



WESTERN REGION TECHNICAL ATTACHMENT
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THE STATUS OF AWIPS-90

A. Introduction

The Advanced Weather Interactive Processing System for the 1990s (AWIPS-90) will be a highly automated, integrated weather information processing and display system that will support the operational demands of the NWS field offices and national centers during the 1990s. AWIPS-90 is essential to achieving the goals of providing more timely and accurate forecasts and warnings, improving dissemination of these products and of restructuring and modernizing the NWS.

B. Purpose

One of the greatest challenges in the NWS is the forecasting of severe weather. The technology of this decade has provided sensor systems, notably satellite and Doppler radar, capable of observing the time and space scales on which severe weather events occur. The resulting very large increase in observational data, combined with advanced processing and display techniques, has increased our scientific understanding of atmospheric dynamics. AWIPS-90 will provide field offices with a modern interactive system capable of (1) assimilating the diverse new data sets and integrating them with each other and with conventional data, (2) supporting warning and forecast decision making processes, and (3) facilitating the dissemination of weather products.

C. Capability

AWIPS-90 will provide modern data ingest, storage, manipulation, analytical processing, interactive color display, and product preparation and dissemination support to meteorologists and hydrologists. A major feature of AWIPS-90 will be its capability to receive, store, and process data from planned hydrologic and meteorologic guidance and observing systems, including the following:

- . guidance products produced at national centers, river forecast centers, and field offices,
- . conventional observations (surface and upper air),
- . reports from the Automated Surface Observing Systems (ASOS),
- . digital multispectral imagery data and soundings from the next generation GOES and polar-orbiting satellites,
- . digital radar reflectivity and Doppler data from NEXRAD,
- . wind profiler data, and
- . observational data acquired by other Federal and local agencies.

AFOS was designed to automate field office functions as they existed in the early 1970s; it cannot accommodate the high volume, high resolution data sets that are becoming available. Also, the computational capabilities of AFOS are too limited to support modern techniques for interactive data processing and display, automated analyses, and computer-assisted decision making. These design and operational limitations will render AFOS obsolete by the end of this decade.

D. Transition

The transition from AFOS to AWIPS-90 will be accomplished in three major stages over the next several years.

Stage I will introduce a narrow band satellite broadcast capability and improved local applications processing to the NWS operations. This satellite broadcast will contain the national guidance materials and the data and products which are sent from NMC to the field offices. Front-end processors (FEP), dedicated to handling data communications, are being developed to interface with the existing AFOS systems. The FEP will enable more local applications software to be run on the existing AFOS computers.

Stage II will feature the operational test and evaluation of prototype AWIPS-90 workstations and a new AWIPS Communications Network (ACN) that can handle the enormous increase in inter-office data traffic, as a result of NEXRAD. The AWIPS Communications Network will evolve along with the deployment of NEXRAD units and the equipping of AWIPS-90 sites.

Stage III, occurring in the early 1990s, will introduce the full-scale AWIPS-90 architecture and a broad-band satellite capability that can accommodate GOES digital data and enhanced national guidance products. About four years will be needed to deploy AWIPS-90 equipment nationwide.

Completion of the third stage of the transition will mark the termination of the AFOS concept. At this point, the NWS will have the initial operating capability of AWIPS-90 available to support the nationwide operations. This capability will include: (1) a broad-band satellite broadcast; (2) an AWIPS Communications Network; and (3) local forecasting workstations and subsystem for data base management, applications processing and data/product dissemination.

E. AWIPS-90 Phase Activities

The following paragraphs summarize the activities associated with the various phases of the AWIPS-90 program.

In the Requirements Phase, candidate operating concepts will be examined in light of the established mission need, the results of ongoing hydrometeorological research activities, and the technological state-of-the-art with regard to communications, data ingest, data management, display man-machine interaction, and scientific processing capabilities. A concise set of system operational and engineering requirements for each office type has been developed to serve as the basis for the Definition Phase.

A competition to define the AWIPS-90 system and develop detailed plans will be conducted in the Definition Phase. The winning contractors will be selected on the basis of such factors as how well the proposed system architecture and plans satisfy the system requirements, life cycle cost projections, technological risk assessments, and design flexibility to accept future changes.

In the Development Phase, following a second solicitation, a single contractor will be chosen to complete the detailed system design and deliver the prototype workstations which will undergo an operational test and evaluation at several field offices in the central states. This test has been labelled the Modernization and Restructuring Demonstration (MARD). In the Deployment Phase, sites will be prepared, forecasters and technicians will be trained, and operational systems will be produced and implemented nationwide.

In the fifth and final Operations Phase, AWIPS will become the primary operational information and processing system of the NWS. Operational, maintenance, and logistic concepts developed in parallel with the system will be implemented.

F. Schedule Objectives

Milestones: AWIPS - 90	Completion Date (Month/Year)	
	<u>Planned</u>	<u>Actual</u>
1. Conduct First Industry Briefing	Jun/85	Jun/85
2. Complete Requirements Initiative for AWIPS-90 Hydrometeorological Applications Program Support	Mar/86	Mar/86
3. Obtain DPA from GSA (System Definition)	May/86	Jun/86
4. Complete Requirements Initiative for System Definition	May/86	Sep/86
5. Release RFP for System Definition	Aug/86	Dec/86
6. Begin Risk Reduction and Evaluation Exercise	Sep/86	Sep/86
7. Award Definition Contracts	Mar/88	

<u>Milestones: AWIPS - 90</u>	Completion Date (Month/Year)	
	<u>Planned</u>	<u>Actual</u>
8. Award Development Contract	May/89	
9. Complete Development Testing	Sep/91	
10. Begin Initial Deployment of Production	Sep/91	
11. Complete Field Installation	Oct/96	