

NATIONAL WEATHER SERVICE INSTRUCTION 10-1716

August 27, 2008

***Operations and Services
Dissemination, NDS 10-17***

NOAA WEATHER WIRE SERVICE (NWWS) SYSTEMS MANAGEMENT

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

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SUMMARY OF REVISIONS: This directive supersedes the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) Instruction 10-1716, *NOAA Weather Wire Service (NWWS) System Management*, dated May 15, 2006.

The following changes have been made:

1. In Section 2, Description, the Master Ground Station site has changed from Alexandria, Virginia to Woodbine, Maryland. A paragraph describing the Ku band satellite network has been added.
2. In Section 3.1, corrected the title for the National Weather Service Assistant Administrator.
3. In Section 3.1.1, a new bullet item (d) has been added for Information Technology (IT) security and data transmission management.
4. In Section 3.1.3, a second paragraph has been created to identify the NWS Chief Information Officer as the Authorizing Official for system security accreditation. A third paragraph was added to cover routing of data through the Network Control Facility to the Advanced Weather Interactive Processing System Satellite Broadcasting Network.
5. In Sections 4.1 and 4.2, the term "shall" has been deleted per usual recommendation and current NWS policy NWSI 1-101.
6. In Section 5.2, added All Hazard to the description of the National Law Enforcement Telecommunications System.
7. In Section 5.3, added the phrase "subject to the availability of funds" to the second sentence.
8. In Section 6, the paragraph on contractor maintenance activities has been expanded.
9. In Appendix A, a table has been added to list the 25 Ku band sites.
10. In Appendix B, changed "The NWS shall:" to "The NWS will:"

Signed by
John McNulty, Jr.
Director, Office of Operational Systems

August 13, 2008
Date

NOAA Weather Wire Service (NWS) System Management

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1. Document Purpose. This Procedure describes how the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) manages, operates and maintains the NOAA Weather Wire Service (NWS).

2. Description. The NWS employs a two-way C-band satellite network for collecting and disseminating information from all NWS Weather Forecast Offices (WFOs), Weather Service Offices (WSOs) and National Centers to a variety of subscribers throughout the United States.

NWWS receives products from the product sites at a rate of 9.6 kilo-bits-per-second (kbps). Collection of products and satellite uplink is performed at twenty sites equipped with 2-way transmit/receive capability Very Small Aperture Terminal (VSAT). (The 2-way sites are co-located at the 13 Weather Forecast Office (WFOs)/River Forecast Centers (RFCs), 6 National Centers, and 1 WFO as identified in Appendix A). Products are received from the satellite at Master Ground Station (MGS) No.1 in Woodbine, Maryland and delivered to the contractor's Message Processing Center (MPC) in Chantilly, Virginia. Most products are sent twice through two VSAT uplink sites with service level backup for each other. This ensures receipt of the product if one site goes down. Additionally, NWWS has a third level of backup for 'priority 1' weather warnings via the Advanced Weather Interactive Processing System (AWIPS) Network Control Facility (NCF) located in Silver Spring, Maryland. Duplicate products are removed from the NWWS data stream at MPC before being broadcast to users.

NWWS also operates a Ku band satellite network to provide backup communications at 25 coastal WFOs. This supports collection and dissemination of weather data products to users during hurricanes, severe coastal storms, or other emergencies, when normal ground communications (including connectivity to AWIPS, and AWIPS Wide Area Network, may be inoperative or disrupted). Products are received from the satellite at a MGS in Marietta, Georgia, and then delivered to the MPC for inclusion in the NWWS broadcast. This also allows the NCF to receive the data from the impacted sites, for routing to the AWIPS Satellite Broadcast Network (SBN). The NWWS Ku band network will be discontinued once the NOAA Net Ku Band High Availability network is established.

2.1 Public Dissemination. The NWWS is the primary means by which this vital information is delivered to mass news disseminators and public safety agencies. The NWWS broadcast is sent from the contractor's MPC to users via satellite from Master Ground Station No.2 in Ft. Meade, Maryland. The broadcast data rate is 64 kbps. The NWWS collects and delivers its warning products within 10 seconds and other products within 30 seconds.

2.2 Warnings and Forecasts. Weather warnings, forecasts, and other meteorological information are transmitted in a plain language format.

3. Organizational Responsibilities. This section describes the responsibilities of the NWS Headquarters (WSH), Regional Headquarters (RH), and field offices for NWWS.

3.1 Weather Service Headquarters (WSH). The NOAA Assistant Administrator (AA) for Weather Services has overall responsibility for the NWWS program.

3.1.1 Office of Operational Systems (OPS). OPS provides staff assistance to the AA for NOAA Weather Services concerning NWWS program management and configuration control. The Dissemination Systems Branch (W/OPS17) has responsibility for the following:

- a. Program management of the overall NWWS telecommunications system;
- b. Management of the contract with the NWWS system contractor, and NOAA procurement liaison as Contracting Officer's Technical Representative (COTR);

- c. Processing of change requests and configuration control management at each NWS field site and Systems Operation Center;
- d. IT Security for NWWS, including system Certification and Accreditation, in accordance with all applicable and relevant National Institute of Standards and Technology special publications and Federal Information Processing Standards, continuous monitoring, and incident response;
- e. Design, development, maintenance, and validation of databases for all NWWS-related sites;
- f. Maintain the NWWS internet site (<http://www.nws.noaa.gov/nwws>); and
- g. Outreach to government and private organizations and to the public regarding NWWS.

3.1.2 Office of Climate, Water and Weather Services (OS). OS is responsible for establishing service requirements, including the nature and scope of products to be transmitted. OS is responsible for the definition of data message format and content, geographic code format and usage, and operational backup procedures (see NWS Instruction (NWSI) 10-1715, *NOAA Weather Wire Service (NWWS) Dissemination*). OS is responsible for the Change Management Process (see NWSI 10-101, *Change Management Process*), including administration of Data Review Group (DRG) Requests for Change (RC). These are collected and forwarded from Regional Headquarters and National Centers for Environmental Prediction (NCEP) for product addition, deletions, or content changes. OS forwards approved NWS RC to OPS, and the Office of the Chief Information Officer, for implementation (consistent with NWSI 10-1715).

3.1.3 Office of the Chief Information Officer (W/CIO). The W/CIO manages the Telecommunications Operations Center (TOC), with the responsibility that includes the overall management of telecommunication interfaces. A major component of the TOC is the NWS Telecommunications Gateway (NWSTG), which is the principal data communications switching and monitoring facility. The NWSTG manages processes that control the routing of data, both domestically and internationally. The NWSTG remotely monitors the NWWS network and reports failures (or anomalies) to the NWWS Contractor and to the NWWS Program Office (W/OPS17) for appropriate action.

The NWS CIO will serve as the Authorizing Official for the NWWS system security accreditation. As such, OPS will provide the CIO with the information necessary to determine the risk that the NWWS system will pose to agency operations, agency assets, or individuals throughout the NWWS system development lifecycle.

The NWS CIO will also support dissemination of data collected by the NWWS-operated KU band backup coastal satellite network. The TOC receives the data from their NWWS data feed, and routes selected products to the NCF, for inclusion on the AWIPS SBN. This makes the data available to all AWIPS equipped offices (WFOs, RFCs, and National Centers).

3.2 Regional Headquarters (RHs). It is the responsibility of RHs to coordinate, with the field sites for installation problems or operational changes and to forward to OPS17 any maintenance or end-user problems that cannot be resolved at the local or regional level.

RHs validate field requirements for new or updated data to be placed on NWWS and forward requests to WSH by initiating RCs. RHs assist WSH and the field in troubleshooting data issues.

3.3 Field Offices. The NWS field offices are responsible, in accordance with predetermined schedules and procedures, for preparation and issuance of the products available on the NWWS. The NWWS has thirteen co-located WFO/RFC uplinks and one WFO (San Juan, Puerto Rico) (see APPENDIX A). These sites are responsible for monitoring their product streams and reporting system outages to OPS17 and the system contractor.

3.4 National Centers. National Centers require prior approval from WSH on any new products for NWWS. The six National Center uplink sites (listed in Appendix A) are also responsible for monitoring their product streams, and reporting system outages to OPS17 and the NWWS contractor.

4. Products. Most products for weather warnings, forecasts, and other meteorological information are transmitted in a plain language format. Products are disseminated to outside users via Internet Protocol broadcast at an output rate of 64 kbps. The subscriber receives these data by means of a VSAT C-band satellite receiver.

4.1 Product Policy. This section documents the broad policies pertaining to NWWS products. OS, in coordination with the RHs, establishes the policies regarding all products transmitted on the NWWS (see NWSI 10-1715, *NOAA Weather Wire Service Dissemination*). These policies pertain to product type, content, and format. Any requests to add, delete, or change the official set of products transmitted on the NWWS are governed by the NWS Configuration Management DRG using the current policies and procedures.

4.2 Product Format. Products transmitted on the NWWS are, in general, alphanumeric and in plain language format so the information within the product can be easily understood by the general public. NWWS products include, but may not be limited to, weather and flood warnings, watches, statements, all hazards/alerts and forecasts.

4.3 Product Origination. Products transmitted on the NWWS originate from NWS offices, WFOs, RFCs, National Centers, Tsunami Warning Centers, and state agencies when appropriate agreements (see APPENDIX B) have been established between the NWS and the state. NWWS also receives products from the United States Geological Survey's Earthquake Center and the National Law Enforcement Telecommunications System (NLETS). OS will establish the format of all specific NWWS products and ensure the consistent use of established formats (see directive 10-1701, *Text Product Formats and Codes*).

5. NWWS Network Costs and Accessibility. This section outlines the NWS policy on cost and access to the NWWS.

5.1 National Weather Service (NWS). NWS bears all costs for the operation and maintenance of NWWS via private sector contractor. Access to the NWWS for the purposes of disseminating all-hazard warnings will require a Memorandum of Agreement (MOA) between the NWS and the issuing party or agency. Access is accomplished indirectly through either a

manual or automated interface at WFOs/RFCs, National Centers, or directly through an NWWS uplink. Message formats are stipulated by NWS.

5.2 State Agencies. A state agency (non-NWS) will be designated as the official NWWS data exchange agency. In a large number of states, the designated agency will be the State Police. In other states, it may be the Highway Department, Office of Emergency Services, or some other agency with weather-related interests. A formal agreement with the specific state agency must be in place regarding this data exchange arrangement. The agreement form to be used between the NWS and designated state agency is shown in Appendix B.

The designated state agency will receive NWWS information by means of a dedicated receive-only NWWS satellite receiver and distribute this information to other appropriate agencies within its jurisdiction, and will, where appropriate, provide data to the NWS via a dedicated or dial-up telecommunications connection or via NLETS. This connection will be used by the state to provide the NWS with important local weather information (e.g., road condition reports, severe weather reports, weather observations, etc.).

NWS funds the entire cost of equipment installation and operation for the NWWS receive-only satellite earth station to be located on the state agency premises. The states are required to pay only for their monthly telecommunications (i.e., TELCO) charges to send data to the NWS, and for any special equipment (e.g., modems, printers, etc.) they may need to send their data or to internally display the data they receive.

During 2005, NWS completed a two-way telecommunications interface linking the NWWS with the NLETS computer facility located in Phoenix, Arizona. This link allows state and federal agencies (primarily law enforcement agencies), to receive NWWS information products directly from their NLETS connection. They can also use this connection to send all hazards information to NWS. This new data product dissemination method is expected to be especially important during natural disasters or severe weather, and will help minimize damage to life and property, with better information exchange. It is also expected to enhance Homeland Security response and preparedness capabilities, through improved two-way data dissemination of products and information between the NWS, state, local law enforcement agencies, and other federal agencies.

5.3 Other Agencies. NWS has signed a MOA with the Department of Homeland Security for national messages. Subject to the availability of funds, NWS will be adding many more local, regional and federal government organizations with the capability of relaying messages manually through the WFOs and soon will be sending it directly through HazCollect to NWWS.

5.4 Subscribers. Under the terms of the NWWS contract, the end-users of the NWWS, such as mass news disseminators, private companies, private forecasters, Federal agencies, and local governments, etc., can coordinate or contract directly with the NWWS contractor.

6. NWWS Maintenance. Maintenance is provided by the NWWS contractor in accordance with the contract. This includes day-to-day system performance monitoring, and maintenance of hardware and software interfaces at WFOs, National Centers, and the contractor-operated MPC. The contractor also provides and maintains the remote satellite ground station sites located at the

satellite uplinks and MGSs. Services are provided that keep the network fully operational 24/7, along with trouble tracking, escalation, and resolution as required. System through-put, along with all terrestrial and satellite services are monitored, to verify that system performance and availability goals are achieved.

APPENDIX A

**NOAA Weather Wire Service (NWS)
Product Collection and Paired Uplink Sites**

Thirteen WFOs/RFCs Paired AWIPS Hubs uplinking products to NWS

	Primary Uplink		Secondary Uplink		Third Level Backup
1	KCTP/KRHA (State College, PA)	7	KBOX/KTAR (Taunton, MA)		AWIPS NCF (priority 1 products)
2	KFWD/KFWR (Dallas, TX)	8	KSLC/KSTR (Salt Lake City, UT)		AWIPS NCF (priority 1 products)
3	KFFC/KALR (Peachtree City, GA)	9	KLIX/KORN (Slidell, LA)		AWIPS NCF (priority 1 products)
4	KMPX/KMSR (Minneapolis, MN)	10	KILN/KTIR (Wilmington, OH)		AWIPS NCF (priority 1 products)
5	KEAX/KKRF (Kansas City, MO)	11	KTSA/KTUA (Tulsa, OK)		AWIPS NCF (priority 1 products)
6	KSTO/KRSA (Sacramento, CA)	12	KPQR/KPTR (Portland, OR)	13	PAFC/PACR (Anchorage AK) and AWIPS NCF (priority 1 products)

14 One WFO TJSJ (San Juan, Puerto Rico) uplinking products to NWS

For additional information on primary and secondary collection paths, link to <http://www.nws.noaa.gov/directives/sym/pd01017015curr.pdf> to see *10-1715 NOAA Weather Wire Service (NWS) Dissemination*.

Six National Centers Uplinking Data to NWS

1	KWNS (Storm Predictions Center, Norman, Oklahoma)
2	KNHC (Tropical Prediction Center, Miami, Florida)
3	PHEB (Pacific Tsunami Warning Center, Honolulu, Hawaii)
4	PAAQ (West Coast/Alaska Tsunami Warning Center, Anchorage, Alaska)
5	KNEC (National Earthquake Information Center, Golden, Colorado)
6	KNCF (AWIPS/NOAAPORT NCF, Silver Spring, Maryland)

The 20 uplink sites (14 WFOs and 6 National Centers) identified above are typical 2-way sites. These sites collect, send, and receive products. The terrestrial dial-in circuit backs up the satellite connection for inbound collection of products. The circuit is activated automatically when satellite connectivity cannot be established. Currently, Computer Sciences Corporation

(formerly DynCorp) broadcasts the entire NOAA Weather Wire product stream on the Internet through the “Open Interface¹”. This Open Interface allows NWS products to be accessed from anywhere with Internet address.

Twenty Five Sites Connected to The Ku Band Emergency Backup Satellite Network

1	WFO Austin/San Antonio, TX (KEWX)
2	WFO Brownsville, TX (KBRO)
3	WFO Corpus Christi, TX (KCRP)
4	WFO Houston/Galveston, TX (KHGX)
5	WFO Lake Charles, LA (KLCH)
6	WFO Shreveport, LA (KSHV)
7	WFO Mobile, AL (KMOB)
8	WFO Birmingham, AL (KBMX)
9	WFO Jackson, MS (KJAX)
10	WFO Key West, FL (KRYW)
11	WFO Melbourne, FL (KMLB)
12	WFO Miami, FL (KMFL)
13	WFO Tallahassee, FL (KTAE)
14	WFO Tampa Bay/Ruskin, FL (KTBW)
15	WFO Charleston, SC (KCHS)
16	WFO Columbia, SC (KCAE)
17	WFO Wilmington, NC (KILM)
18	WFO Raleigh, NC (KRAH)
19	WFO Newport/Morehead City NC (KMHX)
21	WFO Wakefield, VA (KAKQ)
22	WFO Baltimore/Washington (KLWX)
23	WFO MT. Holly, NJ (KPHI)
24	WFO Upton, NY (KOKX)
25	WFO Grey, ME (KGYX)

¹ The Open Interface is the point (TCP socket) at which the NWS one-way data stream is accessible on a full and open basis to parties who may wish to receive and/or to redistribute all such data which are considered to be public products by the NWS. The data stream is encapsulated in TCP packets.

APPENDIX B

**U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Telecommunications and Dissemination Branch
Silver Spring, MD 20910**

Agreement: NOAA Weather Wire Service (NWS) Data Exchange between the National Weather Service and Designated State Agencies

Whereas the National Weather Service (NWS) of the Department of Commerce distributes weather reports, warnings, forecasts, etc., over the NWS for the public interest, convenience, and safety, and whereas the state/commonwealth of _____ has an interest and need to receive NWS information for the use of public safety agencies within the state, whereas the state/commonwealth of _____ may have access to weather information of importance and interest to the NWS, the NWS and the _____ hereby agree to the following terms and conditions:

(name of Agency)

1. The NWS will:
 - (a) Pay all acquisition, installation, and maintenance costs for the necessary satellite data receive-only equipment for the designated state/commonwealth agency.
 - (b) Transmit NWS data to the designated agency via the NWS provided satellite data receiving equipment.
 - (c) Provide required assistance to the agency in understanding and interpreting the information provided.

2. The Designated State/Commonwealth agency shall:
 - (a) Transmit special weather information (e.g., road conditions, severe weather reports, flooding reports, etc.) to the NWS via a state-provided telecommunications connection to a designated NWS site. All such information transmitted shall utilize formats and protocols specified by the NWS.
 - (b) Receive NWS data via the Government-provided receive only satellite equipment.
 - (c) Assume full responsibility for the necessary internal data distribution and any intrastate agency agreements for data distribution, and hold the Government and its officers harmless from any damage which may arise from the use thereof.

- (d) Provide any terminals, interfaces, cabling, etc., needed to output, print, or further distribute information received from the satellite equipment.
- (e) Not establish a routine public service using the information from the NWS.
- 3. The NWS's obligations under this agreement are subject to the availability of funds.
- 4. This agreement is for an indefinite period and may be canceled by either party upon thirty (30) days written notice.
- 5. The designated NWS offices (primary and back-up) to which the _____ shall transmit weather information are:
(name of Agency)

(Primary NWS Office)

(Back-up NWS Office)
- 6. EFFECTIVE DATE: This Agreement shall become effective on the last date shown below when executed by the parties hereto.

STATE AGENCY

UNITED STATES OF AMERICA
Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service

By _____
(Signature)

By _____
(Signature)

TITLE: _____

TITLE: Chief, Dissemination Systems Branch
Office of Operational Systems
National Weather Service

DATE: _____

DATE: _____

AGREEMENT NO. _____

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