SECTION 2

FEDERAL COORDINATION AND PLANNING

BASIS FOR FEDERAL COORDINATION PROCESS

In 1963, Congress and the Executive Office of the President expressed concern about the adequacy of coordination of federal meteorological activities. In response, Congress directed in Section 304 of Public Law 87-843--the Appropriations Act for State, Justice, Commerce, and Related Agencies--that the Bureau of the Budget prepare an annual horizontal budget for all meteorological programs in the federal agencies. The Bureau of the Budget (now the Office of Management and Budget) issued a report entitled "Survey of Federal Meteorological Activities" (1963). The report described each agency's program in some detail, particularly its operational services, and detailed the relationship between the programs of the various agencies. The report revealed close cooperation but little evidence of systematic coordination. Based on this study, the Bureau of the Budget issued a set of ground rules to be followed in the coordination process. It established a permanent general philosophy for assignment and assessment of agency roles in the field of meteorology and set certain goals to be achieved by the coordination process. The Bureau of the Budget tasked the Department of Commerce (DOC) to establish the coordinating mechanism in concert with the other federal agencies. It also reaffirmed the concept of having a central agency--the DOC-- responsible for providing common meteorological facilities and services and clarified the responsibilities of other agencies for providing meteorological services specific to their own needs. The implementation of these directives by DOC led to the creation of the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) which operates with policy guidance from the Federal Committee for Meteorological Services and Supporting Research. The principal work in the coordination of meteorological activities and in the preparation and maintenance of federal plans is accomplished by the OFCM staff with the advice and assistance of the Interdepartmental Committee for Meteorological Services and Supporting Research, and over 40 program councils, committees, and working groups.

MISSION AND STAFFING OF THE OFFICE OF THE FEDERAL COORDINATOR FOR METEOROLOGY (OFCM)

The mission of the OFCM is to promote coordination and cooperation among the federal agencies having weather-related activities so that the most effective and best possible weather information and user services are provided for the funds made available by the government. To discharge its mission, the OFCM has meshed its objectives with the objectives of the agencies that provide the services and perform the research. They include:

» Documenting agency programs and activities in a series of national plans and reports that enable agencies to revise/adjust their individual ongoing programs and provide a means for communicating new ideas and approaches to fulfill requirements.

» Providing structure and program to promote continuity in the development and coordination of interagency plans and procedures for meteorological services and supporting research activities.

» Preparing analyses, summaries, or evaluations of agency meteorological programs and plans that provide a factual basis for the Executive and Legislative branches to make appropriate decisions related

to the allocation of funds.

» Reviewing federal weather programs and federal requirements for meteorological services and supporting research. This review may suggest additions or revisions to current or proposed programs or identify opportunities for improved efficiency, reliability, or cost avoidance through coordinated actions or integrated programs.

In 1979, a General Accounting Office (GAO) report, "The Federal Weather Program Must Have Stronger Central Direction," LCD-80-10, recommended stronger centralized planning and direction for federal weather activities. Pursuant to GAO's recommendation, DOC increased the permanent professional staff from one to seven and assigned an additional professional staff member as the DOC representative. DOC also provides administrative support to the OFCM and provides approximately one-half of the OFCM's annual operating budget. The Department of Defense (DOD) currently provides two senior staff officers--one Air Force and one Navy--and contributes approximately one-fourth of the annual budget. The Department of Transportation (DOT) Federal Aviation Administration (FAA) provides one professional staff member and also provides approximately one-fourth of the annual operating budget. These four agency representatives are designated Assistant Federal Coordinators for liaison to their respective agencies. The OFCM staff consists of 17 meteorologists, oceanographers, physical scientists, and administrative and computer-support personnel.

COORDINATION OF MULTIAGENCY PROGRAMS

The Federal Committee for Meteorological Services and Supporting Research (FCMSSR), established in 1964, provides high-level agency representation and policy guidance to the Federal Coordinator in resolving agency differences that arise during the coordination of meteorological activities and the preparation of federal plans. The Under Secretary of Commerce for Oceans and Atmosphere, who is also the Administrator of the National Oceanic and Atmospheric Administration (NOAA), serves as the FCMSSR Chair.

The 13 federal agencies that engage in meteorological activities or have a need for meteorological services are represented on FCMSSR. The FCMSSR membership includes: DOC, DOD, DOT, the Departments of Agriculture (USDA), Energy (DOE), Interior (DOI), and State (DOS), and the Environmental Protection Agency (EPA), Federal Emergency Management Agency (FEMA), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), National Transportation Safety Board (NTSB), and the U.S. Nuclear Regulatory Commission (NRC). In addition, the Office of Management and Budget (OMB) is represented.

OMB and FCMSSR provide guidance at the policy level to the Federal Coordinator. At the program management level, guidance from the agencies is provided by the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR). Under ICMSSR, there are six standing committees: Basic Services, Operational Processing Centers, Automated Weather Information Systems, Aviation Services, Operational Environmental Satellites, and Space Environment Forecasting.

Also within the OFCM structure, there are seven program councils (PC) to coordinate specific interagency cooperative programs. There seven PCs are:

» Next Generation Weather Radar.

» Joint Automated Weather Observations.

» Automated Weather Information Systems.

» Aircraft Icing.

» Aviation Weather.

» National Space Weather.

» Improved Weather Reconnaissance.

Each of the PCs is comprised of decision-level representatives from the agencies directly concerned with the specific program area. The Federal Coordinator serves as the chairperson of each PC.

Next Generation Weather Radar (NEXRAD)

A major milestone in United States weather modernization programs was achieved during July 1996 with delivery of Weather Surveillance Radar-1988 Doppler (WSR-88D) number 161, the last system in the basic Next Generation Weather Radar (NEXRAD) procurement schedule. Five of the 161 WSR-88D systems have been allocated to support training, maintenance, and testing activities; 116 are deployed at National Weather Service (NWS) sites within the contiguous 48 states, 29 are deployed to DOD operational sites in the U.S. and overseas, and 11 were installed by the FAA in Alaska and Hawaii. As of August 1996, 106 WSR-88D units have been commissioned as the official site on the national network of weather radars--a little over two years since commissioning began during 1994.

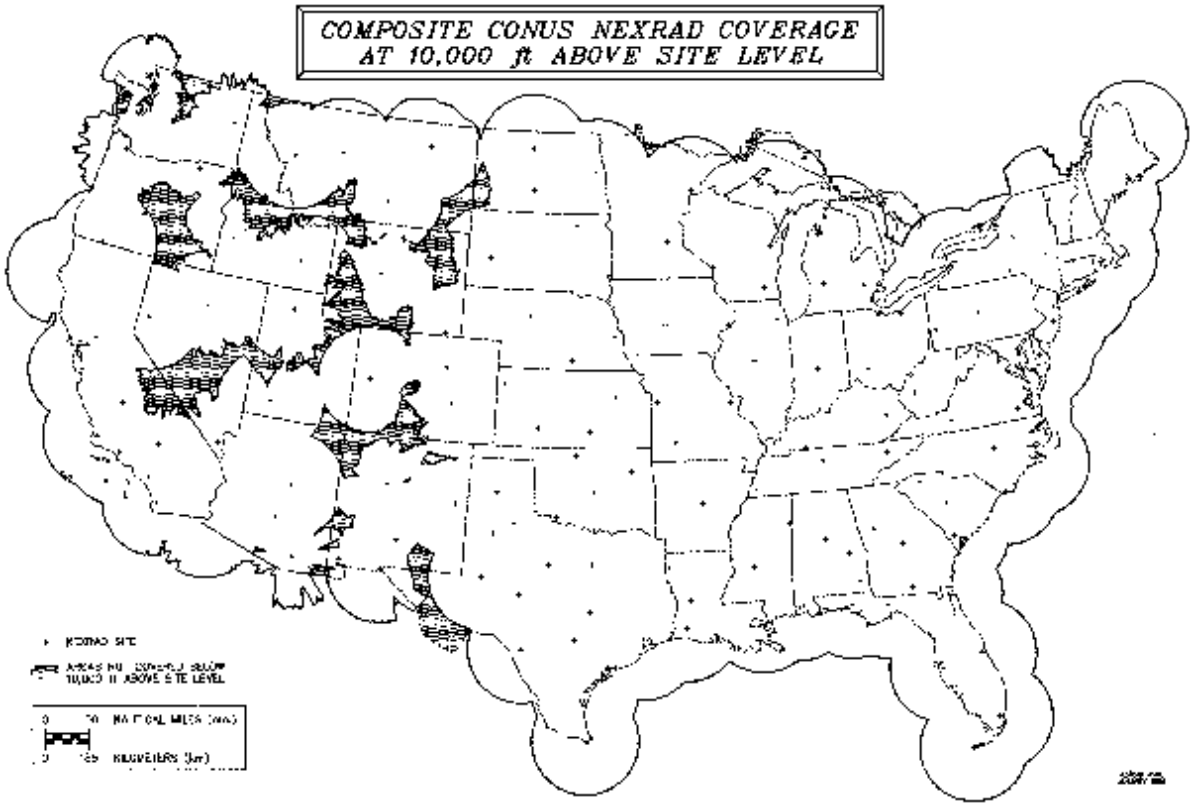

Figure 2-1 WSR-88D Continental United States Coverage

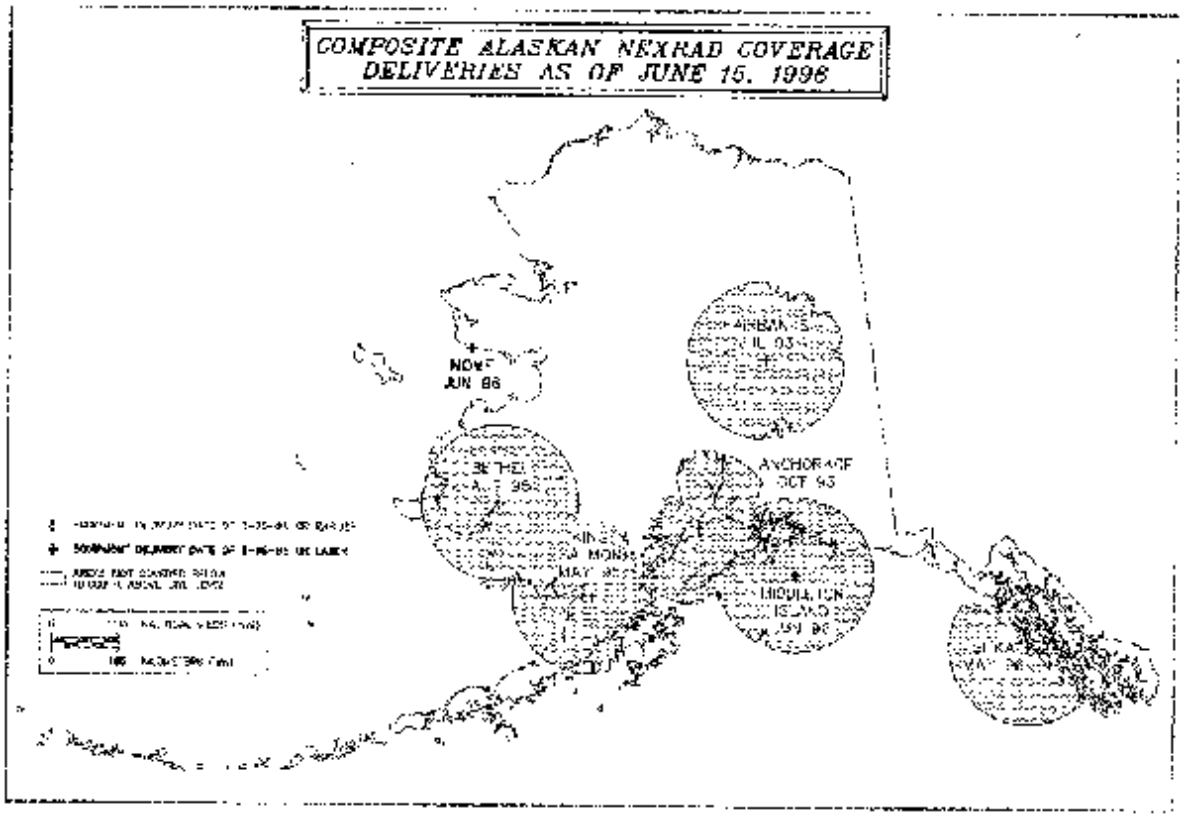

Figure 2-2 WSR-88D Alaskan Coverage

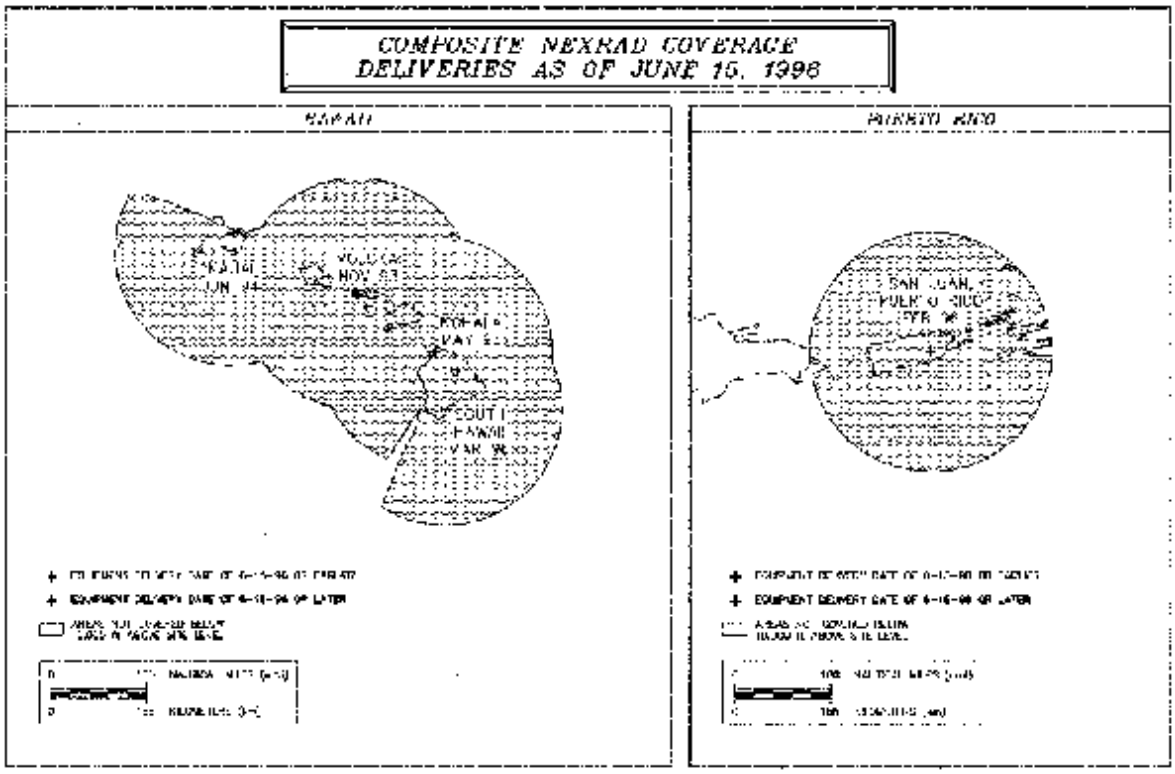

Figure 2-3 WSR-88D Hawaiian and Puerto Rican Coverage

The WSR-88D is a computerized Doppler weather radar developed to meet the needs of DOC, DOD, and DOT for improved ability to detect and maintain surveillance of hazardous weather. This need was defined in an OFCM-sponsored study in the late 1970's. It led, in 1979, to the establishment of a Joint System Program Office to develop and procure the new Doppler radar under policy guidance and oversight of the triagency NEXRAD Program Council.

The WSR-88D system's advanced technology provides automated Doppler signal processing, computerized processing of data by sophisticated meteorological software algorithms, state-of-the-art ergonomically designed operator workstations, and a high-capacity, processor-driven communications capability. The system is modular in design, upgradeable, and has a long life-cycle expectancy. NEXRAD's advanced weather radar products meet the needs of the three Departments for accurate information on the location, severity, and movement of hazardous weather.

The NWS uses the WSR-88D for more than forecasts and warnings of severe weather. The WSR-88D also provides rainfall analysis capability for improved river stage and flood forecasts and for data to support effective management of water resources. This advance in water resources management reaches beyond flood control to impact areas, such as river navigation, drinking water supplies, pollution management, and water-based recreation--all with beneficial economic consequences. The DOD will use WSR-88D data to support military operations and protect defense assets in the United States, the Azores, and at key Pacific locations. The FAA uses the data to improve flight safety and to manage traffic more efficiently within the National Airspace System. The National Climatic Data Center provides historical archiving of the WSR-88D data.

Planned activities for FY 1996 and 1997 include procurement and implementation of 3 additional WSR-88D systems in response to recommendations made the the National Research Council Report on the NWS Modernization and Restructuring. In addition, major initiatives in hardware and software capabilities refinement are underway for WSR-88D product improvement. These pre-planned product improvements include the evolution to an open-architecture environment to ensure compatibility with the automated weather information systems of NWS, DOD, and the FAA.

Automated Surface Weather Observations

As of August 1996, a total of 868 units have been purchased as part of the base program. The NWS has purchased, installed, and accepted 245 units. The FAA has purchased 537 units, installed 421 units, and accepted 413 units. The Navy has purchased 86 units, installed 59 units, and accepted 48 units. Collectively, the NWS and FAA have commissioned 297 units--NWS 205 and FAA 92. In FY 1995-1996, the average ASOS commissionings for the NWS and FAA were 10 and 7 units per month, respectively. The rate of commissionings for the FAA is expected to increase in the coming year.

In July 1996, the ASOS Program Office successfully implemented software modifications to change the observation code format from Airways (SAO) to METAR. This change was part of the overall United States effort to join the world aviation and meteorological communities in the use of a common code for surface aviation weather observations. The conversion required close coordination between the users of ASOS (NWS, FAA, AF, and Navy) and represented a major program accomplishment.

Historically, each agency has independently developed an operational weather system capability in pursuit of its mission. In 1983, the Joint Automated Weather Observations Program (JAWOP) was established with membership from DOC, DOD, and DOT/FAA. Concurrently, the JAWOP Council was established to provide policy guidance and oversight for automated surface observation program development efforts.

In 1986, the JAWOP Council agreed to use the NWS Automated Surface Observing System (ASOS) at the FAA's towered airport locations. The Administrators of NOAA and FAA agreed that NOAA would procure, install, operate, and maintain the ASOS to meet FAA requirements for both the towered and most of the non-towered (smaller) airports. This action would make ASOS the primary federal surface observing system. Immediate needs of the FAA for limited weather observations at small non-towered airports was satisfied by 200 off-the-shelf automated weather observing systems (AWOS) as an interim capability system until the fielding of ASOS.

In February 1991, based on the recommendations of an independent interagency Test Review Board (TRB), the ASOS production and implementation contract was awarded to AAI Corporation for as many as 1700 units over the next 5 years. The early systems were fielded in the central United States during the summer of 1991. In March 1992, the TRB concluded that the risks of proceeding with full system acceptance and commissioning during the summer of 1992 were small and manageable. Commissioning of NWS-sponsored ASOS units began in September 1992; FAA commissionings began in November 1993.

The Navy is replacing obsolete equipment with ASOS at Navy and Marine Corps Air Stations. The Navy does not plan to use ASOS as a fully automated station except at remote sites, such as bombing ranges, where surface observations are not presently taken due to manpower limitations. The Navy requires 86 ASOS units--85 operational and one for research and development (R&D)--at 70 continental U.S. sites and 15 overseas sites. In 1992, the R&D unit was installed at the Naval Electronics Engineering Center, Charleston, SC.

The Air Force is acquiring and installing ASOS units at towered and non-towered facilities to meet requirements not currently satified by existing Air Force equipment and manpower. The Air Force does not plan to use ASOS as a fully automated station except at remote sites, such as training ranges, where surface observations are not presently taken due to equipment or manpower limitations. The Air Force purchased 23 ASOS units in FY 1994 and 1995, and will continue to fill ASOS requirements as funding becomes available in FY 1997 and beyond.

The U.S. Army Research Laboratory (ARL) has developed and installed the Surface Automated Meteorological System (SAMS) for automated collection and processing of surface weather parameters for supporting the Army's Research, Development, Test, and Evaluation sites. Each data collection package (DCP) measures: solar radiation, air temperature, humidity, wind direction and speed, barometric pressure, and soil temperature. The central site, called the Acquisition Control Unit (ACU), directs the DCPs to acquire and transmit data, calculates a variety of derived parameters, and maintains a listing of the acquired data including reports and plots.

Planned ASOS activities for FY 1996-1997 include continuing with ASOS full-scale production, fielding as many as 12 or more systems per month, and commissioning of NWS and FAA ASOS units. In addition, NWS, FAA, and DOD (under the auspices of the JAWOP) will continue with selected future sensor enhancement, development, and testing.

Automated Weather Information Systems

Automated Weather Information Systems (AWIS) are required by a number of federal agencies. AWISs are being procured to provide an automated, high-speed, user-friendly man/machine interface to access and process large volumes of sophisticated meteorological data. They support the timely production of accurate and geographically precise warnings, forecasts, and special tailored products. They also provide the communications capability for expeditious product dissemination.

Major agency systems classified as AWISs are: NOAA's Advanced Weather Interactive Processing System (AWIPS), FAA's Central Weather Processor (CWP), Air Force's Automated Weather Distribution System (AWDS), and Navy's Naval Oceanographic Data Distribution and Expansion System (NODDES) and Navy Integrated Tactical Environmental Subsystem (NITES). These systems include communications to collect and distribute raw data, information and processed products but exclude observation subsystems and the supercomputers at the major centers.

The AWIS Program Council which consists of high-level representatives from DOC, DOD, and DOT, was established in 1986 in response to a 1985 recommendation by the Inspectors General of these agencies. The goals of the council were to: (1) identify major items that needed coordination, (2) determine what commonalities existed among the systems, and (3) produce a federal plan for the coordination of AWIS programs. To pursue these goals, the Council uses the Committee for Automated Weather Information Systems (CAWIS) and its Working Groups for Communications Interfaces and Data Exchange (WG/CIDE), AWIS Meteorological Applications (WG/AMA), and NOAAPORT Liaison (WG/NPL).

National Aviation Weather Program

The National Aviation Weather Program Council (NAWPC) was formed in 1989 and a supporting Joint Action Group (JAG) in 1990 to address aviation weather issues. Membership includes the Departments of Agriculture, Commerce, Defense, and Transportation as well as the National Transportation Safety Board and NASA. The first major undertaking of the JAG resulted in the publication of the ***National Aviation Weather Program Plan (NAWPP)*** in 1992 which outlined unmet user needs.

After some intervening time and prompted by recommendations from the National Research Council, the JAG has been reconstituted by the NAWPC and tasked with the preparation of a National Aviation Weather Strategic Plan. In spite of the NAWPP, several user forums, and individual agency activities, no single, integrated policy/strategy for a national aviation weather information system exists. The JAG will be meeting regularly over the next several months with the goal of having a draft strategic plan by the end of 1996. The emphasis will be to build upon what has been done before and to foster a unified effort to improve the overall state of the Nation's aviation weather program.

National Space Weather Program Council

Recent activity in the National Space Weather Program (NSWP) has focused on completing an Implementation Plan which builds on the Strategic Plan published in late 1995. The NSWP Implementation Plan covers research, modeling, and observation requirements, and provides guidance on priorities, agency roles and responsibilities, and program management. The projected publication date for the Implementation Plan is late 1996. In April 1996, the National Science Foundation released a letter to the scientific community requesting proposals for research to support the National Space Weather Program. The announcement generated strong interest in the community. The 23 successful proposals will share in $1.3 million in new research money acquired from multiple agencies and identified as National Space Weather Program funding.

Improved Weather Reconnaissance System (IWRS)

The Improved Weather Reconnaissance Program Council (IWRPC) was formed to manage the acquisition of the IWRS. Currently, the Air Force Reserve's 53rd Weather Reconnaissance Squadron (53 WRS) operates ten WC-130H aircraft equipped with the IWRS, which provides an automated, accurate, high-density, data-gathering capability in support of tropical cyclone and winter storm forecasting operations. The 53 WRS has a Congressionally mandated charter to provide hurricane reconnaissance in

support of the NWS's National Hurricane Center/Tropical Prediction Center. With the successful completion of the IWRS program, the IWRPC continues to meet at least annually to evaluate the operational effectiveness of the IWRS and to evaluate/approve proposals for IWRS improvements and upgrades. The IWRPC met in March 1996, in conjunction with the 50th Interdepartmental Hurricane Conference, to review the status of ongoing projects and enhancements.

The Air Force and the IWRPC are actively pursuing the acquisition of the Global Positioning System (GPS)-based Atmospheric Vertical Profiling System (AVAPS) to replace the Lightweight Omega Digital Dropwindsonde System (LOD2), which will become obsolete with the demise of the Omega radionavigation system on September 30, 1997. AVAPS is being developed by the National Center for Atmospheric Research (NCAR) for NOAA's WP-3Ds and for the new Gulfstream IV-SP aircraft. The result will be the standardization of atmospheric sounding systems used by the Nation's weather reconnaissance aircraft. The 53 WRS briefed on the new C-130J--the likely successor to the WC-130H. The C-130J sports a "glass cockpit," is GPS equipped, and promises significantly enhanced performance. The 53 WRS hopes to have the first three operational aircraft by June 1998.

In August 1995, Quadrant Engineering, Inc. installed the next generation stepped frequency microwave radiometer (SFMR) on NOAA's WP-3D to provide remotely sensed surface wind speeds. Flight testing began almost immediately due to the very active hurricane season. While the system operated properly, the noise levels in the system measurements were higher than expected. Quadrant Engineering completed an analysis of the noise problem and modified the SFMR to correct the problem; final flight testing will be conducted during the 1996 hurricane season. Plans for FY 1997 will focus on completing a series of analysis tasks required to provide the data to the National Hurricane Center in real-time and on planning the transfer of technology to the operational environment of the WC-130. This project was approved and funded by the IWRPC.

PLANNING, COMMITTEE ACTIVITIES, AND PUBLICATIONS

Interdepartmental Hurricane Conference

In March 1996, the Office of the Federal Coordinator for Meteorology hosted the 50th Interdepartmental Hurricane Conference (IHC) in Miami, Florida. A combination of a near-record hurricane season, celebration of the 50th conference, and concern about certain weather reconnaissance issues made for a full agenda and unusually large attendance (134 representatives from DOC, DOD, and DOT). In addition to the normal activity of reviewing the 1995 hurricane season and incorporating plans for 1996 into the National Hurricane Operations Plan (NHOP), representatives participated in several activities unique to this particular conference. A groundswell of interest in hurricane research necessitated extending the research portion of the conference.

Special events to celebrate the 50th conference included historical presentations on hurricane forecasting and aircraft reconnaissance, a look into the future of hurricane forecasting, and former Federal Coordinator Bill Barney's review of weather and its impacts over the years. A special session was convened to review issues regarding the most effective use of limited aerial weather reconnaissance resources.

The 1996 NHOP was published in May. The 51st Interdepartmental Hurricane Conference is scheduled for March 4-7, 1997 in Miami, Florida.

Climate Services

In 1994, the Interdepartmental Committee for Meteorological Services and Supporting Research

(ICMSSR) formed the Working Group for Climate Services (WG/CS) in an effort to provide a focal point for federal involvement in climate change, ozone depletion, seasonal to interannual forecasting, and climatological applications. The WG/CS has provided a unique forum, bringing together an extremely diverse group of agencies which conduct a very broad scope of activities related to climatology. The exchange of information at working group meetings has been invaluable, and the WG/CS is looking into methodologies for providing some unity to their various climate services efforts.

Federal Meteorological Handbooks

At the direction of the ICMSSR, the OFCM maintains a continuing program to revitalize the Federal Meteorological Handbooks (FMH). Responsibility for review and revisions, if necessary, of each handbook is assigned to the approriate committee and/or working group within the existing interdepartmental coordinating infrastructure. The FMH series includes observing and reporting practices for surface, upper air, radar, and meteorological rocket observations. The titles of nine existing handbooks are: ***Surface Weather Observations and Reports***, ***Surface Synoptic Codes***, ***Radiosonde Observations***, ***Radiosonde Code***, ***Winds-Aloft Observations***, ***Upper Wind Code***, ***Weather Radar Observations***, ***Meteorological Rocket Observations***, and ***Doppler Radar Meteorological Observations***.

To date, revisions have been completed for the ***Surface Weather Observations and Reports*** (FMH-1), ***Surface Synoptic Codes*** (FMH-2), ***Meteorological Rocket Observations*** (FMH-10), and ***Doppler Radar Meteorological Observations*** (FMH-11) handbooks. In November 1995, the Ad Hoc Group for FMH-1 finalized and recommended publication of the fifth edition of FMH-1. The latest edition reflects the U.S. implementation of METAR code for surface weather observations. Federal agencies are reviewing a preliminary draft of the ***Manual on Codes--U.S. Supplement*** (FMH-12). This new handbook will include, along with other codes to be determined, the Pilot Report (PIREP) code form that had been included in earlier versions of FMH-1; the projected publication date is the fall 1996. Federal agencies are also reviewing the latest draft of ***Upper Air Observations*** (FMH-3).

New versions of all handbooks are available to private-sector users through the Customer Services at the National Climatic Data Center, Asheville, North Carolina. Federal agencies may request copies from the OFCM.

Meteorological Codes

The use of meteorological codes is of fundamental importance for the collection, exchange, and distribution of meteorological information. Within the OFCM, the Working Group for Meteorological Codes (WG/MC) is the principal means for coordinating the employment of these codes by concerned federal agencies.

The major WG/MC effort during 1995-1996 was the coordination and formulation of exceptions to three WMO codes--Aviation Routine Weather Report (METAR), Aviation Selected Special Weather Report (SPECI), and Aerodrome Forecast (TAF). These new code formats were implemented in the U.S. on July 1, 1996, at 0800 UTC. The WG/MC is also considering updates to several code formats, such as Gridded Binary (GRIB) and Binary Universal Form (BUFR), that are being discussed and proposed within the WMO. The WG/MC is continuing coordination and review of the initial chapters of FMH-12.

Satellite Telemetry

The Satellite Telemetry Interagency Working Group (STIWG) is co-chartered by the Federal Coordinator for Meteorology and the Chief, Office of Water Data Coordination. The STIWG reports to the coordinators through the Committee for Basic Services and the Hydrology Subcommittee in their

respective coordinating infrastructures. The STIWG agencies collect data from remote Data Collection Platforms (DCP) through the GOES Data Collection System (DCS). DCPs owned by the user agencies sense and collect a variety of data at remotely located positions. Among those types of data are rainfall, stream flow, water levels in lakes and reservoirs, seismic stress and vibration, wind direction and speed, atmospheric pressure, soil moisture, air/soil temperature, sea surface temperatures, and relative humidity.

A major concern of the STIWG and NESDIS has been the growing numbers of DCPs and the possibility of system saturation. Several international users are coming on-line with a growing number of DCPs. In response to this growing concern, NESDIS has taken steps to increase the efficiency of bandwidth use in the satellite and to increase the throughput at the ground processing system at the Command and Data Acquisition Station. The STIWG member agencies have funded additional demodulators for the ground receiving system and a domestic communications satellite channel to disseminate the collected data to users. They have also funded studies to evaluate the advantages and impacts of higher baud-rate equipment. Based on these results, STIWG agencies have jointly funded the development of 300 and 1200 baud transmitters, demodulators, and test sets. Prototypes are expected in late 1996.

Post-Storm Data Acquisition

A Working Group for Post-Storm Data Acquisition (WG/PSDA) was established by ICMSSR to prepare an interagency plan for scientific and engineering data acquisition, especially highly perishable data, after coastal storms, tornadoes, tsunamis, and lake storms. Active participants are from the U.S. Army Corps of Engineers, NWS, FEMA, USGS, NOAA Coastal Oceans Program, National Institute for Standards and Technology, and the USDA's Soil Conservation Service.

In March 1995, a draft of the federal plan, which is designed to improve coordination among the federal agencies and reduce duplication of effort, was distributed for review.

Volcanic Ash Reporting and Warning

At the request of the federal agencies in 1993, the ICMSSR established the Ad Hoc Group for Volcanic Ash (AHG/VA) to develop a "National Plan for Volcanic Ash Reporting and Warning." The Plan will identify responsibilities of the federal agencies to report and collect data on volcanic disturbances and eruptions, and to develop forecasts and warnings of locations and movement of ash plumes or clouds. A draft plan is under review.

An International Workshop on Volcanic Ash Hazards to Aviation was held in Anchorage, Alaska in May 1996. Representatives included pilots, airport managers, dispatchers, volcanologists, as well as representatives from the airline industry and FAA's Air Traffic Control management. The participants exchanged concerns and capabilities, highlighted issues, and conducted a desktop exercise. The findings derived from this exercise will provide direction for new work to improve the volcanic ash alerting system.

Operational Processing Centers

The principals of the OFCM-sponsored Committee for Operational Processing Centers (COPC) and the Shared Processing Program Operations Steering Committee (SPOSC) meet twice a year to discuss data issues, modeling activities and algorithm development, and other cooperative efforts. During FY 1995, joint meetings of the COPC and SPOSC were held, and it was concluded that the two committees should meet consecutively rather than jointly, followed by a joint executive session. The November 1995 meeting, hosted by Air Force Global Weather Center (AFGWC), and the May 1996 meeting, hosted by the NESDIS Office of Satellite Data Processing and Distribution (OSDPD), were successfully conducted

in this format. At the November meeting, NESDIS/OSDPD was added as the fifth principal of the COPC, joining AFGWC, Fleet Numerical Meteorology and Oceanography Center (FNMOC), the Naval Oceanographic Office (NAVOCEANO), and the National Centers for Environmental Prediction (NCEP). Concern over the declining number of observations and the variability in terms of data counts and data types in the databases of the OPCs led to the formation of an Ad Hoc Group for Observations (AHG/OBS). At the May COPC meeting, the Chairman, AHG/OBS, briefed on the group's plans to review master station libraries, data counts, and observation processing/quality control procedures, and to begin working towards common, quality observational databases among the OPCs. AFGWC briefed that the FNMOC-AFGWC Asynchronous Transfer Mode (ATM) communications link was operational in February 1996. Plans are underway to tie all the centers together using ATM, significantly upgrading the landline and satellite communications that currently link the OPCs. The October 1996 meeting will be hosted by NAVOCEANO at Stennis Space Center, Mississippi.

The Working Group for Cooperative Support and Backup, under the auspices of the COPC, completed and published section one of the totally revised ***Federal Plan for Cooperative Support and Backup Among Operational Processing Centers***. The revised plan details the mission and operations descriptions plus the general cooperative support and backup requirements of the OPCs. In section two, each of the OPCs has a separate annex to document their detailed cooperative support and backup requirements with the other OPCs. Work in the coming year will focus on the preparation of these annexes.

National Program for Lightning Detection Systems

The Working Group for Lightning Detection Systems (WG/LDS) has compiled agency requirements for lightning detection and developed a set of standards for lightning detection systems. These documents formed the foundation for a NWS procurement of operational lightning data from a commercial source. A Request for Proposals (RFP) was issued in February 1991. Proposals were received and evaluated. Contract award took place in August 1992. The data are used routinely in NWS field operations. Meanwhile, various other agencies have arranged to make use of lightning data to meet their requirements.

Federal agencies are collectively making plans for another procurement of lightning data, now that the original NWS contract is approaching its end (September 1996). A draft statement of work was reviewed by the agencies and provided to NWS for further action. The NWS issued the RFP for the next contract in April 1996; these responses are being evaluated.

Hydrometeorology

The Working Group for Hydrometeorology (WG/HM) has been addressing areas for mutual cooperation and coordination in hydrometeorology. One of its first tasks has been the development of a handbook for automated flood warning systems. The "Handbook on Automated Local Flood Warning Systems" describes local flood warning systems in terms of types, standards, requirements, implementation, and maintenance. The document is currently being prepared for publication by the NWS.

Marine Environmental Services

The Working Group for Marine Environmental Services (WG/MES) published the ***Federal Plan for Marine Environmental Data, Services, and Supporting Research*** with the objective to define a responsive national policy for marine environmental services. In support of this policy development, existing and planned programs are documented, and critical deficiencies in operational capabilities that can be addressed through research and development are defined. The plan will serve as a mechanism for interagency cooperation in marine data collection efforts.

Mobile Meteorological Equipment

ICMSSR tasked the Ad Hoc Group for Mobile Meteorological Equipment (AHG/MME) to provide a forum for coordinating information on mobile observing and forecasting systems within the federal meteorological community. In December 1995, AHG/MME published a revised ***Federal Directory of Mobile Meteorological Equipment and Capabilities*** to catalogue both current mobile systems and capabilities and those programmed to be available in the near future.

Committee and Working Group Structure

A schematic of the federal committee and working group structure for meteorological coordination is found on the back inside cover of this Plan.

Meteorological Publications of OFCM

The preparation of federal plans is a major responsibility of the Federal Coordinator and requires extensive planning and coordination. Generally, federal plans are prepared for each of the specialized meteorological services and for meteorological programs common to two or more agencies. The federal coordinating committees and working groups compile information from the involved agencies and propose a unified plan for consideration. Current publications of the Federal Coordinator for Meteorology are listed in Table 2.1. With the exception of FMH's, copies of OFCM publications are available upon request.

RELATED FEDERAL METEOROLOGICAL COORDINATION

The focus of OFCM and of this report is on federal operational meteorological programs and supporting research that directly supports the operational programs. Brief descriptions are given below of federal coordination activities that are not specifically a part of OFCM activities.

Omega Radionavigation System

The 1994 *Federal Radionavigation Plan* stated that the Omega radionavigation system would be phased out by September 30, 1997, in the absence of continuing requirements for the system. The phase-out date was based on the fact that current marine and aviation systems using Omega were quickly transitioning to GPS-based systems. Currently, over 220 stations around the world use Omega-based systems for upper-air observations. On March 18, 1996, the DOT Positioning and Navigation Executive Committee was briefed on the meteorological community's use of Omega and on the potential impacts should Omega be prematurely terminated. The issue, however, went beyond use and requirements to responsibility for the continued funding of U.S. participation in the worldwide Omega network. The FAA will fund the network through FY 1997 based on civil aviation requirements, but there is no programmed funding beyond that point. On April 26, 1996, the OFCM hosted a strategy session to revalidate continuing requirements for Omega within the federal meteorological community, and then, based on those requirements, investigate possible funding arrangements. The outcome of the meeting was that, until the community can quantify the impact of losing these data, it would be impossible to justify to any agency the continuing need to fund U.S. participation in the Omega network.

In response to this need, the NWS's NCEP completed a study on the impact of the anticipated demise of Omega wind-finding capability. The study results were briefed to the ICMSSR on July 2, 1996. The conclusion of the study was that, on a global basis, removing Omega-based upper-air observational data results in a degradation of forecast error statistics equivalent to 5 years of numerical weather prediction progress in forecast error reduction. The study went on to show that, without the Omega observations, the

variabilitiy of analyses and forecasts about a mean error value was greater, implying some forecasts are much worse and others are about the same. Also, if a key station for a particular forecast is missing, local error growth (downstream) will likely be large.

In a letter to the Assistant Secretary for Transportation Policy, the OFCM, on behalf of the federal meteorological community, stated that while the impacts are of concern, they are not devastating. And, given the costs of the Omega system and the community's need for a concerted effort to implement new systems, the continued funding of the Omega radionavigation system beyond September 30, 1997, would not be pursued. In the near term, the efforts of both the U.S. and international meteorological communities will be directed at finding alternative wind-finding solutions to Omega, such as GPS, for key stations impacted by the Omega phaseout.

World Weather Program

Some federal agencies participate in international activities relating to meteorological services and data exchange. These activities are carried out under the World Weather Program of the World Meteorological Organization, which is a specialized agency of the United Nations. The World Weather Program is described in Appendix E.

Table 2.1 Current OFCM Publications

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