

NATIONAL WEATHER SERVICE INSTRUCTION 10-1721

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**Operations and Services
Dissemination NDS 10-17
INTERNATIONAL SATELLITE COMMUNICATIONS SYSTEM (ISCS)
MANAGEMENT**

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SUMMARY OF REVISIONS: This instruction supersedes NWSI 10-1721, International Satellite Communication System (ISCS) Systems Management, dated May 29, 2008.

The following changes have been made:

1. In Section 2 additional text has been added for clarification.
2. The text in Section 2.1 has been re-edited for clarity.
3. In Section 2.1.2 new technical information has been added.
4. The text in Section 2.3 has been re-edited for clarity.
5. In Section 3.1.1 the list of responsibilities has been updated.
6. In Section 3.1.2 the role of OS23 with respect to NWS, FAA, ICAO and WMO has been re-edited.
7. In Section 3.1.3 the Office of the Chief Information Officer has been deleted and replaced by the International Activities Office.
8. Sections 4 and 6 have been modified for clarity.
9. Minor grammatical and spelling edits throughout the document.

Signed

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July 13, 2010

Date

International Satellite Communications System (ISCS) Management

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1. Document Purpose. This procedure describes how the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) as the functionary specified in an Inter-agency agreement with the Federal Aviation Administration (FAA) operates and maintains the ISCS.

2. System Description. The ISCS is a satellite communications data distribution system for meteorological data products under FAA contract which is operationally managed by the NWS. This system is part of the GTS¹, providing an integrated global weather distribution network covering the Atlantic and Pacific World Meteorological Organization (WMO) regions. The ISCS end-to-end service is composed of three major components: the data provider, the data delivery system for data broadcast, and the end processor.

2.1 System Purpose. This section describes ISCS support to WAFS and GTS.

2.1.1 ISCS support to WAFS. ISCS support to WAFS is in response to International Civil Aviation Organization (ICAO) and WMO requirements. ISCS and the United Kingdom WAFS - Satellite Distribution System (SADIS) make up the worldwide WAFS program providing vital meteorological support for flight planning and air traffic management throughout the world. The purpose of ISCS/WAFS is to provide the worldwide aviation community with operational meteorological forecasts and information about meteorological phenomena required for flight planning and safe, economic and efficient air navigation. As a real-time, point to multi-point service, ISCS operates on a continuous 24 hours per day, 7 days per week, 365 days per year

¹ The GTS is defined as: “The co-ordinated global system of telecommunication facilities and arrangements for the rapid collection, exchange and distribution of observations and processed information within the framework of the World Weather Watch.” – WMO No 49 Technical Regulations
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basis. Where the ISCS sites are located at an airport, ISCS functions as an additive component to the Aeronautical Fixed Telecommunication Network.

2.1.2 ISCS support to GTS. ISCS provides support to GTS services to Columbia², Ecuador, Venezuela² (members of WMO Region III), and the Caribbean, Mexico, and Central American nations [WMO Region IV Meteorological Telecommunications Network (ISCS/RMTN)] as part of cooperative efforts between NWS and WMO to improve meteorological data and information dissemination within WMO Region IV. When paired with the NOAAnet Multi Protocol Label Switching (MPLS) data collection circuits, ISCS allows for two-way exchange of meteorological information between the United States and Columbia, Ecuador and the nations of WMO Region IV.

2.2 First ISCS Component - Data Provider. The Washington World Area Forecast Center (WAFC) communications facility and the GTS/Regional Telecommunications Hub (RTH) on the GTS/Main Telecommunications Network (MTN) are located together in Silver Spring, Maryland and jointly comprise the first component as data provider to the ISCS. This facility distributes gridded products from networked facilities, builds and/or switches observational collectives, and distributes worded forecast messages from other communication centers on the multiple data streams of the ISCS. The data is transmitted using the Transmission Control Protocol /Internet Protocol (TCP/IP) from the Washington RTH/WAFC to the ISCS communications service provider satellite up-link facility. In the event of a catastrophic failure at, or evacuation of the facility in Silver Spring, Maryland, the NWS Backup Telecommunications location is activated to provide continuity of operations. In the event of catastrophic failures to both Silver Spring and Backup Gateway, SADIS will be used as the backup.

2.3 Second ISCS Component - Communications Service Provider. Verizon Business under contract with the FAA provides satellite communications services for the ISCS system. The contracted satellite system utilizes up-link facilities located at Andover, Maine for provider space segment on the INTELSAT 903 over the Atlantic Ocean; Yacolt, Washington on INTELSAT 701 over the Pacific Ocean; and Fuchsstadt, Germany on INTELSAT 906 over the Pacific Ocean. The satellite broadcast uses a C-band (3.6-6.4 GHz) system. The ISCS very small aperture terminals (VSAT); 2.4 meter antenna, radio frequency electronics, and a network interface device make up the downlink equipment. All downlink equipment (with exception of U.S. Government facilities, equipment, and maintenance) is the responsibility of the owner/end-user country. The components as indicated comprise the communications system and will be placed where users establish their service. The potential reception footprint of the three satellites encompasses the intended coverage of two-thirds of the globe. SADIS (United Kingdom WAFS - Satellite Distribution System) covers the remaining one-third.

2.4 Third ISCS Component - Computer Processing System. A computer processing system (workstation or mini-computer) must be connected to the communications port of the site network interface downlink equipment. This computer system is selectable by the user, but the interface of the selected computer must be able to use Hughes Network Systems' Program Director (PD) Receiver software to enable reception of an IP multicast data stream. The computer processing system operates as a stand alone workstation. This component receives the data stream and stores the data for retrieval and use. Countries (or agencies within authorized

². Columbia and Venezuela are also members of WMO Region IV.

Countries) desiring connection to receive the ISCS satellite broadcast may select any workstation configuration from the available commercial vendors. These vendors (located around the world) have built computer systems that meet the functional requirements for an ISCS WAFS/RMTN workstation. A partial list of companies with WAFS ready computer systems is located on the internet at <http://www.metoffice.gov.uk/sadis/about/manufacturers.html>.

3. Organizational Responsibilities. This section describes the responsibilities of the NWS WSH concerning ISCS.

3.1 WSH. The Assistant Administrator (AA) for Weather Services has responsibility for ISCS operations and coordinates ISCS program administration with FAA and WMO.

3.1.1 Office of Operational Systems. OPS provides staff assistance to the AA for Weather Services and the FAA for ISCS program operations and configuration control. The Data Dissemination Systems Branch (OPS17) provides direction, assistance, resources, and other support to the registered users of the ISCS broadcast and ISCS Memorandum of Understanding signatories, and has overall responsibility for the following:

- a. Program Management support of the ISCS; including program and financial management and operational, engineering and communications;
- b. Engineering and technical support for ISCS, including workstations, telecommunications, and site VSAT components;
- c. ISCS/WAFS and ISCS/RMTN data transmission management, including establishing and maintaining the data product baselines and change management processes, and exercising authority to approve or deny data product change requests;
- d. Maintaining the ISCS Switching Directories in compliance with the approved baseline of products;
- e. Technical and system management liaison with ISCS stakeholders; including WSH, equipment manufacturers, other government agencies and user communities (foreign and domestic); and
- f. Outreach to government and private organizations (both foreign and domestic); individuals and the public regarding ISCS participation in WAFS, and its importance in support of free global aviation weather data and products dissemination required for flight planning and safe, economic, and efficient air navigation.

3.1.2 Office of Climate, Water and Weather Services. The Department serves as the primary focal point for collaboration with NWS, FAA, ICAO, and WMO to provide and disseminate aviation weather services. The Department works with the Office of Operational Systems to collect aviation observations and deliver aviation products to users. The Department creates internal and external partnerships to collect and validate aviation service and mission needs, including those of the ISCS.

3.1.3 International Activities Office. The NWS IA is responsible for the coordination of system and data requirements with all WMO Regions that receive the ISCS broadcast (Regions III, IV, V) to ensure the successful exchange of meteorological information, and for maintaining the ISCS switching directories in compliance with the approved ISCS data products baseline. NWS IA also facilitates policy and matters of notification in coordination with the ISCS Program Office and the Permanent Representative of the WMO.

4. Area of Coverage. ISCS broadcasts can usually be received on WAFS compliant systems and other computer systems as configured with WMO International Standard interface and data format capability.

Current ISCS service areas covered are:

- a. Atlantic Ocean Region (North America, Central America, Caribbean Islands, South America, parts of Western Europe and Western Russia, and Western North Africa) by INTELSAT 903;
- b. Pacific Ocean Region (Alaska, Western North America, Hawaii, New Zealand, Australia, Eastern Asia, Eastern Russia and the Pacific Islands of Australasia) by INTELSAT 701 and 906.

5. Meteorological Data Products and Information. The ISCS aviation weather broadcast format conforms to WMO (GTS) and ICAO specific guidelines. Information that is broadcast to the aviation community is selected and prioritized based on the weather needs of the people in the service area and in accordance with established ICAO guidelines.

6. Policy on ISCS Access. Access to the ISCS broadcast is free based on the user's purchase of a VSAT antenna, downlink, and registration with the NWS/WMO-ICAO representative.

Any country or entity with the desire/need to receive ISCS/WAFS data must do the following: (1) Submit a request through their respective ICAO State Representative to the WAFS Providing State Representative; request will then be processed through the NWS office of International Activities (W/IA). (2) Upon notification of approval, sign an End-User-License-Agreement (EULA) for the right to use the required PD Receive software. (3) As part of the pre-installation process provide point of contact information for the new ISCS/WAFS site to the W/IA and NWS ISCS Program Office (OPS17). All of the above actions must be completed before the site will be considered for any future changes/upgrades to the ISCS. Countries of WMO Region IV accessing the ISCS/RMTN broadcast as an extension of GTS are identified in WMO 386³.

³ Manual on the Global Telecommunication System
2009 Edition (WMO-No. 386)
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