locations primarily to the NWS Flood and Flash Flood Programs but also to the general weather program. HADS acquires hydrologic and meteorological data in non-standard formats from the GOES Data Collection System (DCS) and translates them into Standard Hydrometeorological Exchange Formatted (SHEF) data products.

HADS delivers uniquely tailored products to each WFO and RFC, and to NCEP and NOHRSC. The products are also publicly available via NOAAPORT.

HADS operational systems are physically located within the TOC. There is one operational system and one "hot" backup system. There are no off site backups. HADS processing is dependent upon the infrastructure of the NWSTG and its external telecommunications links. Plans are being developed to install remote backup systems in the planned Backup NWSTG. These systems are expected to be commissioned at the same time as the planned Backup NWSTG, thus included here for completeness, since the NWSTG backup site is scheduled to be operational before the annual review of this instruction.