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PROGRAM IMPLEMENTATION PLAN
FOR THE
INTEGRATED TERMINAL WEATHER SYSTEM (ITWS)
CIP # 63-21
ACQUISITION PHASE 2 (PRIOR TO KDP-3)



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FOREWORD

This letter transmits the Program Implementation Plan (PIP) for the Integrated Terminal Weather System (ITWS) Program. It provides technical information and guidance to all levels of the FAA that are involved in ITWS Program implementation. The PIP is focused on the essential elements of information prescribed in FAA Order 1810.1F for PIP content. These include Airway Facilities Operations, Air Traffic Operations, System Configuration & Engineering, Physical Facilities, Financial Resources, Human Resources, Test & Evaluation, System Support, Schedule, Administration, and Implementation Requirements. In addition, each of the essential elements are subdivided, as appropriate, into the seven phases of implementation which include Planning, Pre-Installation and Checkout, Installation and Checkout, System Integration, Field Shakedown, Dual Operations, and Equipment Removal. The format of the PIP complies with the new FAA-STD-036B.

Included as Attachment A in the PIP is a Generic Site Implementation Plan (GSIP) to provide a tool to assist regional and site personnel to develop site specific implementation plans. Attachment B is a Transition Information Exchange (TIE) Summary that identifies and provides resolution status of issues affecting ITWS implementation activities.



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DOCUMENT CHANGE NOTICE

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PROGRAM IMPLEMENTATION PLAN FOR THE INTEGRATED TERMINAL WEATHER SYSTEM

SECTION 1

GENERAL

1.1 Purpose of Document

This Program Implementation Plan (PIP) identifies the activities, schedules, technical direction, funding required, plans, and participants involved in the implementation of the Integrated Terminal Weather System (ITWS) Program prior to Key Decision Point (KDP) 3.

1.2 Scope of Document

This document is applicable to all Federal Aviation Administration (FAA) organizations with responsibilities in the implementation of the ITWS.

1.3 Distribution

This document is distributed as follows: at the director level to the offices of the Associate Administrator for Airway Facilities, Associate Administrator for National Airspace System (NAS) Development, Acquisition and Policy Oversight, Independent Operational Test & Evaluation (OT&E) Oversight, Associate Administrator for Aviation Safety, Airport Planning and Programming, Airport Safety and Standards, Air Traffic (AT), System Capacity and Requirements, Aviation Standards, Contracting and Quality Assurance, Human Resource Development; at the division level to Flight Standards and Budget; at the branch level to the Research and Development Service Aviation Weather Development Program Office, NAS Transition and Implementation Service, Systems Maintenance Service, and the AT Plans and Requirements Service; to the branch level at the FAA Technical Center and the Mike Monroney Aeronautical Center; and to the branch level in the regional Airway Facilities (AF), Logistics and AT Divisions.

1.4 Definition of Terms

The following terms are defined to clarify their specific usage in this document:

Associate Program Manager for NAS Implementation (APMNI): A member of a Program Manager's matrix support team assigned by NAS Transition and Implementation Service (ANS) to plan and coordinate program implementation, and to serve as an information bridge between Headquarters, Region, and field activities.

Acquisition Phase: The period of time before or following a key decision point. The ITWS is currently in Phase 2, the Demonstration/Validation Phase.

Essential Elements of Information: The eleven essential elements of information that are critical and are required to be addressed in the PIP are: AF Operations, AT Operations, System Configuration & Engineering, Physical Facilities, Financial Resources, Human Resources, Test & Evaluation, Implementation, System Support, Schedule, and Administration.

Implementation: Those activities necessary to deploy and support the products of a single program into a facility or field environment. Implementation activities include program planning for implementation during early acquisition phases and extend through site and facility preparation for new or relocated systems and equipment, equipment installation and test, completion of all steps leading to full operational capability and facility commissioning. Implementation also includes the removal of replaced equipment and the restoral/refurbishment of associated space and real property. Implementation activities during the system/equipment acquisition have been divided into phases bounded by specific acquisition milestones. The phases are:

Planning: The planning phase begins during Phase 0, Mission Need Determination, when initial estimates are being made regarding implementation resource requirements on long-range resource allocation planning (required by 1810.1F, page 2-4). This phase ends at the start of the Pre-Installation and Checkout phase.

Pre-Installation and Checkout (Pre-INCO): This phase begins with the start of the initial program site engineering survey and concludes with the initial delivery of program electronic equipment at the site. Pre-INCO activities include plant engineering and construction, overall site preparation, electronic engineering, and preparatory electronic installation activities.

Installation and Checkout (INCO): INCO activities address the installation and completion of stand-alone testing of program equipment.

Integration: Integration begins upon successful completion of INCO. The program equipment is integrated with the existing NAS systems/subsystems, including FAA internal and external interfaces. Interface testing is conducted, and Initial Operational Capability (IOC) may be declared.

System Shakedown: Once IOC is declared, controllers, maintenance staff, system engineers, and managers take steps to increase the number of staff at full proficiency on the system during System Shakedown. The contractor provides support, including On-the-Job Training (OJT) and briefings to all personnel involved in the program. System use begins in a carefully controlled operational environment during limited low traffic periods and increases incrementally to verify that the integrated system is fully functional. The end of System

Shakedown is marked by the final Joint Acceptance Inspection (JAI) and an Operational Readiness Demonstration (ORD).

Implementation Management Team (IMT): A team established by the APMNI and the Program Manager. The IMT consists of the APMNI, representative regional implementation personnel and other Associate Program Managers.

Management by Exception: A management concept in which an issue is only elevated after every effort has been made to resolve the concern within the manager's authority and resources.

Milestone: A signification event that marks the successful completion of a series of dependent activities resulting in definable program progress.

Operational State: The portion of the system/equipment life-cycle following the successful completion of site implementation.

Operations & Maintenance: The Operations & Maintenance phase of the acquisition process begins upon completion of Equipment Removal and continues beyond implementation for the remainder of the system life cycle. The Operations & Maintenance phase marks the achievement of full operational capability.

Personnel Certification: Personnel certification is a two-phase process consisting of a certification authority phase and a responsibility assignment phase. Certification authority requires FAA technical personnel to demonstrate knowledge of the theory of operations and the ability to practically demonstrate this knowledge. Certification responsibility is the official assignment to FAA technical personnel to use their authority to certify a specific service/system/subsystem/equipment in the NAS.

Platform: A basic type of NAS facility that hosts the systems and subsystems necessary to perform an essential air traffic control function. The three types of platforms as currently defined are: Air Route Traffic Control Center (ARTCC)/Metropolplex Control Facility (MCF), Air Traffic Control Tower (ATCT)/Terminal RADAR Approach Control (TRACON), and Airway Support Facilities (ASF).

Program: A directed and funded effort that is designed to provide a new or improved capability in response to a validated need.

Project: A term used synonymously with program.

System Certification: Periodic verification and validation that the advertised quality and scope of services, and the capability of providing those services, are being provided to the users.

Risk: A subjective assessment made regarding the likelihood of achieving an objective within a specified time and with the resources provided.

Transition: The aggregate of activities required to deploy and support the products of multiple programs in a field or facility environment.

Transition/Implementation Information Exchange (TIE) A procedure conducted by the APMNI and IMT to identify and resolve program implementation and transition issues. At least one TIE cycle is completed during each acquisition program phase and is a criterion for exit to the next phase. A TIE cycle begins with development of the PIP and ends when all issues have been addressed.

1.5 Cancellation

No other documents are canceled or superseded by this PIP.

1.6 Authority to Change

Changes, updates, and revisions to this document will be made by the APMNI with the approval of the Program Manager and will be issued under signature of Research and Development Service (ARD-80) and ANS-200.

1.7-1.19 (Reserved)

1.20 Risk Assessment Overview

The ITWS Program Manager has ultimate responsibility for managing, directing, and authorizing ITWS risk management activities. The ITWS Risk Management Plan (RMP) is the controlling document for the management of all risks associated with the ITWS program. It will be updated periodically to reflect changes in risk mitigation strategies which are the natural outcome of the continual risk identification and mitigation process. It will provide the needed continuity for the risk management process to allow smooth transfer of program management responsibility from ARD to ANR at KDP-3. [Reference: ITWS RMP (Second Draft), September, 1994, p. 3]

The contractor's responsibilities will include defining and documenting a risk management plan and process, modifying and updating the plan and process as necessary throughout the life cycle, identifying and evaluating program risks, establishing risk handling efforts, and documenting and reporting risk status. [Reference: ITWS RMP (Second Draft), September, 1994, pp. 3&4]

SECTION 2

PROGRAM OVERVIEW

2.1 Synopsis of Mission Need

The ITWS is a development program initiated by the FAA to produce a fully automated, integrated terminal weather information system to improve the safety, efficiency, and capacity of terminal area aviation operations. The ITWS will acquire data from FAA and National Weather Service (NWS) sensors as well as from aircraft in flight in the terminal area. The ITWS will provide products to Air Traffic personnel that are immediately usable without further meteorological interpretation. These products include current terminal area weather and short-term (0-30 minute) predictions of significant weather phenomena. (Reference: ITWS Program Office Memo, March 29, 1994)

2.1.1 Operational Needs

The operational needs to be addressed by this program are maintain airport capacity when adverse weather is present, reduce the need for excessive controller interpretation of weather information such as reflectivity data, support effective traffic management planning, and improve margins of safety. (Reference: ITWS Operational Requirements Document (ORDoc), Draft, February, 1995, pp. 2-4)

Maintaining airport capacity during adverse weather conditions and workload reduction will be accomplished by automatically providing weather information and automated weather-impacted airspace and wind shear location and movement to traffic managers for terminal route and runway usage planning. Safety will be improved by reducing the need for controller interpretation of Airport Surveillance Radar-9 (ASR-9) reflectivity data to identify hazardous cells. [Reference: ITWS Mission Need Statement (MNS), KDP-2, November 1992, p. 2]

2.1.2 Strategic Goals

The ITWS project [Capital Investment Plan (CIP) 63-21] is a Level I major system acquisition which will provide coverage for the 45 airports with Terminal Doppler Weather Radar (TDWR). Since a number of these airports are clustered in common TRACON or metroplex control areas, and there is a need for only one ITWS per area, only 34 ITWS operational product generation systems will be required. ITWSs will also be deployed to the FAA Aeronautical Center, the FAA Technical Center (FAATC) and an FAA Program Support Facility (PSF). [Reference: ITWS Program Management Team (PMT) Meeting, September 9, 1994]

2.2 Functional Description

The ITWS project successfully completed KDP-2 in the acquisition cycle in May, 1993. KDP-3 is tentatively scheduled for April, 1995. The target date for Request for Proposal (RFP) release is August, 1995. The first operational readiness date (ORD) for initial operational capability is planned for the first quarter of 2000 with the last ORD in the second quarter of 2001. See Table 2-1, Program Milestones. (Reference: ITWS Program Office Schedule dated March 28, 1994 and ITWS Program Office Memo, February 7, 1995)

The ITWS will be fielded with an IOC which will provide only those products which with existing inputs and algorithms are demonstrated via operational testing at major airports to be feasible. Following IOC, there will be a series of upgrades leading to the end-state capability. Under this strategy problematic and unsuccessful products can be delayed or deleted without jeopardizing delivery of successful products. (Reference: ITWS MNS, KDP-2, November 1992, p. 6)

The ITWS will have the following functional capabilities at its IOC: acquire data and products generated by FAA weather sensing and processing systems; without meteorologist intervention, generate integrated, consistent, terminal area analyses, predictions, and warnings of near-term (0-30 minutes) significant weather; disseminate and display products to users to include: tower and TRACON personnel; and, perform support functions, such as archiving all products in off-line storage, retrieving and reconstructing recorded data on request, generating reports of archived data on request, and synchronizing itself to the NAS standard time source. (Reference: ITWS MNS, KDP-2, November, 1992, pp. 2-3)

The following is a list of anticipated IOC products: windshear, gust front wind shift estimate, ITWS precipitation, ASR-9 precipitation with anomalous propagation flagged, storm motion and extrapolated position, storm cell information, tornado detection, airport lightning warning, low-level windshear alert system (LLWAS) winds, terminal winds, terminal weather text message, and runway configuration. (Reference: ITWS ORDdoc, Draft, February, 1995, p. 10)

2.3 Program History & Status

The FAA and the NWS are modernizing to improve their aviation weather services and products. New Doppler weather radars, such as the TDWR and the nationwide Weather Surveillance Radar-1988 Doppler (WSR-88D). [(also referred to as the Next Generation Weather Radar (NEXRAD)] will enable much more accurate terminal and en route area weather detections and forecasts than previous weather radars. The FAA is developing an enhanced terminal area LLWAS and an improved weather detection and processing capability to the ASR-9 system. Furthermore, automatic surface and airborne weather detection systems, wind profilers, a lightning network, and digital satellite data will eventually contribute to the ability to collect much more detailed, comprehensive, and timely weather information. (Reference: ITWS Operational Concept, August, 1992, p. 1-1)

Demonstration/validation testing of functional prototypes of the ITWS was completed at Memphis, Tennessee, and Orlando, Florida, during the summer of 1994. These prototypes along

with some number of other functional prototypes will be fielded and operate until they are replaced by production units. (Reference: ITWS Program Office Memo, October 31, 1994)

The ITWS is expected to be an evolutionary system. The IOC system will be operational by 2000 and will be upgraded thereafter through a series of builds. With each build, new or enhanced algorithms will be implemented. The capabilities for IOC have been defined as the discrete products listed in Section 2.2. The ITWS acquisition is currently in the demonstration/validation phase, prior to KDP-3. The program management is in the ARD-80. (Reference: ITWS ORDoc, Draft, February, 1995, p. 9)

2.4 Program Milestones

ACTIVITY	PLANNED COMPLETION
Demonstration/Validation at Memphis	July 22, 1994
Demonstration/Validation at Orlando	August 19, 1994
Major Acquisition Review	September 7, 1994
Acquisition Review Committee/KDP-3	April 13, 1995
Transportation Systems Acq Rvw Council	June 7, 1995
"A Specification" Approval	June 30, 1995
Statement Of Work	June 30, 1995
RFP Release	August 31, 1995
Contract Award	August, 1996
Critical Design Review	December, 1996
OT&E	February, 1999
KDP-4	July, 1999
Full Scale Production Begins	September, 1999
First ORD of IOC ITWS	March, 2000
Last ORD of IOC ITWS	June, 2001
Last ORD of End-State ITWS	June, 2005

Table 2-1 Program Milestones

(Reference: ITWS Program Baseline Schedule March, 1994, and Program Office Memo, February 7, 1995)

2.5 Inter-Agency Involvement

2.5.1 Department of Defense (DoD)

Not applicable.

2.5.2 National Weather Service (NWS)

The NWS is improving its capability to provide more accurate and timely terminal forecast data. This can be attributed to the introduction of improved meteorological models of smaller scale

weather events (mesoscale); and the introduction of new sensors [e.g., automated aircraft down links, Automated Surface Observing System (ASOS) and the NEXRAD Doppler weather radar network] that provide large improvements in the characterization of the atmosphere. The ITWS will use various NWS outputs from the above improved capabilities/systems to produce sets of graphical, textual, and numeric weather products that do not require any meteorological interpretation. These products will be in the form of simple and timely area alerts, depictions of the current weather, and short term forecasts.

ITWS will provide terminal weather products over a NADIN II interface for use by external users. External users will supply their own communications interfaces and display equipments. (References: ITWS TEMP, Draft, September, 1994, p. 18 and ITWS ORDoc, Draft, February, 1995, p. 29) Access by external users to FAA facilities will not be required. (Reference: Telecon between SEIC/Weather System Engineering and ITWS APMNI, October 19, 1994)

2.5.3 U.S. Customs Service

Not applicable.

2.5.4 Drug Enforcement Agency (DEA)

Not applicable.

2.5.5 Other Agencies

Not applicable.

2.6-2.19 (Reserved)

2.20 Risk Assessment

The following risks were included in Appendix I of the ITWS RMP (Review Draft dated 10 April 1994) but were not included in subsequent drafts: slip in RFP preparation, NEXRAD product availability, cost of technology (post IOC products), and viability/inter-operability of direct interfaces. Risks associated with each interface and each supporting system should be considered in future ITWS risk assessment. In addition, the effect/impact of potential restructuring of systems currently in development which will provide inputs to ITWS should also be considered. Analysis, mitigation strategies, and appropriate schedules have not yet been determined by the program office. A more detailed listing of program risks can be found in Section 12.4.2.

SECTION 3

AF OPERATIONS

3.1 Summary of Maintenance Operations Impacts

3.1.1 Transitory State

During the implementation of the ITWS at a particular site, the following activities may affect AF operations (also see section 13.2 for further discussion of site implementation process): prior to Pre-INCO, some AF personnel may be asked to participate in site survey activities; during system INCO, AF personnel may be required to be on-site during installation to monitor contractor installation activities; and, during system integration, AF personnel may be asked to support JAI, IOC, ORD, and commissioning activities. (Reference: ITWS TEMP, Draft, September, 1994)

In making arrangements to support the ITWS during the transitory state, AF offices should consider issues related to such personnel matters as overtime, night differential, weekend/holiday schedules, etc. Also, interim maintenance support to include training should be pre-arranged in coordination with the program office, if necessary, until the ITWS is officially commissioned, since local AF Sector personnel are only responsible for commissioned systems. (Reference: Weather Radar Regional Conference, April 13, 1994)

3.1.2 Operational State

After the first year or two of contractor maintenance FAA site technicians will be responsible for providing preventive and corrective maintenance. Field corrective maintenance activities will consist of troubleshooting, replacing failed lowest line replaceable units (LRUs), and sending the defective units to either the FAA Logistics Center (FAALC) or to a contract facility, as determined by the FAALC. [Reference: ITWS Integrated Logistics Support Plan (ILSP), Draft, October 7, 1994, p. 25]

AF workload staffing estimates will be developed by the Associate Administrator for Airway Facilities (AAF) Directorate for Resource Management (AFZ). [Reference: ITWS Maintenance Requirements Document (MRD), Draft, August 30, 1994, p. 6]

3.2 AF Procedural Changes

3.2.1 Preventive Maintenance

During the first one to two years the contractor may be required to maintain the equipment. (Reference: ITWS PMT Meeting, August 10, 1994)

All preventive maintenance will be scheduled. Preventive maintenance actions include cleaning, lubricating, adjusting, and inspecting. Preventive maintenance will be required no more frequently than once per quarter/per system and will require no more than a total of two labor hours per year, excluding travel time. (Reference: ITWS ILSP, Draft, October 7, 1994, p. 24 and FAA Order 6000.30B)

3.2.2 Corrective Maintenance

During the period of interim contractor maintenance support, the contractor will provide all maintenance and logistics support. After this period the FAA will dispatch a technician from the work center to the site for corrective maintenance. The technician, using a Local Display Console, or the portable Maintenance Data Terminal (MDT) can perform diagnostics to verify or determine failure. The MDT is a portable computer terminal provided by the government that can be connected to the ITWS equipment in the TRACON/MCF equipment room. Defective LRUs will be replaced. Verification of repair can be performed on-site. The ITWS system will achieve a minimum mean time to repair (MTTR) to the LRU level of no greater than 30 minutes and a mean time between failures (MTBF) of 2704 hours. (Reference: ITWS ILSP, Draft, October 7, 1994, p. 24)

3.2.3 Software Maintenance

The software algorithms developed by Massachusetts Institute of Technology/Lincoln Laboratories (MIT/LL) will be furnished to the full scale development contractor as Government Furnished Property (GFP). The software and documentation will be provided to the contractor as Government Furnished Information (GFI). (Reference: The ITWS Acquisition Plan, Draft, October 7, 1994, p. 3)

Software maintenance requirements will be finalized before the ITWS RFP is released. Current plans, however, assume that the contractor will be responsible for software maintenance during the contract, plus there will be two one year options for continued software maintenance after the last installation. (Reference: ITWS Contracting Officer during PMT Meeting on July 8, 1994)

At the end of the last ITWS installation AOS will maintain the source code for the ITWS and have responsibility for enhancements and future updates to the software. (Reference: AOS-100 Memo, September 30, 1994)

The ITWS Program Office anticipates that a PSF similar to the one now supporting the TDWR will be required for the ITWS. The specific location of an ITWS PSF has yet to be determined. One set of ITWS equipment will be deployed to this PSF. The contractor will work with that facility, as required, to supply needed software and/or hardware. (Reference: ITWS Program Office Memo, June 16, 1994)

3.2.4 System Operations/Monitoring

Information regarding system operations and monitoring requirements will be supplied after completion of the "A-Specification", June, 1995.

3.2.5 System Certification

System certification will be accomplished, as required, either locally or remotely via the MCC. The essence of technical certification is the periodic verification and validation that the baselined quality and scope of services, and the capability of providing those services, are actually being provided to the users. ITWS maintenance technical handbooks will specify proper procedures to follow and frequency for establishing ITWS certification. (Reference: FAA Order 6000.15B, General Maintenance Handbook for Airway Facilities, July 15, 1991)

3.2.6 Personnel Certification

Personnel certification is a two-phase process consisting of a certification authority phase and a responsibility assignment phase. Certification authority requires FAA technical personnel to demonstrate knowledge of the theory of operations and the ability to practically demonstrate this knowledge. Certification responsibility is the official assignment to FAA technical personnel to use their authority to certify a specific service/system/subsystem/equipment in the NAS. Maintenance Automation Implementation, AOP-300, will identify specifics as part of the training development. (Reference: FAA Order 3400.3F, AF Maintenance Personnel Certification Program, August 6, 1992, p. 13)

3.2.7-n (others as needed)

3.3 Facilities and Equipment (F&E)

F&E personnel may participate in site surveys before contract award and monitor and assist in those site surveys conducted by the contractor after contract award prior to ITWS equipment installation. During installation, F&E personnel may be required to provide access to power and grounding for the ITWS equipment. In addition, F&E personnel may participate in ITWS orientation training, if provided by the contractor. Verification of these requirements and more detailed information will be supplied after the development of the ITWS SOW in June, 1995.

3.4 Systems Maintenance

Commercial off-the-shelf (COTS) computer and communications hardware will be contractor provided, and application software will be contractor developed. System performance will be monitored via the interface to the RMMS, via the MPS and MDT. The ITWS will localize failures through software and hardware maintenance features and facilitate replacement of failed line replaceable units. FAA system specialists will acquire sufficient knowledge of system

operation to allow real-time analytical decisions regarding maintenance actions. Maintenance of ITWS equipment will be accomplished at two levels: site and depot. Site maintenance will consist of routine preventive maintenance, isolation of failed line replaceable units, replacement of appropriate units, and restoring the system to operational status. Restoration of service will be assigned in accordance with FAA Order 6030.31E and NAS-SR-1000. The FAALC will be the point of contact for the field to acquire repair and replacement parts. (Reference: ITWS ORDoc, Draft, February, 1995, p. 30)

Interim Contractor Maintenance and Logistics Support (ICMLS) services for both site and depot maintenance shall be required for a period beginning with the first site installation and ending not later than two years following the last site installation. This may include any combination of hardware, software, or firmware maintenance support. Follow-on site level support will be accomplished by FAA/Government technicians while follow-on depot support strategy will be selected when requirements are more refined. If software ICMLS is employed, the contractor shall be required to maintain the ITWS software in accordance with procedures established by AOS. The ITWS's maintenance concept will address environmental impacts after the ITWS Program Office has completed facilities inspections of selected installation sites. (Reference: ITWS ORDoc, Draft, February, 1995, p. 30)

Airway Facility Sector Maintenance (SM) personnel will be responsible for selecting personnel for new ITWS implementation related positions and assigning and scheduling personnel to training, as required. During the pre-Installation and Checkout (pre-INCO) implementation phase, AF SM personnel will provide an ITWS project coordinator, provide site survey support, establish a Joint Acceptance Board, designate sector representatives to site implementation teams, select/designate sector personnel for participation in installation tasks, provide ITWS documentation for site reference, participate in Contract Acceptance Inspection (CAI), and conduct a partial JAI. During Installation and Checkout of the ITWS, AF SM personnel will update personnel and equipment certification requirements (if necessary), to reflect ITWS equipment, participate in site installation and test activities, participate in the ITWS system JAI, and create, maintain, and update the ITWS Facility Reference Data File (FRDF) information. During integration, AF SM personnel will complete ITWS-related training and declare IOC. During shakedown, SM personnel will conduct the final JAI and declare an ORD. (Reference: Implementation Process Guidelines, June, 1994)

3.5-3.19 (Reserved)

3.20 Status Assessment

The FAALC must determine whether contractor or organic LRU repair is most cost effective for the ITWS. The contractor and/or AFZ-200 should perform a staffing study after contract award in August, 1996, to identify staffing impact/requirements to the maintenance and support operations. The contractor may be required to provide depot level support for a specific period with options for additional periods. (Reference: ITWS ORDoc, Draft February, 1995, pp. 30-33)

SECTION 4

AT OPERATIONS

4.1 Summary of AT Operational Impacts

4.1.1 Transitory State

During the implementation of the ITWS at a particular site, the following activities may affect AT operations. During system INCO, some TDWR system shutdown or interruption may be required. Such activities will be coordinated with Air Traffic management by the Technical On-site Representative (TOR). Any required shutdowns to TDWR operations will normally be permitted only during periods of non-adverse weather within the TDWR coverage area. During the System Integration phase of implementation, existing letters of agreement and Notice to Airmen (NOTAM) will be examined to determine the need for changes when the ITWS is in operational use. If applicable, NOTAMs and revisions to Letters of Agreement (LOA) will be executed. At the anticipated OT&E integration test sites (see Section 9.1.1) AT will play a major role in evaluating end-to-end system performance. During the shakedown testing phase, Air Traffic Control (ATC) personnel who will use the output of the ITWS will participate in shakedown testing per defined test procedures. (Reference: ITWS TEMP, Draft, September, 1994, pp. 50-55)

During ITWS OT&E, controller personnel will require training on the ITWS products to ensure a consistency in their evaluation of the products. This training will be conducted by FAA Technical Center, ACW-200D personnel. (Reference: ITWS TEMP, Draft, September, 1994, p. 52)

4.1.2 Operational State

The ITWS MNS identifies program objectives designed to positively impact AT operations, as summarized below. ITWS capabilities will enable the FAA to meet its terminal area objectives of improving safety, planning, capacity, and reducing controller workload. Safety benefits will accrue from the ITWS' producing timely predictions of weather hazards and making them available for direct transmission to aircraft. Controller workload benefits will accrue from: consolidated displays where apparent data conflicts have been resolved; and, possible future dissemination via other automated NAS systems directly to aircraft so that controllers will be relieved of the burden of manual integration, manipulation, interpretation, and dissemination of various aviation weather impacts. (Reference: ITWS MNS, KDP-2, November, 1992, p. 4)

4.2. AT Procedural Changes

4.2.1 ATC Operational and Management Procedures

The ITWS will reduce, if not eliminate, the need for manual integration and interpretation of weather data, resulting in greater operational efficiency. Data link and automated broadcasts may permit ITWS information to be transmitted directly to aircraft, further reducing controller weather related tasks and allowing greater coordination of operations between controller and pilot. By having accurate weather information, supervisors will be able to efficiently plan for the optimal use of terminal airspace in a manner which minimizes aircraft delays and maintains airport capacity. (Reference: ITWS ORDoc, February, 1995, p. 8)

Before RFP release in August, 1995, the ITWS Program Manager should task the Air Traffic and Rules Service through the Associate Program Manager for Procedures (APMP) to ask the Procedures Division (ATP-100) to evaluate existing ATC procedures prescribed in FAA Orders/Handbooks 7110.65, 7110.10, and 7210.3, as well as the Airmans Information Manual as to the need to revise current procedures or change the above publications. (Reference: FAA Order 1810.1F, Acquisition Policy, March, 1993)

4.2.2 Flight Procedures/Standards

The ITWS will not impact flight procedures/standards.

4.2.3 Administrative and Management Procedures

The ITWS is not expected to impact AT administrative and management procedures.

4.2.4 Software Verification Procedures

Software verification procedures as they relate to AT operations will be included in this section after pertinent information becomes available upon completion of the ITWS Statement of Work (SOW) in June, 1995.

4.2.5 Interfacility Procedures

No impact to interfacility procedures is anticipated as a result of the implementation of the ITWS project. Displays of ITWS products at ARTCCs for Traffic Management Unit (TMU) specialists and at towers/TRACONS/MCFs for supervisory/controller personnel will ensure the dissemination of integrated and consistent weather information.

4.2.6 Personnel Certification Procedures

Information regarding personnel certification procedures will be supplied after completion of the ITWS SOW (June, 1995) and after contract award in August, 1995.

4.2.7 System Back-up/Cutover Procedures

The ITWS must automatically switch to the TDWR display within 30 seconds of ITWS outage. (Reference: ITWS ORDdoc, Draft, February, 1995. p. 35)

4.2.8-n (others as needed)

4.3 AT Implementation

Test plans and testing procedures will be developed by ACW-200D and will to the maximum extent possible involve field ATC personnel as an integral part of the test efforts. Air traffic controllers will be actively involved in hands-on evaluation of the ITWS equipment. OT&E will be conducted in an environment as operationally realistic as possible. (Reference: ITWS TEMP, Draft, September, 1994, p. 47)

Anticipated OT&E test sites in which AT personnel would be involved include: Orlando, Memphis, and Dallas-Fort Worth. (Reference: ITWS TEMP, Draft, September, 1994, p. 41)

4.4-4.19 (Reserved)

4.20 Status Assessment

Primary involvement of AT personnel during implementation will revolve around OT&E at the anticipated three sites listed above in paragraph 4.3 above. Specific implementation issues/risks identified to date regarding AT involvement in OT&E are listed in detail in paragraph 9.20.

SECTION 5

SYSTEM CONFIGURATION AND ENGINEERING

5.1 NAS Level Architecture

5.1.1 NAS Target State

The ITWS will be baselined as a NAS subsystem processor located in the TRACON equipment room. TDWR displays located in the TRACON and tower cab of the ATCT facility will be used to display ITWS products. In addition, in those cases where TRACONS are consolidated into a MCF, the ITWS processor will be located in the MCF equipment room with related TDWR/ITWS displays in the MCF control room and supported ATCT cabs. Subsystems of other facility sets which will interface with the ITWS [(not counting the Remote Monitoring Subsystem (RMS))] will include the ASR-9, the TDWR's radar product generator (RPG), the NEXRAD, the LLWAS-2/3, the Automated Weather Observing System (AWOS) Data Acquisition System (ADAS), the Data Link Processor (DLP), and the FAA Telecommunications Satellite (FAATSAT) system. The ITWS architecture is depicted below. (Reference: ITWS NAS Change Proposal (NCP) # 17331, October, 1994)

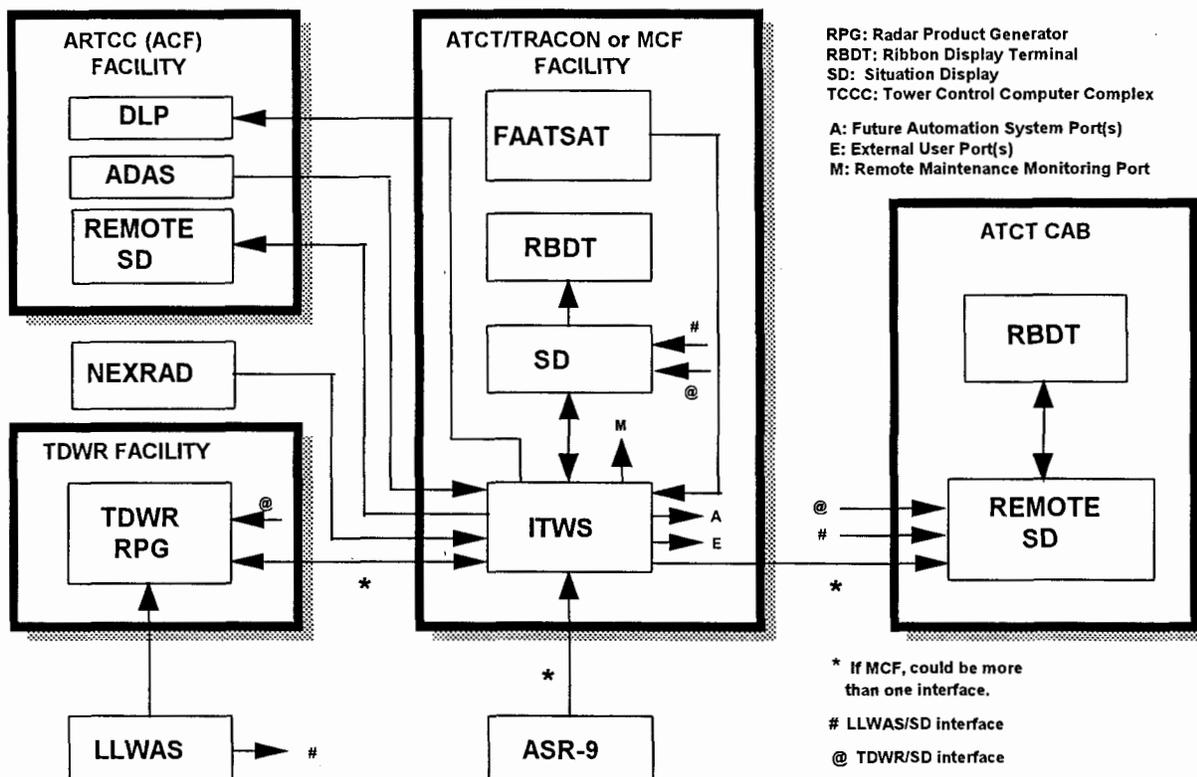


Figure 5-1 ITWS Top Level Block Diagram

5.1.2 Inter-program Interfaces

The ITWS IOC will include input interfaces from NAS systems to include: TDWR, ASR-9, NEXRAD, ADAS, and FAATSAT. Output interfaces will include: the Situation Displays (SDs) and alphanumeric displays in the TRACON/MCF, tower cab, and an ITWS SD in the ARTCC/Area Control Facility (ACF); plus, output ports to the RMMS, the data-link processor (DLP), external users (e.g., commercial airlines, NWS), and future output ports for expandability. These interfaces are described in the following paragraphs. (Reference: ITWS NCP # 17331, October)

5.1.2.1 Input Interface Requirements

5.1.2.1.1 Terminal Doppler Weather Radar (TDWR) Interface

Up to 4 TDWRs will provide base data and wind shear products and forward LLWAS wind data to ITWS. This interface will be defined in NAS-Interface Requirement (IR)-31052514. The TDWR will also provide a backup capability in case of ITWS failure for windshear, storm motion, and precipitation products.

5.1.2.1.2 Airport Surveillance Radar - 9 (ASR-9) Interface

Up to 5 ASR-9s will provide 6-level reflectivity covering the MCF/TRACON areas. This interface will be defined in NAS-IR-31022514.

5.1.2.1.3 AWOS Data Acquisition System (ADAS)

Up to 2 ADASs will provide data from the Lightning Position and Tracking System (LPATS) and surface observation data from AWOS/ASOS. This interface will be defined in NAS-IR-25082514.

5.1.2.1.4 FAA Telecommunications Satellite (FAATSAT)

One interface will provide Aviation Gridded Forecast System (AGFS) and Meteorological Data Collection and Reporting System (MDCRS) data from the NWS. The direct interface to ITWS will be defined in NAS-IR-44010001 [Transmission Equipment (TE) Digital Interface Requirement Document (IRD)] which will be modified to accommodate full T1 data rate capability.

5.1.2.1.5 Next Generation Weather Radar (NEXRAD)

One interface will supply NEXRAD products to the ITWS. The physical construction of this interface will be in accordance with the NEXRAD/Associated Principal User Processor (PUP) Interface Control Document (ICD).

5.1.2.1.6 Low-Level Windshear Alert System (LLWAS)

One LLWAS-3 and up to three LLWAS-2 systems will provide runway-oriented winds and windshear data for instrumented ITWS airports. These interfaces are already defined by TDWR/LLWAS-2/3 ICD (Build #5) in NAS-IC-31053102.

5.1.2.2 Output Interface Requirements

5.1.2.2.1 Situation Display (SD) Interface

For display of ITWS products the ITWS will use SDs which will be functionally similar to those used by the TDWR. SDs will be located in the associated ITWS TRACONS/MCFs and towers. In addition, an ITWS Situational Display will be located in the parent ARTCC/ACF.

5.1.2.2.2 Data-link Processor (DLP)

This interface will provide for the transfer of ITWS products to the pilot via data-link. Interface requirements will be defined in NAS-IR-25142513.

5.1.2.2.3 Remote Maintenance Monitoring System (RMMS) Interface

The RMMS will remotely control and monitor the maintenance status of the ITWS. Functional requirements for the RMS are specified in NAS-MD-793. This interface will be in accordance with NAS-IR-51035101.

5.1.2.2.4 External Users Interface

This interface will provide output ports for use by external users (e.g., airlines, NWS) in order for them to access ITWS products. The requirements and design for these ports will be described in the ITWS Specification which is scheduled for approval in June, 1995.

5.1.2.2.5 Expandability Ports

The ITWS will be designed to allow for expandability. Output ports will be available for future automation systems such as the Terminal ATC Automation (TATCA) system. The requirements and design of these ports will be described in the ITWS Specification which is scheduled for approval in June, 1995.

5.2 Platform Architecture

The NAS consists of three major physical platform groupings: ARTCC/ACF/MCF, ATCT/TRACON, and Airway Support Facilities. The ITWS will be an element supporting ARTCC/MCF, and ATCT/TRACON platforms as shown in Figure 5-1, ITWS Top Level Block

TENTATIVE ITWS SITES (34)

<p><u>SOUTHERN</u></p> <ol style="list-style-type: none"> 1. Central Florida MCF Orlando Tampa 2. Miami TRACON Miami Fort Lauderdale 3. Atlanta 4. Charlotte 5. Cincinnati 6. Louisville 7. Memphis 8. Nashville 9. Raleigh/Durham 10. West Palm Beach 11. San Juan 	<p><u>GREAT LAKES</u></p> <ol style="list-style-type: none"> 1. Chicago MCF Chicago Midway Chicago O'Hare Milwaukee 2. Cleveland 3. Columbus 4. Dayton 5. Detroit 6. Indianapolis 7. Minneapolis 	<p><u>SOUTHWEST</u></p> <ol style="list-style-type: none"> 1. Dallas MCF Dallas FW Dallas Love 2. Houston TRACON Houston Hobby Houston Intercont 3. New Orleans 4. Oklahoma City 5. Tulsa 	<p><u>EASTERN</u></p> <ol style="list-style-type: none"> 1. Potomac MCF Andrews AFB Wash National Wash Dulles Baltimore 2. New York MCF New York Kenn New York Lag Newark 3. Philadelphia 4. Pittsburg
<p><u>NEW ENGLAND</u></p> <ol style="list-style-type: none"> 1. Boston 	<p><u>CENTRAL</u></p> <ol style="list-style-type: none"> 1. Kansas City 2. St Louis 3. Wichita 	<p><u>NORTHWEST</u></p> <ol style="list-style-type: none"> 1. Denver MCF Denver 2. Salt Lake City 	<p><u>WESTERN PACIFIC</u></p> <ol style="list-style-type: none"> 1. Phoenix

Figure 5-2 Tentative ITWS Sites

Diagram. The ITWS is a new project which will be located at the sites indicated in Figure 5-2, Tentative ITWS Sites.

5.2.1 Interim Platform Configuration

NAS platform analyses by ANS are still under development. The ITWS will be a new capability, and nothing will be removed. However, ITWS and TDWR will use the same displays in the ATCTs, TRACONs, and MCFs. An ITWS Situation Display will be located in the parent ARTCC/ACF. (Reference: ITWS ORDdoc, Draft, February, 1995, p. 8)

5.2.2 Target State Configuration

NAS Platform analyses are still under development. The ITWS equipment initially installed will not change except for possible upgrade enhancements after IOC to the product algorithms, processor and/or displays. (Reference: ITWS ORDdoc, Draft, February, 1995, p. 9)

5.3 Subsystem Level Architecture

5.3.1 Hardware

The ITWS will include a COTS processor (computer) with a maintenance/system terminal and keyboard, several modulator-demodulators (modems), a backup power supply, ports for various

communications interfaces, and related cabling. The size of the processor and the number of modems will vary according to the site configuration (i.e., standalone TRACON or combined TRACON/MCF). [Reference: System Engineering and Integration Contractor (SEIC) ITWS Facility Requirements Analysis, June 10, 1994)

5.3.1.1 Processor

The ITWS COTS processor(s) will require a performance rating of 500 million instructions per second (MIPS) for IOC. The ITWS will provide sufficient performance so that no more than 50% of CPU will be used in performing the specified requirements. (Reference: ITWS ORDoc, Draft, February, 1995, p. 34)

5.3.1.2 Peripheral Devices

The following peripheral devices will be required: the operational displays will be similar to those used by the TDWR; data recorders for archiving maintenance status and operational data; and, maintenance/system terminal and keyboard for system configuration control. [Reference: ITWS ORDoc, Draft, February, 1995, p. 34)

5.3.1.3 Modems

Modems ranging from a minimum of 1.2 kbps to T-1 performance will be required to interface the ITWS to various system input/output and source/destination entities. [Reference: ITWS ORDoc, Draft, February, 1995, p. 34)

See paragraph 6.10, Telecommunications, for additional information.

5.3.2 Software

The ITWS will require in excess of 350,000 high order language developed source lines of code for IOC. A single high order language shall be used for programming all ITWS product generation software. (Reference: ITWS ORDoc ,Draft, February, 1995, p. 34)

Computer system configuration items (CSCIs) are to be supplied (TBS) after contract award, August, 1996.

5.3.2.1 - 5.3.2.n (as necessary)

5.3.3 Physical Specification

Actual equipment dimensions for the ITWS will be determined after contractor award, August, 1996.

Preliminary analysis depicted in Figure 6-1, Equipment for Single TRACON Configuration, has indicated that the ITWS main computer to be located in a single TRACON and supported by one TDWR will require a maximum space of 56" high by 30" wide by 39" deep and weigh approximately 400-1000 lbs.. Up to one additional rack (82" high by 25" wide by 32" deep) will be required to hold modems, system terminal with keyboard, backup power, etc. and would weigh approximately 700 lbs. The computer and rack will require 36" clearance in front and rear. (Reference: SEIC ITWS Facility Requirements Analysis, June 10, 1994 and Facility IRDs, Draft, July 31, 1994)

For the combined TRACONS/MCF environment where the ITWS will support multiple towers and will have multiple TDWR and ASR-9 interfaces, preliminary analysis depicted in Figure 6-2, Equipment for Multiple TRACON Configuration, has indicated that the ITWS main computer will require a maximum space of 63" high by 30" wide by 48" deep and weigh up to 1000 lbs. Up to two additional racks (82" high by 25" wide by 32" deep) will be required to hold modems, system terminal with keyboard, backup power supply, etc. The racks would weigh about 700 lbs each. The computer and racks will require 36" clearance in front and rear. (Reference: SEIC ITWS Facility Requirements Analysis, June 10, 1994 and Facility IRDs, Draft, July 31, 1994)

The ITWS SDs will require space of approximately 24" high by 23" wide by 26" deep with a track ball and weigh a maximum of 100 lbs. Frontal clearance requirement will be 36" and rear clearance requirement will be 2". (Reference: Facility IRDs, Draft, July 31, 1994)

5.4-5.19 (Reserved)

5.20 Status Assessment

The following risks were included in Appendix I of the ITWS RMP (Review Draft dated 10 April 1994) but were not included in subsequent drafts: slip in RFP preparation, NEXRAD product availability, cost of technology (post IOC products), and viability/inter-operability of direct interfaces. Risks associated with each interface and each supporting system should be considered in future ITWS risk assessment. In addition, the effect/impact of potential restructuring of systems currently in development which will provide inputs to ITWS should also be considered. Analysis, mitigation strategies, and appropriate schedules have not yet been determined by the program office. A more detailed listing of program risks can be found in Section 12.4.2.

SECTION 6

PHYSICAL FACILITIES

6.1 Real Estate

6.1.1 Real Estate Requirements

There are no additional FAA real estate requirements. The ITWS will occupy existing facility space.

6.1.2 Real Estate Plans

Not applicable.

6.2 Heating, Ventilation & Air Conditioning (HVAC)

6.2.1 HVAC Requirements

ITWS equipment will be located in TRACON or combined TRACONs/MCF equipment rooms, with associated TDWR/ITWS displays in the TRACON/MCF operations area, the tower cab, and the parent ARTCC/ACF. Preliminary analysis has determined that the ITWS computer equipment which will be located in a single TRACON equipment room will generate 8160 to 12,000 British thermal units (BTUs)/hour. For the combined TRACONs/MCF equipment room environment the ITWS computer equipment will generate 12,000 to 24,000 BTU/hour. Heat generated by the one to two racks of modems, system terminal with keyboard, backup power, etc. will range from 8000 to 16,000 BTU/hour. Each TDWR/ITWS display with keyboard will generate about 750 BTU/hour. One display will be located in the tower cab, up to six displays will be located in the TRACON/MCF operations area, and one display in each of the TMU and Center Weather Service Unit (CWSU) in the ARTCC/ACF. The operating temperature requirements in the equipment room are between 50 to 95 degrees Fahrenheit and in the cab, TRACON/MCF operations area, and ARTCC/ACF between 32 to 104 degrees Fahrenheit. Operating humidity requirements are 20 to 80% non-condensing in the equipment room and 5 to 95% in the cab, operations area, and ARTCC/ACF. (Reference: SEIC ITWS Facility Requirements Analysis, June 10, 1994, and ITWS Facility IRDs, Draft, July 31, 1994)

The interior environmental requirements for communications and electronic equipment areas will be in accordance with FAA-STD-032, Design Standards for National Airspace Physical Facilities, paragraph 3.5.2.

6.2.2 HVAC Plans

Transitory and operational HVAC requirement plans, to include any facility constraints relevant to the ITWS implementation, are TBS after contract award, August, 1996.

6.3 Cables

6.3.1 Cable Routing/Raised Floor Requirements

Cabling will consist of power wiring/cabling and grounding wiring/cabling and comply with FAA-C-1217. Interface wiring and cabling routing should be completed on a site-by-site basis and specified in site installation drawings. All interconnecting cables will be plenum rated and be compatible with both under floor and overhead distribution. Cabling should permit accessibility to equipment for test, maintenance, and replacement. (Reference: ITWS Facility IRDs, Draft, July 31, 1994, pp. 4 & 8)

6.3.2 Cable Plans

TBS after contract award, August 1996.

6.4 Power

6.4.1 Power Requirements

Preliminary analysis has determined that the ITWS computer equipment which will be located in a TRACON/MCF equipment room will require essential power of 115 to 208 VAC 60 HZ, 1.84 to 6.24 kVA, and single (three wire) or three phase (four wire). The one to two racks of associated modems, etc. will require essential power of 115 and 208 VAC 60 HZ, 3.68 kVA, plus single (three wire) and three phase (four wire). The TDWR/ITWS displays with keyboards will require essential power of 115 VAC 60 HZ, 1.0 kVA for each display. (Reference: ITWS Facility IRDs, Draft, July 31, 1994, pp. 7-9)

6.4.2 Power Plans

Transitory and operational power requirement plans, to include any facility constraints relevant to the ITWS implementation, are TBS after contract award, August, 1996.

6.5 Physical Safety & Security

6.5.1 Security and Safety Requirements

Safety and security requirements will conform to FAA-STD-032 which provides guidelines for the expansion of facility support equipment, utilities, etc. Specific technical requirements will be defined in the ITWS specifications. (Reference: ITWS Facility IRDs, Draft, July 31, 1994, p. 3)

6.5.2 Security and Safety Plans and Procedures

TBS after contract award, August 1996.

6.6 Environmental/Hazardous Material (HAZMAT)

6.6.1 Environmental Monitoring Requirements

ITWS contractors will be required to identify hazardous materials used in the ITWS equipment and post warning labels, as necessary. ALM-400 will be responsible for developing an ITWS Disposal Plan to address how to properly dispose of any hazardous materials. Environmental records should be reviewed to ensure that, if necessary, an environmental site characterization has been initiated for asbestos considerations (e.g., drilling holes in the floor/wall may require asbestos abatement). (Reference: FAA Order 4800.2C, Chapter 8)

Further information regarding these requirements will be supplied after "A Spec" approval, June, 1995.

6.6.2 Environmental Monitoring Plans and Procedures

TBS after contract award, August 1996.

6.7 Grounding, Bonding, Shielding & Lightning Protection

6.7.1 Grounding, Bonding, Shielding & Lightning Protection Requirements

The facility will furnish the multi-point earth ground and the AC power ground at each installation site to prevent ground loops and shared impedance-coupling paths. The interface between ITWS and facility grounding systems circuits for power and signals will be indicated in site installation drawings. Proper installation will be validated by means of a demonstration that ITWS and collocated equipment function without interference. (Reference: ITWS Facility IRDs, Draft, July 31, 1994, p. 8)

6.7.2 Grounding, Bonding, Shielding & Lightning Protection Plans

TBS after contract award, August 1996.

6.8 Space

6.8.1 Space Requirements

Actual equipment dimensions for the ITWS will be determined after contractor award, August, 1996. Regional/field representatives should identify possible space constraints regarding the ITWS as soon as possible to the ITWS Program Office.

Preliminary analysis depicted in Figure 6-1, Equipment for Single TRACON Configuration, has indicated that the ITWS main computer to be located in a single TRACON and supported by one TDWR will require a maximum space of 56" high by 30" wide by 39" deep and weigh approximately 400-1000 lbs.. Up to one additional rack (82" high by 25" wide by 32" deep) will be required to hold modems, system terminal with keyboard, backup power, etc. and would weigh approximately 700 lbs. The computer and rack will require 36" clearance in front and rear. (Reference: SEIC ITWS Facility Requirements Analysis, June 10, 1994 and Facility IRDs, Draft, July 31, 1994)

For the combined TRACONs/MCF environment where the ITWS will support multiple towers and will have multiple TDWR and ASR-9 interfaces, preliminary analysis depicted in Figure 6-2, Equipment for Multiple TRACON Configuration, has indicated that the ITWS main computer will require a maximum space of 63" high by 30" wide by 48" deep and weigh up to 1000 lbs. Up to two additional racks (82" high by 25" wide by 32" deep) will be required to hold modems, system terminal with keyboard, backup power supply, etc. The racks would weigh about 700 lbs each. The computer and racks will require 36" clearance in front and rear. (Reference: SEIC ITWS Facility Requirements Analysis, June 10, 1994 and Facility IRDs, Draft, July 31, 1994)

The TDWR/ITWS SDs will require space of approximately 24" high by 23" wide by 26" deep with a track ball and weigh a maximum of 100 lbs. Frontal clearance requirement will be 36" and rear clearance requirement will be 2" (Reference: Facility IRDs, Draft, July 31, 1994)

SINGLE TRACON CONFIGURATION

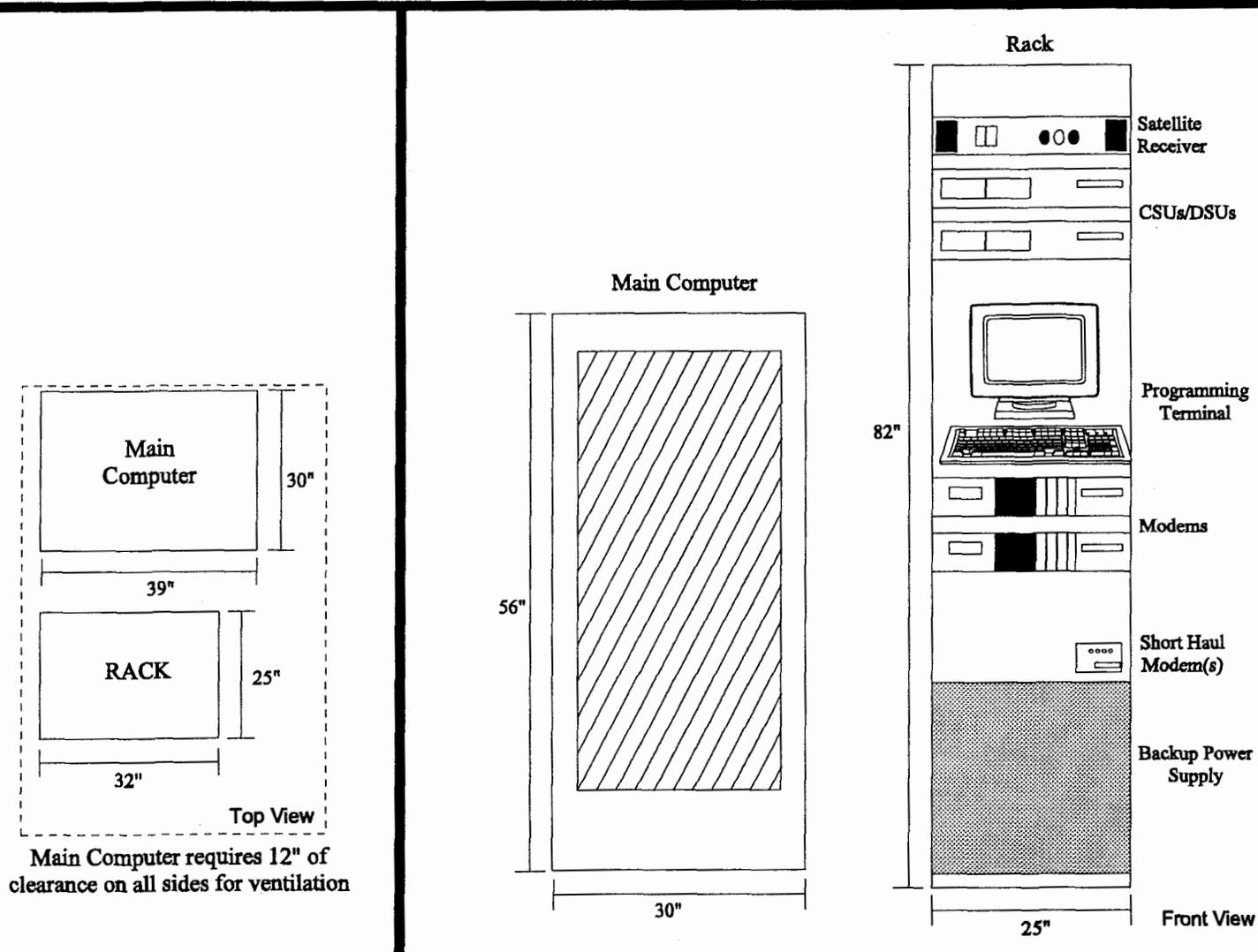


Figure 6-1 Equipment for Single TRACON Configuration

MULTIPLE TRACON CONFIGURATION

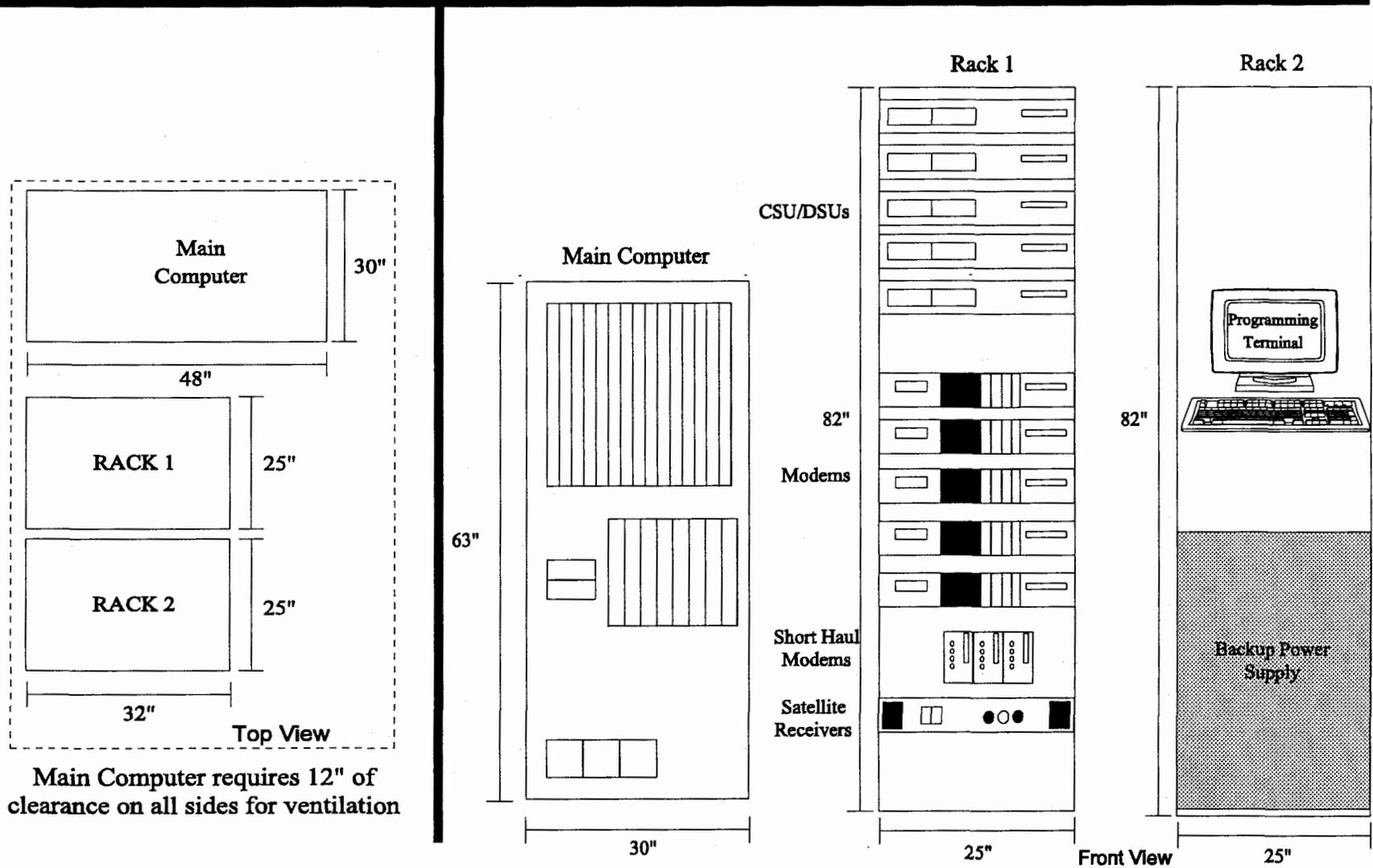


Figure 6-2 Equipment for Multiple TRACON Configuration

6.8.2 Space Allocation Plans

Transitory and operational space requirement plans, to include any facility constraints relevant to the ITWS implementation, are TBS after contract award, August, 1996.

6.9 Construction & Modification

6.9.1 Construction and Modification Requirements

TBS after contract award, August 1996.

6.9.2 Construction and Modification Plans

TBS after contract award, August 1996.

6.10 Telecommunications

6.10.1 Telecommunications Requirements

Telecommunications impacts are still being assessed, but a preliminary analysis by the Associate Program Manager Systems Engineering (APMSE) support contractor has proposed the following requirements:

- 1) The TDWR interface to ITWS will require T1 links (43 total) with line-of-site microwave links proposed for most locations, otherwise, leased lines are required.
- 2) The ASR-9 weather channel interface will require 9.6 kbps links (45 total) with short haul modems probably required depending on the placement of the ITWS processor in relation to the ASR-9 equipment.
- 3) The LLWAS-2 or LLWAS-3 interface to the ITWS SD in the tower/TRACON/MCF will use the link already established by the TDWR project with no changes.
- 4) The tower situation display interface will require a 19.2 kbps modem, if the tower and TRACON are not co-located (16 total). When co-located (29 total), this interface will require a 19.2 kbps direct connect or short haul modem depending on distance from the TRACON/MCF equipment room.
- 5) The TRACON/MCF situation display will require a 19.2 kbps direct connect or short haul modem depending on distance from the equipment room (specific requirements must be determined on a site-by-site basis).

6) The ARTCC/ACF situation display interface will require a 19.2 kbps link through National Airspace Data Interchange Network (NADIN) II (34 total).

7) The FAATSAT interface will require a connection to the appropriate demarcation point at or near each applicable TRACON/MCF. A T1 bandwidth would be required for bulk NWS data.

8) The MPS, DLP, and ADAS each require a 9.6 kbps link through a common NADIN interface.

(Reference for the above requirements: SEIC ITWS Communications Impact Briefing, August 23, 1994)

6.10.2 Telecommunications Plans and Procedures

The above telecommunications requirements will be coordinated with AOP-400 and ANC-800 before inclusion in the FAA "Fuschia Book" and included in the "A Spec" which will be approved in June, 1995.

6.11-6.19 (Reserved)

6.20 Status Assessment

Most of the physical facility requirements are still not fully developed. Further analyses and plans are required to determine detailed impacts. Potential issues/risks are possible space and HVAC requirement problems at some tower/TRACON facilities which could impact the site implementation schedules and costs. Regional/field representatives should identify possible site problems in order to resolve/mitigate issues as early as possible. The proposed use of microwave transmission of TDWR data to ITWS and overall ITWS modem requirements also need further analyses and definition by AOP-400.

SECTION 7

FINANCIAL RESOURCES

7.1 Summary of Funding Plan

Information relating to this section is reserved for procurement officials only.

7.2 Facilities and Equipment (F&E) Budget

7.2.1 F&E Budget Requirements

7.2.2 Summary of F&E Funding Status

7.3 Operations and Maintenance (O&M) Budget

7.3.1 O&M Budget Requirements

7.3.2 Summary of O&M Funding Status

7.4 Research, Engineering and Development (RE&D) Budget

7.4.1 RE&D Budget Requirements

7.4.2 Summary of RE&D funding Status

7.5-7.19 (Reserved)

7.20 Status Assessment

Information relating to the above sections is reserved for procurement officials only.

SECTION 8

HUMAN RESOURCES

8.1 Human Resource Management

8.1.1 Impacts of Acquisition on Human Resource Management

8.1.1.1 Personnel Security

No Impacts on FAA personnel security are anticipated. The contractor's employees will be required to adhere to all security policies and procedures when entering and working in FAA facilities.

8.1.1.2 Relations with Local Communities

ITWS weather products may be found to be helpful to local communities through their use by the NWS.

8.1.1.3 Relations with Aviation Community

ITWS will enhance flight safety and efficiency by providing air traffic control personnel with products that locate and anticipate the occurrence, growth, and movement of hazardous phenomena to be avoided, such as wind shear, microbursts, tornadoes, and wake vortices. (Reference: ITWS MNS, KDP-2, November, 1992, p. 1)

Aviators, dispatchers, traffic managers, controllers, and airport operations/management personnel will be able to anticipate rather than just react to weather impacts. They will be able to coordinate the movement of air/ground traffic, and select optimal routes and holding strategies. (Reference: ITWS ORDdoc, Draft, February, 1995, p. 5)

8.1.1.4 Employee Work Environment

ITWS specifications will conform to existing standards relating to provisions of work space, physical, visual and auditory links between personnel and equipment, and safety provisions. No temporary or long-term adverse impacts on employee work environments are anticipated.

8.1.1.5 Employee Job Satisfaction

Air Traffic personnel can anticipate a reduction in controller workload while maintaining airport capacity when adverse weather is present by the ITWS providing the requisite weather information in dynamically changing weather environments. The ITWS will reduce the need for controller interpretation of radar reflectivity data and provide unambiguous information on hazardous weather regions. (Reference: ITWS MNS, KDP-2, November, 1992, p. 1.)

AF personnel can anticipate the introduction of improved, state-of-the-art technology and attendant minimal preventive maintenance which will contribute to employee job satisfaction.

8.1.1.6 Labor-management Relations

No changes in labor-management relations are anticipated.

8.1.1.7 Organizational Structure(s)

Potential impacts to AT and AF organizations will be assessed during test and evaluation of ITWS. The ITWS will have a remote maintenance capability which will involve an additional monitoring responsibility for sector MCCs.

8.1.2 Human Resource Implementation Strategies

Potential impacts on human resource management will be assessed during test and evaluation of the ITWS.

8.1.3 Security Clearances

Normal security procedures will apply as specified in FAA Order 1600.54. Security processing may be required for site contractor personnel involved in site preparation, installation, and test activities. Sector or security personnel may be required to perform escort responsibilities. The Government will provide or coordinate security at Government-designated sites and will coordinate access to these sites through existing local security channels and procedures (e.g., building passes).

8.2 Staffing

8.2.1 Impacts of Acquisition on Staffing

Staffing requirements for Regional Implementation and support of the ITWS system have yet to be determined. A Logistics Support Analysis could be required of the contractor to identify ITWS support tasks and manpower requirements necessary to implement and support the ITWS. AF workload staffing estimates will be developed by the AAF Directorate for Resource Management (AFZ). (Reference: ITWS ORDoc, Draft, February, 1995, p. 33)

8.2.1.1 Operational Workload

TBS after contract award, August, 1996.

8.2.1.1.1 - 8.2.1.1.n (as necessary: one for each affected work force)

8.2.1.2 Implementation Workload

TBS after contract award, August, 1996.

8.2.1.2.1 - 8.2.1.2 (as necessary: one for each affected work force)

8.2.2 Staffing Plans

TBS after contract award, August, 1996.

8.2.3 Staffing Schedule

TBS after contract award, August, 1996.

8.3 Training

8.3.1 Training Program

Training requirements for FAA systems technicians have not yet been fully determined but may be required to the LRU level. Technical training to this level would then be needed to provide the knowledge, skills, and abilities that enable the technician to troubleshoot, isolate, and correct any hardware and/or software malfunction in the ITWS. Additional training may also be required for the second level engineering support personnel located at the FAALC. Specific software training that includes knowledge of the contractor's software source code must be provided to AOS personnel. Initial training will be provided by the contractor and long term training will be administered by the FAA Academy. If the FAALC will be required to repair LRUs, then they will require component through system maintenance training for both hardware and software. FAA personnel requiring technical training must complete the training prior to FAA assuming maintenance responsibility (Reference: ITWS MRD, Draft, September 28, 1994)

AFZ-110 is responsible for training controllers on new systems such as the ITWS. Currently, the process consists of training AT training specialists who will then train their facility personnel. This methodology is in concert with standard FAA policy. Although human factors is not responsible for the training process per se, there is opportunity for human factors input into the training program. This will be accomplished by the sharing of information obtained via questionnaires and user comments regarding training, as well as assessment of the training materials. Areas such as user interface, understandability, ease of reference, etc. will be

monitored to ensure compliance with human factors guidelines. (Reference: ITWS Human Factors Plan, Draft, October 7, 1994, p. 15)

Additional training requirements for logistics/maintenance and software support will be supplied after contract award, August, 1996.

8.3.2 Training Support

TBS after contract award, August, 1996.

8.3.3 Personnel Skills

TBS after contract award, August, 1996.

8.3.4 Training Quotas

Prior to ITWS fielding, ATZ-110 anticipates that they will provide training to one person per SD for one week. (Reference: ITWS Human Factors Plan, Draft, October 7, 1994, p. 8)

Additional information regarding maintenance/logistics and software training quotas will be supplied after contract award, August, 1996.

8.3.5 Training Schedule

TBS after contract award, August, 1996.

8.4-8.19 (Reserved)

8.20 Status Assessment

Staffing and training requirements for Regional Implementation and support of the ITWS system have yet to be determined. A Logistics Support Analysis could be required of the contractor to identify ITWS support tasks and manpower requirements necessary to implement and support the ITWS. AF workload staffing estimates will be developed by the AAF Directorate for Resource Management (AFZ). (Reference: ITWS ORDdoc, Draft, February, 1995, p. 33)

If a contractor maintenance strategy is selected, an alternate plan should be developed which would permit the FAA to take over maintenance support should a need arise (e.g., contractor bankruptcy, etc.). Therefore, provisions should be made for obtaining necessary structural and electronic data required for depot level maintenance and logistics support. (Reference: ITWS MRD, Draft, August 30, 1994, p. 7)

ATZ-110 anticipates that they will provide training for one person per SD for one week. This approach may effect user interface with the ITWS products and needs to be investigated. Constraints that should be considered include: length of training time, controller availability, and number of trainees. (Reference: ITWS Human Factors Plan, Draft, October 7, 1994, p. 8)

SECTION 9

TEST AND EVALUATION

9.1 Overview of Test Program

9.1.1 Government Test Program

The draft ITWS FAA TEMP directs that comprehensive testing be planned, conducted, and reported for the demonstration and development acquisition phases. The TEMP describes Demonstration Phase test goals (e.g., verify performance objectives and requirements, demonstrate that design risks have been minimized, evaluate compatibility with existing systems, etc.) and provides information relative to the Test & Evaluation (T&E) processes following KDP-3 and OT&E activities which will occur in the 1998 and 1999 time frame.

Demonstration/Validation testing will be conducted at Memphis, Tennessee, and Orlando, Florida, during 1994. Data collected during the Demonstration/Validation Phase will not be used for satisfying future Developmental T&E (DT&E) and OT&E test requirements.

The FAA will conduct OT&E to evaluate the ITWS. OT&E will identify deficiencies in hardware, software, human performance factors, and operational concepts. OT&E will consist of three test phases: integration, operational, and shakedown. Anticipated OT&E test sites include: Orlando, Florida; Memphis, Tennessee; and Dallas-Forth Worth, Texas. RMS integration testing will be at the FAA Technical Center and in Orlando, Florida. (Reference: TEMP, Draft, September, 1994, pp. 5, 36, & 41).

9.1.2 Contractor Test Program

The ITWS contractor will develop a T&E Master Plan which will include the DT&E Plan for Factory and first site testing to verify that both hardware and software meet the design requirements outlined in specifications and the contract SOW. The T&E Master Plan will also include information pertaining to Production Acceptance T&E (PAT&E) for both Factory and Field Deployment testing. (Reference: TEMP, Draft, October, 1994, pp. 33-39)

Further components of the contractor's test program will be supplied after completion of the ITWS SOW (June, 1995) and after contract award August, 1996.

9.2 T&E Schedule

RMS integration, operational, and shakedown testing is scheduled at the FAATC and in Orlando, Florida from August, 1998, through October, 1998. OT&E integration, operational, and shakedown testing of the ITWS at the anticipated four sites listed in Section 9.1.1 above is

scheduled from March, 1998 through July, 1999. PAT&E is scheduled from December, 1999 through March, 2001 with field shakedown planned for January, 2000 through June, 2001. (Reference: ITWS TEMP, Draft, September, 1994, App. B)

Additional information regarding test program schedules/milestones will be supplied after completion of the ITWS SOW (June, 1995) and after contract award August, 1996.

9.3 T&E Responsibility Matrix

9.3.1 Government Test Organization

The following organizational responsibilities were extracted from the ITWS TEMP, Draft, September, 1994, pp. 29-31.

ARD-80: The Program Manager (PM) for the ITWS Program is currently ARD-80. The PM, in conjunction with the Associate Program Manager for Test (APMT), will develop the TEMP. In addition, the PM will approve the budget to fund T&E activities, monitor testing activities, and manage the accomplishment of the program by the ITWS contractor and participating FAA organizations.

ACW-200D: The FAATC Engineering, Integration, and Operational Evaluation Service, Weather Radar, is assigned as the APMT. The APMT is responsible to the PM for all testing activities. The APMT ensures preparation of the TEMP, the OT&E Integration and OT&E Operational Test Plan and Procedures, and all aspects of OT&E Integration and Operational testing. ACW-200D will analyze and report the results of OT&E to the Test Policy Review Committee (TPRC) and Deployment Readiness Review (DRR) Executive Committee (EXCOM).

AOS-250: AOS-250 will develop OT&E shakedown requirements, plans, and procedures. In addition, AOS-250 will be responsible to the PM to conduct the OT&E/Shakedown and report the results to the APMT.

Regional AF Divisions: Regional AF personnel will be responsible for overall Field Shakedown in cooperation with the AT Division.

Division AF Sectors: Sector personnel will provide maintenance support for OT&E activities and will be responsible for coordinating schedule outages with AT.

Regional AT Division: The Regional AT Division will provide coordination with the AF Division for field shakedown requirements plans, procedures, and reports and will participate in conduct of OT&E as coordinated with the ATR organization.

AT Facilities: AT will participate in FAA TEMP activities as requested by ATR through the Regional AT Division and will support development of field shakedown requirements plans, procedures, and reports in coordination with AF organizations.

9.3.2 Contractor Test Organization

The contractor will prepare and perform testing according to Government direction. The contractor will provide test support as requested and resolve deficiencies relating to testing.

The contractor's test organization will be determined after contract award, August, 1996.

9.4 T&E Field Support Requirements

9.4.1 Personnel Requirements

Table 9-1 below lists the ACW-200D test personnel resources required to support government and contractor test and evaluation activities. In addition AOS will require one test person to accomplish program monitoring and test activities (Reference: AOS-100 Memo, September 30, 1994). ACN-100D will require test engineers to draft plans, procedures, conduct testing, and draft reports. ACN-100D will be responsible for budgeting, staffing, and training test personnel. Regional manpower will be required for system and maintenance support. The APMT will prepare and coordinate Memorandums of Agreement (MOA) with the regions approximately one year in advance of field involvement and system/maintenance support. (Reference: ITWS TEMP, Draft, September, 1994, pp. 32, & 39-40 plus telecon with ACW-200D on November 14, 1994)

	1994	1995	1996	1997	1998	1999	2000
PERSONNEL							
<i>GOVERNMENT</i>							
APMT	.25	.25	.25	.25	.25	.25	.25
TEST ENG	1	1	1	1	1	1	1
<i>CONTRACTOR</i>							
TEST ENG	1	1	1	1	1	1	1
TEST SPT	.5	1	1	1	2	2	2
PLANNING	.2	.2	.2	.2	.2	.2	.2
HUMAN FACTORS	1	1	1	1	1	1	1
ATC ANALYST	1	1	1	1	1	1	1
DATA BASE SPEC.	.5	.5	.5	.5	.5	.5	.5
METEOROLOGIST	1	1	1	1	1	1	1

Table 9-1 ACW-200D Test Resource Requirements

Tower and TRACON controllers/supervisors will require training on use and interpretation of ITWS system operation/products prior to testing. Regional maintenance specialists will require training on the RMS and repair of the ITWS hardware in order to provide assistance to the OT&E teams. Regional personnel will also be asked to induce faults in the ITWS hardware as well as at the various interfaces to ensure failure detection of the RMS. (Reference: ITWS TEMP, Draft, September, 1994, p. 40)

Further information regarding test program personnel requirements and training schedules/milestones for T&E personnel will be supplied after completion of the ITWS SOW (June, 1995) and after contract award August, 1996.

9.4.2 Test Equipment Requirements

The APMT requires the following software to manage ITWS testing: database software (e.g., dBASE IV) to be used for status tracking analysis of failure data; scheduling software (e.g., Microsoft Project) for schedule tracking and test planning; and, Interim Monitor Control Software (IMCS) for RMS to MPS testing. The APMT will also need test simulators for LLWAS, RMS, and weather playback tools. COTS baselined ITWS hardware will be used at the various test sites. (Reference: ITWS TEMP, Draft, September, 1994, p. 42)

Additional information regarding test equipment requirements will be supplied after completion of the ITWS SOW (June, 1995) and after contract award August, 1996.

9.4.3 System Access

Information/schedules regarding access to site equipment for conduct of testing will be supplied after contract award, August, 1996.

9.4.4 Space Requirements

Information regarding facility space requirements to support testing will be supplied after completion of the ITWS SOW (June, 1995) and after contract award August, 1996.

9.5 T&E Program Status

9.5.1 Test Results Summary

Demonstration/validation OT&E results from testing at Memphis and Orlando will be finalized in November, 1994. OT&E of the contractor produced ITWS will begin in March, 1998. Identification of any deferred testing, follow-on testing, testing limitations, and failed tests will be provided as they become available. (Reference: ITWS TEMP, Draft, September, 1994, App. B)

9.5.2 Outstanding Program Trouble Reports (PTR)

TBS after testing in 1997 through 2001.

9.5.3 Discrepancy Correction Process

The contractor's Master Test Plan (CMTP) will show traceability to the project specification and identify the allocation of test requirements to subsequent test plans and procedures. Once the FAA approves the contractor's test plan, it will become a test control document. The CMTP will include a schedule of testing, objectives for each test phase, and responsibilities/resources needed to support the test program. The CMTP will include a specification compliance matrix which will indicate the specification paragraph, methodology, and verification level for each requirement. Upon government approval of the CMTP, electronic files/databases will be provided the Government for use in tracking requirements relative to contractor testing. Specifics of the

CMTP and associated plans to include tracking discrepancies and corrective actions processes will be in accordance with the ITWS SOW. (Reference: ITWS TEMP, Draft, September, 1994, p. 38)

9.6-9.19 (Reserved)

9.20 Status Assessment

The ITWS will consist of a software driven stand-alone processor, interfaced with a number of systems having the NAS function of providing usable weather products through graphical displays to the ATC community. T&E representatives and ITWS management personnel will have responsibility for ensuring that the following critical operational issues (COIs) are assessed and their impacts minimized. (Reference: ITWS TEMP, Draft, September, 1994, pp. 25-26):

- (1) **Interoperability:** Will NEXRAD, TDWR, and other sensor quality and availability be adequate?
- (2) **Regional Effectiveness:** Can the effectiveness demonstrated at the demonstration and validation test sites be achieved at other ITWS airports given regional climatic differences, diverse airport equipage, and availability of inputs?
- (3) **RMM:** Can RMM requirements be successfully implemented?
- (4) **Operational Procedures:** Will improvements in capacity during adverse weather be realized?
- (5) **Product Interpretation:** Are ITWS products truly usable without the need for external meteorological consultation?
- (6) **System Resiliency:** Is the ITWS system resilient under loss of input from interfaced systems/sensors?
- (7) **AT Safety Concerns:** Are ITWS products suitable for AT use and are detection and false alarm rates acceptable?
- (8) **Enhanced Traffic Planning:** Do the ITWS products enhance the effectiveness of traffic planning/management?
- (9) **ITWS Display:** Is the ITWS SD color/visibility adequate, and should the displays be standardized?

SECTION 10

SYSTEM SUPPORT

10.1 Implementation Support Systems

10.1.1 Hardware

Computer and communications hardware are anticipated to be COTS. System performance will be monitored via the interface to the RMMS, via the MPS and MDT. The ITWS will localize failures through software and hardware maintenance features, and facilitate replacement of failed line replaceable units. These will be reported periodically, or on an event-driven basis automatically to the MPS in the ARTCC, or in response to queries initiated by the MDT. The contractor will be responsible for providing these functions in the system. (Reference: ITWS ORDoc, Draft, February, 1995, p. 30-31)

10.1.2 Software

If software ICMLS is employed, the contractor will be required to maintain the ITWS software in accordance with procedures established by AOS. AOS or contractor support is required in the area of software. Regardless of whether or not contractor support is used, AOS is responsible for the configuration control process and to provide assistance to the field as required. A Program Support Facility will be designated to provide second level engineering and software support. (Reference: ITWS ORDoc, Draft, February, 1995, p. 30)

10.2 Special Support Facilities

10.2.1 Mike Monroney Aeronautical Center

10.2.1.1 Restoration Response Level

FAA system specialists will acquire sufficient knowledge of both hardware and software system operation to allow real-time analytical decisions regarding maintenance actions. Restoration of service will be assigned in accordance with FAA Order 6030.31E, Restoration of Operational Facilities. Mean-Time-To-Repair for the ITWS will not exceed 30 minutes. This period includes all time necessary to localize, repair, test, and restore a failed system/unit to its established baseline performance once on-site repair activity has begun. Maintenance of ITWS equipment will be accomplished at two levels: site and depot. (Reference: ITWS ORDoc, Draft, February, 1995, pp. 24-33)

10.2.1.2 Field Level Maintenance

Site maintenance will consist of routine preventive and corrective maintenance. The site corrective maintenance tasks will involve localization, isolation, disassembly, interchange, re-assembly, alignment, and check out to the extent necessary to effect a system repair by replacement at the LRU level. Interim contractor support for site maintenance will be required for a period beginning with the first site installation and ending not later than two years following the last site installation. (Reference: ITWS ORDoc, Draft, February, 1995, p. 30)

10.2.1.3 Depot Level Maintenance

Depot maintenance will involve the repair/disposition of all failed LRUs and assemblies which are beyond the maintenance capability of the field sites. Interim contractor support for depot maintenance will be required for a period beginning with the first site installation and ending not later than two years following the last site installation. Follow-on depot level maintenance will be FAALC's responsibility, and they will act as the field's primary point of contact for all supply and maintenance support services. When LRUs are coded for repair, the FAALC will be responsible for determining the most cost effective method of LRU repair, e.g., FAA internal (organic) or contractor servicing. AFZ-200 and/or the contractor should perform a staffing study to identify staffing impacts/requirements to the maintenance and support operations. (Reference: ITWS ORDoc, Draft, February, 1995, pp. 30-33)

Portability of software will be an important goal. Application software will be designed for an industry standard operating system. Porting the software to another implementation site will require only minor changes to the operating system. Porting to another hardware platform will require only changes necessitated by differences in the hardware such as number of processors, word alignment, etc. All application software developed for the ITWS will be FAA owned. The Operational Support Directorate, AOS, will be responsible for maintaining this software. (Reference: ITWS ORDoc, Draft, February, 1995, p. 34)

10.2.1.4 Engineering Support

Primary life-cycle engineering support will be provided by the Requirements and Life-cycle Directorate (ALM) of the FAA Airway Facilities Service. This will include overall technical and National Airspace Integrated Logistics Support (NAILS) management provided by the Surveillance Life-cycle Division, ALM-400. The FAA Operational Support Service, AOS, will be responsible for second level engineering support. Second level hardware and software support will be provided for the life of ITWS directly by AOS personnel or by qualified contractors. (Reference: ITWS MRD, Draft, November 10, 1994, p. 4)

10.2.2 FAA Technical Center (FAATC)

This section is not applicable to this document. The FAATC will not perform system support activities beyond the Field Shakedown Phase for the ITWS program.

10.2.3 Other Special Support Facilities

The ITWS Program Office anticipates that a PSF similar to the one now supporting the TDWR will be required for the ITWS. The specific location of an ITWS PSF has yet to be determined. One set of ITWS equipment will be deployed to this PSF. The contractor will work with that facility, as required, to supply needed software and/or hardware. (Reference: ITWS Program Office Memo, June 16, 1994)

10.3 Materiel Support

10.3.1 Project Materiel

Depot logistics support will be provided by the FAALC which will be the point of contact for the field to acquire repair and replacement parts for ITWS specific hardware. Interim repair and support will be provided by the contractor during the initial phase of implementation and will continue for a period of not less than one year after the last system is installed. (Reference: ITWS MRD, Draft, November 10, 1994, p. 4)

10.3.2 Provisions and Supply Support

Replacement and/or part repair will be accomplished either at the FAALC or through a contractor. The FAALC will determine whether organic or LRU repair is most cost effective for the ITWS. (Reference: ITWS MRD, Draft, November 10, 1994, p. 4)

10.3.3 Packaging Transportation and Storage

All components and equipment (except spares) with a consignee other than the FAALC will be preserved, packaged, and packed in accordance with ASTM-3951, Standard Practice for Commercial Packaging. Spares will be preserved and packaged Level A and packed Level C in accordance with MIL-STD-2073-1B, DoD Material Procedures for Development and Application of Packaging Requirements. Certain types of electrical and electronics parts are susceptible to electrostatic discharge damage. These sensitive items must also be packaged in accordance with MIL-STD-2073-1B. (Reference: ITWS ILSP, Draft, October, 1994, para. 9.1)

All shipments will be made in accordance with FAA Order 4650.22D, Vendor Shipment of Nationally Furnished Project Materiel. All items will be transported by the most economical means considering dependability, safety, urgency of need and use of the least costly mode meeting these considerations. Notification in writing of pending shipments consigned the FAALC will be provided at least 30 days prior to the anticipated shipping date. Notice will include number of pieces, weight and dimensions of each piece in each shipment, and any special storage requirements. (Reference: ITWS ILSP, Draft, October, 1994, para. 9.4)

At this time no special storage or handling procedures have been identified for ITWS systems/equipment being shipped directly to each designated site/depot. (Reference: ITWS ILSP, Draft, October, 1994, paras. 9.2 & 9.3)

10.4 Technical Documentation

The contractor will be required to provide a Technical Data Package prepared in accordance with MIL-T-31000, Technical Data Packages, General Specification For, to assist in reprocurement efforts. The package will include the following items as a minimum: Commercial Drawings and Associated Lists, Product Drawings and Associated Lists (if not modified COTS), Depot Level Repair Specifications, and Software and Software Documentation. Upon delivery, the technical data package will include all data necessary to enable the Government to either re-procure or have repaired all ITWS LRUs competitively. (Reference: ITWS ILSP, Draft, October, 1994, para. 10.3)

All hardware, software, and procedural documentation, specifications, and instruction books should be provided in electronic media, DOS compatible, Word Perfect 5.1 format or ASCII format on 3.5", 1.44 MB diskettes. All drawings should be in electronic media, DOS compatible, AutoCad Rel 12 format or .DXF format files on 3.5", 1.44 MB diskettes. One copy of each different piece of COTS item documentation should be provided to AOS-250 upon receipt of item by the contractor. (Reference: AOS-230 Memo, September 15, 1994)

10.4.1 Hardware Documentation

Depot level repair specifications will be in sufficient detail to ensure technically accurate, efficient, and safe repair of all hardware items identified in the system as repairable. (Reference: ITWS ILSP, Draft, October, 1994, para. 10.3.1)

10.4.2 Software Documentation

The contractor will deliver a complete set of all the programs, including subprograms, that are required to enable the ITWS to accomplish the operational performance specified in the system specification. The contractor will provide any COTS software and other special software used to manage, develop, design, and modify the ITWS equipment, and firmware such as programmable read only memory and erasable programmable read only memory. (Reference: ITWS ILSP, Draft, October, 1994, para. 10.4)

10.4.3 Procedural Documentation

The contractor will be required to provide the following ITWS manuals: Software User's Manual, Computer System Operator's Manual, Software Programmer's Manual, and a Firmware Support Manual. (Reference: ITWS ILSP, Draft, October, 1994, para. 10.4)

10.5-10.19 (Reserved)

10.20 Status Assessment

The FAA's and/or a contractor's ability to provide adequate maintenance/software service and support cannot yet be determined based on currently available plans. Further information will be available after completion of the ITWS SOW, June, 1995.

SECTION 11

PROGRAM SCHEDULE INFORMATION

11.1 NAS Implementation Schedule

The program milestone schedule is shown in Section 2.4. Detailed implementation schedule information will be supplied after contract award, August, 1996.

11.2 Deployment Schedule

TBS after contract award, August, 1996.

11.3 Site Implementation Schedule

TBS after contract award, August, 1996.

11.4 Schedule Dependencies

TBS after contract award, August, 1996.

11.5 - 11.19 (Reserved)

11.20 Status Assessment

The ITWS RMP (First Draft) dated April 10, 1994, listed the following schedule related risks: there is a good chance that the RFP preparation could slip up to several months; the lack of an agreed plan to implement the new NEXRAD products could introduce a significant schedule slip for several ITWS products but probably not for the overall ITWS IOC; and, the RE&D required to provide high confidence ceiling and visibility and other ITWS products could exceed current estimates.

SECTION 12

ADMINISTRATION

12.1 Acquisition Program Summary

12.1.1 Market Survey

The SEIC performed an alternatives analysis of seven candidate alternatives which could potentially satisfy ITWS requirements. One of the seven alternatives was to purchase a commercial service. This alternative was eliminated based on its lack of required capability, high risk, and cost. There are no vendors who provide terminal area weather products which meet the ITWS requirements. To begin such service, substantial research, development, and investment would be required. The only customers would be those served by an FAA ITWS, so the market for commercial ITWS capabilities would be limited. (Reference: ITWS MNS, KDP-2, November, 1992, pp. 6 & B-4.)

12.1.2 Acquisition Strategy

This section is reserved for procurement officials only.

12.2 Contracting Information

TBS at contract award scheduled for August, 1996.

12.2.1 Prime Contract

TBS at contract award scheduled for August, 1996.

12.2.2 Service Contracts

TBS after contract award scheduled for August, 1996.

12.2.3 Program Support Contracts

TBS after contract award scheduled for August, 1996.

12.2.4 Regional Contracting

TBS after contract award scheduled for August, 1996.

12.2.5 GFP/GFI/GFE Obligations

This section is reserved for procurement officials only.

12.3 Program Management (PM)

12.3.1 PM Charter

The charter defines the functions, responsibilities, authority, and accountability for the PM for the Aviation Weather Development Program of the Research and Development Service (ARD-80). The primary goals of the program office revolve around implementing significant improvements in aviation weather services through the ITWS program. As stated in the charter, the PM will accomplish the majority of his functions by use of matrix management techniques using established functional organizations. This requires the PM to integrate the efforts of a broad range of supporting organizations, including FAA headquarters, other Government agencies, and other organizations such as the National Center for Atmospheric Research, MIT/LL, and National Oceanic and Atmospheric Administration's (NOAA) Forecast Systems Laboratory. (Reference: ARD-80 PM Charter, November 11, 1992)

The PM negotiates official agreements with each supporting organization. The PM is responsible for overall management of activities performed under these agreements, periodic review of accomplishments, tracking of program resources consumed and final review and approval of all tasks and products. (Reference: ARD-80 PM Charter, November 11, 1992)

12.3.2 Program Management Team (PMT)

Figure 12-1 below depicts the makeup of the PMT. Table 12-1, ITWS Matrix Team, and Table 13-2, ITWS RAPMs taken together comprise all the individual members of the PMT.

ITWS PROGRAM MANAGEMENT TEAM

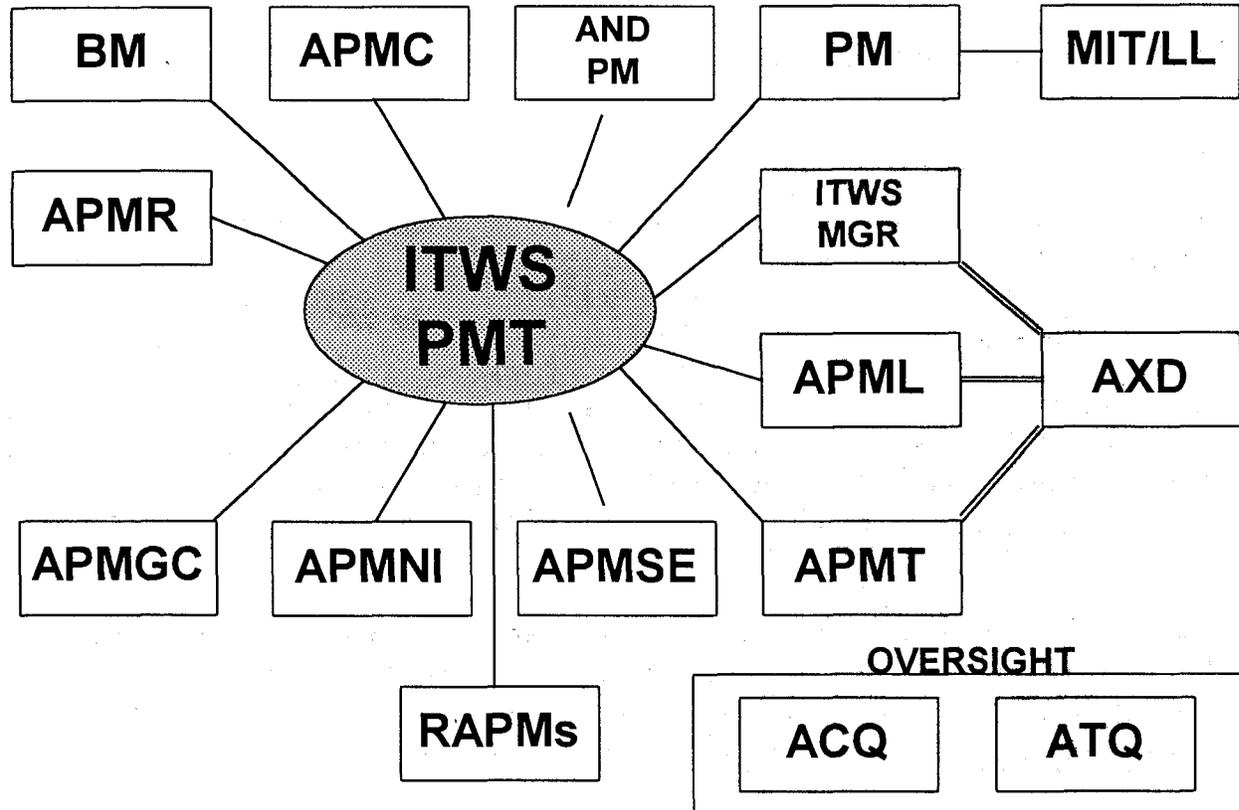


Figure 12-1 ITWS Program Management Team

POSITION	NAME/OFFICE	TELEPHONE
Program Manager	Ken Klasinski, ARD-80	(202) 287-2708
PM TDWR	Don Turnbull, ANR-500	(202) 606-4693
Support Staff	Carl Durst, AMTECH	(202) 488-3045
Group Leader	Jim Evans, MIT/LL	(617) 981-7433
APM for Logistics	Ralph Taylor, ALM-400	(202) 267-3163
APM for Testing	Tom Weiss, ACW-200D	(202) 485-6898
APM for Sys Eng	Mike Porter, ASE-130	(202) 287-8619
APM for NAS Imp	Bill Kiser, ANS-200/NISC	(202) 651-3220
APM for Rqmts	Billy Reed, ATR-337	(202) 267-3685
APM for General Counsel	Chris Jordan, ACG-500	(202) 267-3480
APM for Contracts	Harold LeBlanc, ASU-320	(202) 606-4525
Business Manager	Ken Leonard, ARD-80	(202) 287-7086
System Development Rep	Glen Hewitt, AXD-4	(202) 267-7125
Acquisition Oversight	Henry Gregory, ACQ-10	(202) 267-9078
OT&E Oversight	Elizabeth Turcich, ATQ-3	(609) 485-7035

Table 12-1 ITWS Matrix Team

12.3.3 Program Status Reporting

Current ARD-80 ITWS program status reporting consists of monthly status reports provided to the program office by MIT/LL, year-end summaries, and program management reviews conducted by the program office at least yearly. The monthly status reports cover progress as measured against an established Work Breakdown Structure for the development of ITWS algorithms and products. The ITWS contract will require the contractor to provide progress/status reports in accordance with accepted practices. More information will be supplied after release of the ITWS RFP in August, 1995. (Reference: ITWS Program Office Memo, August 24, 1994)

12.3.4 Exception Management

"Management by Exception" is a management concept in which an issue is only elevated after every effort has been made to resolve the concern within the PM's authority and resources and is governed by FAA Order 1820.3. Technical, implementation, and transition issues that cannot be resolved by the ITWS PM will be coordinated with the Research and Development Service (ARD) and identified and presented to the cognizant acquisition executive at the next acquisition key decision point.

The success of the implementation process is based upon the establishment of effective two-way communications between regional and headquarters focal points. The PIP is one method of information exchange. The initial PIP and subsequent updates provide the sector, region, and field reviewers an opportunity to evaluate the PIP and comment as to the completeness and reasonableness of implementation information contained in it. Implementation concerns which cannot be resolved through an APM or within a division will be elevated by the division manager to the attention of the program manager for resolution.

12.4 Quality Assurance

12.4.1 Program Acceptance Criteria

A number of contractor performance measurement techniques will be used to assess performance during the contract. Contractor performance will be judged by meeting the milestones of the ITWS program schedule. The contractor will be required to produce Cost/Schedule Status Reports and software management indicators and submit them on a timely basis to the program manager. The contractor's performance measurement approach must provide the following: 1) data that relates time-based budgets to specific contract tasks or work statements, 2) data that indicates work progress, 3) information that properly relates cost schedule and technical accomplishments, 4) the ability to produce reports that are valid, timely, and auditable, 5) information that is practical and usable, 6) information that identifies known problems and deficiencies, and 7) data derived from the same internal management control systems used by the contractor to manage the contract. (Reference: ITWS Acquisition Plan, Draft, October 7,, 1994, p. 17)

In accordance with FAA Order 1810.4B, NAS Test and Evaluation Policy, a TEMP has been developed which describes the essential features of the testing program for both the contractor and the Government. A part of this TEMP includes a Verification Requirements Traceability Matrix (VRTM) which integrates physical, functional, operational effectiveness, and NAS operational suitability requirements. In addition, the ITWS program will continue to use a variety of approaches to achieve user concurrence throughout the conduct of test and evaluation. User participation in the performance of test and evaluation to identify system deficiencies and to refine operational requirements will be required. (Reference: ITWS Acquisition Plan, Draft, July 8, 1994, p. 21)

12.4.2 Risk Management

The ITWS RMP is being refined. The following information was extracted from the ITWS Acquisition Plan, Draft, October 7, 1994, pages 11-12 and focuses on risks for the Full-Scale Development of the IOC ITWS. Risks are identified based on the assumption that the contractor will be required to implement the IOC ITWS algorithms and all required interfaces using COTS hardware and commercially available operating systems and utilities. In the risk areas identified below, the terms "low", "medium", and "high" indicate the relative degree of risk among risk areas.

(1) **Cost:** Cost risk for the full scale development of the ITWS is low. The algorithms for the IOC ITWS are already well defined as proven during the Demonstration and Validation Phase OT&E and will be provided as GFP to the contractor. Since the hardware will be COTS, there will not be hardware development or qualification which can be cost drivers. MIT/LL will provide expertise and support throughout the development phase. Specifically, MIT/LL will support the FAA by answering technical questions and providing technical guidance to the full-scale development contractor.

(2) **Schedule:** The schedule risk for the IOC ITWS is low based upon the Acquisition Program Baseline IOC date of 2000. The algorithms that will be developed into the software by the contractor to create the products are already well defined as proven during the Demonstration and Validation Phase OT&E and will be provided as GFP to the contractor. The hardware will be COTS so there will not be any long lead times that could be associated with specialized hardware requirements. Furthermore, MIT/LL will provide expertise and support throughout the development phase. Specifically, MIT/LL will support the FAA by answering technical questions and providing technical guidance to the full-scale development contractor.

(3) **Technical:** The technical risk for the IOC ITWS is low. Through extensive user involvement in the development process the products are well defined, thus the software development process should not be faced with changes in product requirements. The availability of MIT/LL throughout the development phase to answer technical questions and provide technical guidance to the full-scale development contractor will further ensure low technical risk. There is a low risk that some NEXRAD products which are currently undergoing modification could, if not completed as scheduled, result in some ITWS IOC products not being available or the quality of some products being unacceptably degraded. However, the impact of this possibility upon the overall success of the ITWS program is very low because of the number of useful ITWS IOC

products that will be available regardless of progress of the NEXRAD products. The ITWS program will coordinate with the NEXRAD JSPO and the NEXRAD Operational Support Facility to closely monitor the progress of the NEXRAD product modification.

There is a low to medium risk that one or more of the necessary interfaces requiring development or modification by programs outside the ITWS program may not be completed as required. This might mean that some ITWS products will not be available or their quality might be degraded until the interface is available. The ITWS program is coordinating closely with these external systems and sensor programs to carefully define the ITWS technical and schedule requirements plus the resources needed to develop the interfaces. Progress of these efforts which are not under the direct control of the ITWS program will continue to be monitored very carefully.

(4) **Design and Engineering:** Design and engineering risk for the IOC ITWS is low. The IOC algorithms that presently exist operate on COTS hardware using standard commercially available operation systems. Field involvement in the preparation of IOC ITWS specifications is already underway to minimize design errors and omissions. Additionally, procurement of space for the IOC ITWS equipment in the equipment rooms of the affected facilities is in progress and problems in obtaining adequate space and facilities are not anticipated.

(5) **Manufacturing and Production Processes:** The requirement to use COTS hardware and open systems software makes the manufacturing and production processing risk low. After the production software is complete the contractor will make copies of it and install it on the COTS platform.

(6) **Producibility:** Producibility risk is very low because of the requirement to use COTS hardware and standard commercially available operating systems and utilities.

(7) **Support:** The ability to support the IOC ITWS is very low. The specifications will require the use of COTS hardware which typically contains self-diagnostics. This will minimize the time and skill required to maintain the IOC ITWS. The proposed maintenance strategy is to initially use contractor provided maintenance, thus minimizing resource commitments by the Government. The ITWS software will be supported and maintained by an ITWS Program Support Facility where a core of trained meteorologists and software engineers will be charged with maintaining and upgrading the ITWS applications software. The commercially available operating system software and utilities will be part of the COTS hardware procurement and will be maintained by the contractor.

12.5.1 Configuration Management (CM) Responsibilities

Division Manager, Configuration Management and Engineering Support Division, ASE-600, has CM system responsibilities. ASE-600 will provide guidance and monitor configuration management regarding the ITWS procurement. (Reference: FAA Order 1800.8F, NAS Configuration Management)

Configuration management during the acquisition phase will be the responsibility of the program office. After KDP-3 the ANR Configuration Control Board (CCB) will bear the responsibility for

ensuring the transfer of CM responsibilities to the appropriate operations and maintenance organizations through a formal hand-off agreement/procedure. The actual integrity of the hand-off should be assured through configuration audits with joint program office and user organization participation prior to hand-off. (Reference: FAA Order 1800.8F, NAS Configuration Management)

The PM will ensure that the contractor establish, implement, and maintain a configuration management program in accordance with FAA-STD-021. The contractor's configuration management practices are required to establish and implement policies and procedures for computer software identification, specification maintenance, engineering change control, status accounting, and configuration audits.

The Operational Support Service (AOS) will be responsible for all software configuration control and related assistance to the field. (Reference: ITWS MRD, Draft, November 10, 1994, pp. 5 & 6)

12.5.2 Configuration Control Boards (CCB)

In accordance with FAA Order 1800.8F, NAS Configuration Management, NAS/SE CCBs will be the official agencies authorized to approve or disapprove NAS baseline changes. The ANR CCB will control the establishment of, and changes to, the ITWS configuration baseline during the acquisition phase. After the ITWS equipment is fully operational (last ORD), the configuration management responsibility associated with the ITWS equipment will most likely transition from ANR-1 to AOS.

12.5.3 CM Milestones

The following significant CM events are noted on the schedule shown in Table 2-1: the "A" Specification will constitute the initial functional baseline at contract award; the successful completion of the critical design review will provide the allocated baseline; and, the product baseline will be established after successful completion of a Functional/Physical Configuration Audit of the ITWS equipment/software and associated documentation.

12.5.4 Configuration Items (CI)

Configuration management performed on COTS equipment will include inventorying of supplied manuals, tracking of serial numbers and equipment location matrices, and tracking of installation space. The manuals will provide established CIs, serial numbers, a hierarchy, and maintenance information. (Reference: FAA Order 1800.8F, NAS Configuration Management)

Information regarding software CIs will be provided after completion of ITWS SOW (June, 1995).

12.6 - 12.19 (Reserved)**12.20 Status Assessment**

The following risks are included in Appendix I of the ITWS RMP (Review Draft dated 10 April 1994): slip in RFP preparation; NEXRAD product availability; cost of technology (post IOC products); and, viability/inter-operability of direct interfaces. Risks associated with each interface and each supporting system should be considered in future ITWS risk assessment. In addition, the effect/impact of potential restructuring of systems currently in development which will provide inputs to ITWS should also be considered.

See paragraph 12.4.2 above for further detail regarding issues/risks identified to date and plans to mitigate/resolve them.

SECTION 13

IMPLEMENTATION (REQUIREMENTS)

13.1 Implementation Support Organization

13.1.1 Associate Program Manager for NAS Implementation (APMNI)

The ITWS APMNI is Bill Kiser, ANS-200/NISC, 202-651-3220. The APMNI is a member of the PM's PMT and is responsible to the ITWS PM for developing the PIP, chairing the IMT meetings, coordinating and tracking implementation and transition issues through the TIE process, reviewing contractor developed implementation plans, procedures and reports, and tracking the status of program exit criteria related to implementation. (Reference: ITWS Program Directive, January 5, 1994)

13.1.2 Implementation Management Team (IMT)

The APMNI, representing the PM, will organize, schedule, and chair all IMT meetings. The individuals listed below in Tables 13-1 and 13-2 are considered members of the IMT. The frequency and timing of IMT meetings will be dictated by ITWS program requirements, but at a minimum the IMT will meet prior to the issuance of each PIP during each phase of the procurement process and before each Transition Information Exchange report is issued. The purposes of the IMT, as outlined in the Implementation Process Guidelines are to: coordinate PIP and Generic Site Implementation Plan (GSIP) development; support identification and incorporation of implementation related requirements into procurement documents; validate implementation strategies proposed by the equipment contractor; support resolution of program implementation and transition issues through the TIE process; and, facilitate compliance with implementation policy and processes (Reference: Implementation Process Guidelines, June, 1994, p. 15.)

POSITION	NAME/OFFICE	TELEPHONE
Program Manager	Ken Klasinski, ARD-80	(202) 287-2708
Support Staff	Carl Durst, AMTECH	(202) 488-3045
Associate PM for Logistics	Ralph Taylor, ALM-400	(202) 267-3163
Associate PM for Testing	Tom Weiss, ACW-200D	(202) 485-6898
Associate PM for Sys Eng	Mike Porter, ASE-130	(202) 287-8619
Associate PM for NAS Imp	Bill Kiser, ANS-200/NISC	(202) 651-3220
Associate PM for Rqmts	Billy Reed, ATR-337	(202) 267-3685

Table 13-1 Implementation Management Team

The RAPMs listed in the following paragraph are also members of the IMT. After KDP-3 and during the FSD Phase, additional regional AF and AT representatives will be added to the IMT.

13.1.3 Regional Associate Program Manager (RAPM)

As covered in the Implementation Guidelines, the RAPMs are responsible for assuring that ITWS implementation site representatives review proposed implementation requirements, assess requirements against local constraints, and identify and seek resolutions to any issues associated with program requirements. (Reference: Implementation Process Guidelines, June, 1994, p. 41) The following are designated ITWS RAPMs:

REGION	NAME/OFFICE	TELEPHONE
Southwest	Bill Kolp, ASW-421.2	(817) 222-4212
Great Lakes	Orlando Alers, AGL-421.9	(708) 294-7584
Northwest Mountain	Darby Curran, ANW-422	(206) 227-2434
Eastern	Nayla Fouad, AEA-451.1	(718) 553-1176
Western Pacific	John Shea, AWP-422.42	(310) 297-1079
New England	Ed Davis, ANE-422D	(617) 238-7435
Central	Lee Riffel, ACE-425	(816) 426-5676
Southern	Walter Carter, ASO-420A	(404) 305-6299

Table 13-2 ITWS RAPMs

13.1.4 Technical On-Site Representatives (TOR)

The TORs serve as the focal points in the respective regions for ITWS activities. As the program manager's regional representatives, they will work closely with the program manager and the ITWS contractor at the implementation sites. TORs will be recommended by AF Division Managers, appointed by the Contracting Officer's Technical Representative, and will be accountable for ensuring that the ITWS equipment is fielded in an orderly manner. All activities of the contractor following site preparation and construction are the TOR's responsibilities. These include delivery of components, installation, checkout, and acceptance. If subcontractors are used, the contractor will be responsible for all subcontractor(s) performance. The specific names, offices, and telephone numbers of the TORs will be provided after contract award, August, 1996.

Upon AF Regional Managers recommendations, the FAA Contracting Officer's Technical Representative (COTR) will be appointed by the ITWS Contracting Officer. A Resident Engineer (RE) may also be designated. These positions may be combined, and some or all of the functions may be performed by the Regional APM. The COR and RE serve as the focal points in the respective regions for the ITWS site preparation and construction activities. As the program manager's site representative, the COR and RE work closely with the contractor at the site. They are accountable for ensuring that the ITWS site preparation and construction occurs in an orderly manner. The specific names, offices, and telephone numbers of the CORs and REs will be provided after contract award, August, 1996.

13.1.5 Contract Support

Through a DoD Interagency Agreement, the ITWS Program Office has contracted with MIT/LL for program and research support. Weather algorithms and corresponding software have been developed by MIT/LL and tested by them at the ITWS Demonstration/Validation test sites. Concurrent with development and testing of the ITWS IOC capability, MIT/LL will continue to explore new weather processing algorithms for suitability as part of ITWS end-state capability. The initial algorithms as well as these new algorithms (added as pre-planned product improvements) will be provided to the contractor for incorporation into the ITWS. (Reference: ITWS Acquisition Plan, Draft, October 7, 1994, pp. 3, 10 & 21-22)

During this acquisition phase, the ITWS Program Office has also contracted with AMTECH through the Small Business Administration's Small and Disadvantaged Business Development Program under Section 8(A) for general program support services. (Reference: ITWS Acquisition Plan, Draft, October 7, 1994, p. 7)

13.2 Site Implementation Process

13.2.1 Implementation Planning Phase

13.2.1.1 Implementation Activities

The ITWS Program Office along with the PMT and RAPMs will continue to participate in meetings that will be held periodically in order to facilitate implementation planning and information exchange. The ITWS PMT meetings currently under ARD-80 oversight will continue to be held monthly. The IMT meetings will be conducted at least once during each phase of the procurement process and prior to the issuance of an updated PIP. Information gathered during the above team meetings will be used to update the PIP to include the issues in the TIE Appendix.

The software algorithms being developed by MIT/LL during the demonstration phase are being implemented and tested in a series of weather product test beds (currently Memphis and Orlando). The test beds include a series of processors with workstations and related supplies and equipment. The AF and AT personnel at these test sites will be asked to participate in the planning, testing, and gathering of pertinent test results/information. (Reference: ITWS TEMP, Draft, September, 1994, p. 41)

The ITWS contractor will most likely be required to schedule, coordinate, design, test, and staff the efforts required for the expeditious delivery and installation of the ITWS equipment to all field sites with absolute minimum disruption to the ongoing NAS operations. The contractor will be responsible for conducting necessary site surveys, construction, equipment installation, and testing of the integrated ITWS equipment according to Government direction. (Reference: ITWS ILSP, Draft, October 7, 1994, p. 7)

13.2.1.2 Requirements

TBS after completion of ITWS SOW, June, 1995.

13.2.2 Pre-Installation and Checkout (Pre-INCO) Phase

13.2.2.1 Implementation Activities

The Pre-INCO Phase begins with the initial FAA site survey and ends with the delivery of the ITWS equipment to each site. During this phase, FAA sector personnel may be asked to participate in the FAA-conducted site surveys prior to the contractor's arrival. The purpose of the surveys will be to determine site readiness for installation of ITWS equipment. A GSIP is provided at Appendix A to be used by Sector personnel to tailor specific site preparation requirements in a facility Site Implementation Plan (SIP) for each ITWS installation.

13.2.2.2 Requirements

The contractor may be required to prepare SIPs for each installation site to be used to assure timely and effective implementation at each location. The contractor may be required to provide information/data that go beyond the FAA produced SIPs. This information/data may include considerations regarding known headquarters requirements, site implementation sequencing, system management capability at contractor facilities, etc. More detailed requirements and information will be supplied after contract award, August, 1996.

13.2.3 Installation and Checkout (INCO) Phase

13.2.3.1 Implementation Activities

The INCO Phase will begin upon delivery of the ITWS equipment to each respective site and end upon successful completion of the CAI. The CAI is the formal receipt by FAA site personnel of the installed equipment from the ITWS contractor in accordance with FAA Order 6030.45. All stand-alone equipment testing conducted by the contractor will occur during this phase. The designated regional TORs will observe and monitor the installation and stand-alone testing of the ITWS equipment by the contractor. The specific site support tasks for the facility personnel will be delineated in each facility SIP and the GSIP (see Appendix A). Planned site deliveries of the ITWS equipment will be listed in the Material Delivery Forecasting Module (MDFM).

13.2.3.2 Requirements

Normal security procedures will be adhered to and the Government will coordinate access to Government facilities for the contractor through existing security channels and procedures (e.g., building passes). The contractor will be responsible for providing all site preparation work and cleanup in accordance with the applicable Site Implementation Plans. More detailed requirements and information will be supplied after contract award, August, 1996.

13.2.4 System Integration Phase

13.2.4.1 Implementation Activities

The System Integration Phase will start when the ITWS equipment is connected to other operational systems and tests are conducted to verify the performance of the system interfaces. Specific site support tasks for AF personnel will be described in the Site Implementation Plan for each facility. The System Integration Phase will end upon successful completion of the IOC declaration. All OT&E will be conducted during this phase of implementation. The APMT will orchestrate the testing with participation by both the contractor and designated facility site personnel. Anticipated OT&E sites are listed in paragraph 9.1.1.

13.2.4.2 Requirements

TBS after contract award in August, 1996.

13.2.5 Field Shakedown Phase

13.2.5.1 Implementation Activities

The Field Shakedown Phase will start with the IOC decision that determines that the ITWS equipment hardware and software installation and testing have been completed and meet defined requirements. The Field Shakedown Testing, conducted by the individual Site Coordinators and designated FAA facility personnel, will transpire during this phase. The Field Shakedown Testing is separate and distinct from the OT&E, since it will occur at each individual ITWS installation. In addition, ITWS orientation training for facility personnel will occur. The Field Shakedown Phase will end upon successful completion of the final JAI by both AF and AT operations personnel.

13.2.5.2 Requirements

TBS after contract award in August, 1996.

13.2.6 Dual Operations Phase

13.2.6.1 Implementation Activities

The Dual Operations Phase will begin with certification of the ITWS system and will end with the decommissioning of any equipment replaced by ITWS equipment. The Dual Operations Phase will consist of the ITWS "cutover" procedures which will be described in the facility Site Implementation Plan. The cutover actions will be performed at times of least interruption to FAA operations and will be transparent to the AT operations personnel.

13.2.6.2 Requirements

TBS after contract award, August, 1996.

13.2.7 Equipment Removal Phase

13.2.7.1 Implementation Activities

The ITWS contractor will be responsible for the removal of all installation material related to ITWS installation such as packing material, crates, etc.

13.2.7.2 Requirements

The contractor will be responsible for clean-up and disposal of any shipping crates, packing materials, and any other material not required for ITWS operation.

13.8-13.19 (Reserved)

13.20 Status Assessment

Site implementation impacts cannot yet be fully assessed. There are no known issues/risks beyond those already identified in other sections. A more detailed listing of possible impacts relating to this section will be available after release of the RFP in August, 1995, and after contract award in August, 1996.

APPENDIX A GENERIC SITE IMPLEMENTATION PLAN (GSIP)

GSIP Content: The GSIP has been developed as a tool to assist regional and site personnel with development of site specific implementation plans (SIP). Regional and site personnel can tailor this activity list to fit their specific needs and avoid developing each SIP from scratch. The GSIP contains a broad list of anticipated activities necessary for the installation and testing of an ITWS. The information is organized by seven phases of the site implementation process discussed in Section 13 of the Project Implementation Plan (PIP), from *Planning* through *Equipment Removal*.

The list is a starting point for identifying those activities required to successfully complete project implementation at a specific location. Facilities differ depending on environment (i.e., TRACON, MCF, or control tower), size, location, configuration, and operational requirements. Some activities listed in the GSIP, therefore, may not apply and can be removed from the list. Other activities may be added to the list as needed in order to complete the site plan. Once tailored for a particular site, the revised GSIP normally becomes the SIP for that location. Background and related program information already found in the PIP need not be duplicated in the SIP. Following site implementation, information contained in the SIP should be placed in the respective Facility Reference Data File (FRDF).

A DOS compatible soft copy of the ITWS GSIP can be provided to run on Microsoft Excel. The list can easily be customized using Excel, information can be sorted by attribute, and task lists can be generated by *responsible individual*, *responsible organization*, or *essential element*.

Number	PLANNING Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Review and update F&E call for estimates regarding the ITWS	7.2	AXX-42X							
2	Review and update OPS call for estimates regarding the ITWS	7.3	AXX-42X							
3	Develop an updated estimate for funding advance regarding the ITWS based on F&E and OPS funding estimates	7.1	AXX-42X							
4	Coordinate PA for advanced funding to support the ITWS with Program Office	7.0	AXX-42X							
5	Identify the following relating to the ITWS: NAS CIP #, project start date, installation site(s), site survey date(s), equipment installation date(s), and job order number(s)	8.2.1	AXX-42X							
6	Identify ITWS site survey personnel: Site AT Coordinator, Site F&E Coordinator, Site SM Coordinator, Test Coordinator, and security P.O.C.	8.2.1	AXX-42X							
7	Review/verify maintenance concept for the ITWS	3.1	AXX-42X							
8	Identify impacts of the ITWS on local community relations	8.1	AXX-42X							
9	Verify AF endorsement of the ITWS ORDs	3.1.2	AXX-42X							
10	Verify AF endorsement of the ITWS Spec	3.1	AXX-42X							
11	Verify AT endorsement of the ITWS Spec	4.2	AXX-42X							
12	Identify Regional ITWS support personnel: Regional 400 personnel, Regional 500 personnel, and Regional logistics coordinator	8.2.1	AXX-42X							
13	Certify availability of ITWS project funding	7.1	AXX-42X							
14	Develop cost estimates for SM and AT personnel providing ITWS specific support	7.0	AXX-42X							
15	Prepare periodic budget reports relating to the ITWS (Regional 420 and Budget Office)	7.0	AXX-42X							
16	Review and update F&E Project Material List relating to the ITWS	6.9	AXX-42X							
17	Identify additional AF personnel requirements relating to the ITWS	3.1	AXX-42X							

18	Identify additional AT personnel requirements relating to the ITWS: special qualifications/background, recommendation by contractor for operators, and maintenance and support personnel	4.0	AXX-42X							
19	Identify any additional/revised security requirements for the ITWS	6.5	AXX-42X							
20	Notify Office of Labor and Employee Relations of the ITWS implementation	8.1.1	AXX-42X							
21	Identify AT changes to: admin and mgmt procedures, S/W verification procedures, interfacility procedures, and system backup and cutover procedures related to the ITWS	4.2	AXX-42X							
22	Identify AF changes to: admin and mgmt procedures, S/W verification procedures, interfacility procedures, and system backup and cutover procedures related to the ITWS	3.2	AXX-42X							
23	Complete ITWS site assessments regarding: security, PCBs, HAZMAT, asbestos, and radon	6.1	AXX-42X							
24	Determine training requirements for HAZMAT, asbestos, emergency response, CPR, etc. related to the ITWS	8.3	AXX-42X							
25	Provide inputs to develop the ITWS installation contract RFP	13.2.1	AXX-42X							
26	Update affected facility drawings due to the ITWS to the "as built" configuration	6.9	AXX-42X							
27	Develop a preliminary ITWS site survey checklist from the: PIP, GSIP, development contractor inputs, lessons learned from similar/previous project installations	6.9	AXX-42X							
28	Conduct initial ITWS site surveys regarding power (critical, essential, general)	6.4	AXX-42X							
29	Conduct initial ITWS site surveys regarding grounding, bonding, and shielding	6.7	AXX-42X							
30	Conduct initial ITWS site surveys regarding space: installation, office, storage, and loading dock area	6.8	AXX-42X							
31	Conduct initial ITWS site survey regarding HVAC: duct runs, refrigerator equipment layout, additional ceiling, wall, and floor penetrations, and additional power and circuit breaker requirements	6.2	AXX-42X							
32	Conduct initial ITWS site surveys regarding HAZMAT: asbestos, solvents, PCBs, dust, radhaz, noise, storage, usage, removal, and disposal	6.6	AXX-42X							
33	Conduct initial ITWS site surveys regarding telco: interfaces and demarcs affected, line size and hardware rqmts, wire runs and closets to be used, (analog and digital lines), wall/ceiling/floor penetrations, and unique drilling rqmts	6.10	AXX-42X							

34	Following identification of planning phase tasks for each ITWS site implementation, complete the schedule and resource columns of the GSIP table	APP. A	AXX-42X							
35	Update all ITWS project schedules	11.3	AXX-42X							
36	Update the ITWS GSIP	APP. A	AXX-42X							
37	Develop/update the ITWS SIP	13.2	AXX-42X							
38	Review the ITWS contractor-prepared site implementation plans for reference	13.2.2	AXX-42X AXX-5XX							
39	Site personnel participating in ITWS OT&E meet with Program Office test representatives and review test plans, procedures, and schedules	9.3.1	AXX-42X							
40	All RAPMs supporting the ITWS participate in periodic implementation/transition planning meetings at FAA Headquarters.	13.2.1	AXX-42X							
41	Review and comment on each iterative draft of the ITWS Program Implementation Plan.	13.2.1	AXX-42X ITWS Matrix Mgt Team							

Number	PRE-INCO Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Revise cost estimates for all personnel providing ITWS specific support	7.1	AXX-42X							
2	Prepare periodic budget reports relating to the ITWS (Regional 420 and Budget Office). Identify funding rqmts to complete Pre-INCO Phase tasks	7.0	AXX-42X							
3	Identify ITWS site installation team(s): AF/AT/SM Sector & Site Coordinators, Sector & Site Coordinators for testing, and Sector & Site security P.O.C.	8.2.1	AXX-42X							
4	Identify AT/AF/SM regional & site P.O.C.s for Full Scale Development Phase support to the ITWS	8.2.1	AXX-42X							
5	Complete construction cost comparison studies regarding ITWS	6.9	AXX-42X							
6	Develop/update the HAZMAT mitigation plan for the ITWS regarding: asbestos, solvents, PCBs, dust, radhaz, noise, storage, usage, removal, and disposal	6.6	AXX-42X							
7	Establish the ITWS JAI Team	8.2.1	AXX-42X							
8	Develop the ITWS site test plan regarding: stand alone, site acceptance, production acceptance test and evaluation	9.4	AXX-42X							
9	Develop the ITWS site integration test plan	9.4	AXX-42X							
10	Finalize delivery schedule for the ITWS hardware	11.3	AXX-42X							
11	Complete floor plan layout drawing package to include: functional arrangement of the ITWS equipment, dimensional rqmts, location and size of doors, clear space rqmts (no column intrusions), mechanical provisions, and height rqmts	6.8	AXX-42X							
12	Complete the ITWS equipment layout drawing package to include: equipment name, units required, dimensional rqmts, raised floor rqmts, equipment, new furniture rqmts, floor drainage, and top	6.8	AXX-42X							
13	Complete the ITWS storage drawing package to include: access rqmts, ITWS hardware, spares, HAZMAT items, and test equipment rqmts	6.8	AXX-42X							
14	Complete the ITWS office space drawing package to include: test personnel, installation contractor, project team personnel, project library, and maintenance and repair facilities	6.8	AXX-42X							
15	Determine the ITWS support equipment requirements regarding: fork lifts, ramps, elevator sizes and capacities, door openings, and stair well sizes	10.3	AXX-42X							

16	Complete the ITWS telco modifications package to include: interfaces and demarcs affected, line size and hardware rqmts, wire runs and closets to be used, (analog and digital lines), wall/ceiling/floor penetrations, and unique drilling rqmts	6.10	AXX-42X							
17	Complete the ITWS critical/essential power drawing package to include: voltage, amps, phase, frequency, reflected harmonics, inrush current, normal KVA, peak KVA, and power factor	6.4	AXX-42X							
18	Complete building service AC power drawing package to include: voltage, amps, phase, frequency, reflected harmonics, inrush current, normal KVA, peak KVA, and power factor	6.4	AXX-42X							
19	Complete cabling mods drawing package to include: convenience power outlets for contractor work, size added rqmts, commercial power interfaces, wall/ceiling/floor penetrations, circuit breaker panels affected, wire runs, unique drilling rqmts, UPS rqmts	6.4	AXX-42X							
20	Complete HVAC modifications drawing package to include: duct runs, refrigerator equipment layout, wall/ceiling/floor penetrations, and additional power and circuit breaker rqmts	6.2	AXX-42X							
21	Complete lighting modifications drawing package to include: temporary/permanent lighting and window rqmts	6.5	AXX-42X							
22	Complete fire fighting drawing package to include: alarm system, water system, halon system, and floor/ceiling/wall penetration rqmts	6.5	AXX-42X							
23	Identify preliminary construction rqmts for the ITWS	6.9	AXX-42X							
24	Identify any additional ITWS utility rqmts to include: portable power, trash removal, HAZMAT removal, HAZMAT storage, and temporary lighting	6.9	AXX-42X							
25	Review other project implementations to identify cross project impacts for: facility, AF operations, AT operations, training, and installation schedules	6.20	AXX-42X							
26	Prepare and submit NAS Change Proposals (NCPs)	12.5	AXX-42X							
27	Prepare CCDs	12.5	AXX-42X							
28	Develop the ITWS installation contract RFP	12.2	AXX-42X							
29	Provide updated site specific drawings and documents to the ITWS installation contractor to include: floor plan layouts, facility blueprints, grounding/bonding locations, surveys, antenna locations, and shielding rqmts	6.9	AXX-42X							
30	Complete facility electronic modifications relative to the ITWS	5.0	AXX-42X							

31	Complete physical modifications relative to the ITWS	6.9	AXX-42X							
32	Finalize training course attendees and schedule for the ITWS: AT Operators, and maintenance support personnel	8.3	AXX-42X							
33	Develop installation team kickoff agenda to include: security passes/badges, parking, vehicles, driver training rqmts, transfer/loading rqmts, contractor clearance list, work day, in house contract list, training schedule, and issues tracking/resolution	8.2.1	AXX-42X							
34	Schedule the ITWS installation team kickoff meeting: date, attendees, contractor rep, site rep, and regional POC.	8.2.1	AXX-42X							
35	If necessary, order a scheduling software tool	11.0	AXX-42X							
36	Schedule software scheduling tool training course	8.3.1	AXX-42X							
37	Update the ITWS project resource table	APP A	AXX-42X							
38	Generate draft implementation schedule for each site	11.0	AXX-42X							
39	Confirm availability of ITWS specific training courses for: operators, maintenance personnel, and support equipment personnel	8.3.2	AXX-42X							
40	Develop ITWS training schedules compatible with personnel availability, facility constraints, operational milestones, and project activation dates	8.3.5	AXX-42X							
41	Identify LOAs & MOAs that are required or must be modified	4.1	AXX-42X							
42	Identify attendees for required ITWS training courses	8.3	AXX-42X							
43	Identify the ITWS installation support contractor P.O.C.	12.2	AXX-42X							
44	Determine the ITWS support equipment/rqmts prior to delivery to include: vehicle turning radius, weight considerations, staging areas, dollies, jacks, cranes, ramps, fork lifts, and temporary shelters	10.3	AXX-42X							
45	Review the ITWS installation plan with contractor	6.6	AXX-42X							
46	Update the ITWS project schedules	11.3	AXX-42X							
47	Update the ITWS GSIP and SIP	11.3	AXX-42X							
48	Revise the ITWS cost estimates	7.1	AXX-42X							
49	Identify the ITWS HAZMAT/Environmental coordinator	8.2	AXX-42X							
50	Complete the ITWS floor plan drawing package to include: HAZMAT, emergency access/egress, and hazardous waste storage area	6.8	AXX-42X							

51	Identify training attendees for asbestos, HAZMAT, and respirator	8.3	AXX-42X							
52	Complete HVAC modifications drawing package to include: local ventilation rqrmts, welding, and HAZMAT handling	6.2	AXX-42X							
53	Complete fire suppression systems to insure no halon. Review local codes for flammable and HAZMAT storage	6.5	AXX-42X							
54	Obtain permits, as necessary, for: hazardous waste storage, asbestos, air quality permits, National Pollutant Discharge Elimination System, and UST registration and certification	6.9	AXX-42X							
55	Identify equipment requirements for HAZMAT	6.6	AXX-42X							
56	If asbestos is present, develop an Asbestos Operations and Maintenance Plan	6.6	AXX-42X							
57	Develop site specific NCPs	12.5	AXX-42X							
58	Coordinate/submit shutdown requests	4.1.1	AXX-42X							
59	Identify Telecommunications Service Requests (TSR)	10.0	AXX-42X							

Number	INCO Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Update cost estimate for SM and AT personnel providing ITWS specific support	7.1	AXX-42X							
2	Prepare periodic budget reports relating to the ITWS (Regional 420 and Budget Office). Identify funding rqmts to complete INCO Phase tasks	7.0	AXX-42X							
3	Establish Facilities Reference Data File (FRDF) for the ITWS	3.3	AXX-42X							
4	Identify HAZMAT requirements regarding removal or remediation for such items as asbestos during the ITWS implementation	6.6	AXX-42X							
5	Monitor installation of the ITWS on-site telco hardware and software	6.10	AXX-42X							
6	Update AT personnel certifications for new ITWS equipment and software	4.2	AXX-42X							
7	Update AT operational procedures for new ITWS equipment and software	4.2	AXX-42X							
8	Update AT personnel facity certifications for new ITWS equipment	4.2	AXX-42X							
9	Update SM personnel certifications for new ITWS equipment and software	3.2	AXX-42X							
10	Update AF system certifications for new ITWS equipment and software	3.2	AXX-42X							
11	Update facility maintenance operating procedures for the ITWS hardware	3.1.2	AXX-42X							
12	Prepare and submit NAS Change Proposals (NCPs)	12.5	AXX-42X							
13	Identify the Contractor Acceptance Inspection (CAI) procedures for the ITWS	13.2.3	AXX-42X							
14	Review the ITWS JAI procedures (FAA Order 6030.45)	13.2.5	AXX-42X							
15	Develop CAI Plan	13.2.3	AXX-42X							
16	Coordinate CAI Plan with sector and site personnel	13.2.3	AXX-42X							
17	Identify the ITWS Integration Phase testing personnel	9.3	AXX-42X							
18	Monitor installation of the ITWS hardware in "stand alone" configuration	13.2.3	AXX-42X							

19	Monitor testing of the ITWS hardware installation in "stand alone" configuration	9.0	AXX-42X							
20	Monitor installation of the ITWS software in "stand alone" configuration	13.2.3	AXX-42X							
21	Monitor testing of the ITWS software in "stand alone" configuration	9.0	AXX-42X							
22	Generate testing discrepancy list	9.5	AXX-42X							
23	Issue preliminary test report	9.5	AXX-42X							
24	Close test discrepancies	9.5	AXX-42X							
25	Issue final test report	9.5	AXX-42X							
26	Conduct the ITWS CAI	13.2.3	AXX-42X							
27	Update FRDF relating to the ITWS	3.3	AXX-42X							
28	Clear the ITWS CAI discrepancies	13.2.3	AXX-42X							
29	Update the ITWS project schedules	11.3	AXX-42X							
30	Update the ITWS GSIP and SIP	11.3	AXX-42X							
31	Complete the ITWS CAI	13.2.3	AXX-42X							
32	Comply with established HAZMAT procedures regarding ITWS implementation	6.6	AXX-42X							
33	Monitor proper disposal of any generated hazardous waste from ITWS implementation	6.6	AXX-42X							
34	Inventory the Hazardous Material Chemical Inventory, if necessary	6.6	AXX-42X							
35	Begin the Material Safety Data Sheet File	6.6	AXX-42X							
36	Ensure personnel certifications for: equipment, safety (CPR), DOT HAZMAT reqmts, asbestos, and refrigerants	3.2	AXX-42X							
37	Investigate recycling opportunities	6.6	AXX-42X							

Number	SYSTEM INTEGRATION Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Update cost estimate for SM and AT personnel providing ITWS specific support	7.1	AXX-42X							
2	Prepare periodic budget reports relating to the ITWS (Regional 420 and Budget Office). Identify funding rqmts to complete Integration Phase tasks	7.0	AXX-42X							
3	Close out any outstanding ITWS CAI discrepancies	13.2.3	AXX-42X							
4	Update the ITWS schedules	11.3	AXX-42X							
5	Identify field personnel to support the ITWS Shakedown Phase testing	9.0	AXX-42X							
6	Monitor integrated testing of the ITWS	9.0	AXX-42X							
7	Observe the ITWS Contractor cutover actions and insure they comply with the Site Implementation Plan.	3.3.4	AXX-42X							
8	Ensure that the ITWS Contractor's cutover operations occur at the time of least disruption to FAA operations.	3.3.4	AXX-42X							
9	Analyze the ITWS integration testing results	9.0	AXX-42X							
10	Develop the ITWS Shakedown Testing Plan	9.0	AXX-42X							
11	Generate trouble reports	9.0	AXX-42X							
12	Clear trouble reports	9.0	AXX-420							
13	Develop preliminary reports	9.0	AXX-42X							
14	Prepare final ITWS integration testing report	9.0	AXX-42X							
15	Monitor recycling	6.6	AXX-42X							
16	Achieve ITWS IOC	9.0	AXX-42X							
17	Update the ITWS GSIP and SIP	11.3	AXX-42X							

Number	FIELD SHAKEDOWN Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Revise the ITWS funding requirements to complete Field Shakedown Phase tasks	7.0	AXX-42X							
2	Prepare periodic budget reports relating to the ITWS (Regional 420 and Budget Office)	7.0	AXX-42X							
3	Prepare submit NAS Change Proposals (NCPs)	12.5	AXX-42X							
4	Update the ITWS project schedules	11.0	AXX-42X							
5	Monitor the ITWS shakedown testing	9.0	AXX-42X							
6	Analyze the ITWS integration testing results	9.0	AXX-42X							
7	Generate trouble reports	9.0	AXX-42X							
8	Clear trouble reports	9.0	AXX-42X							
9	Prepare final ITWS shakedown testing report. Forward results through RAPM to ITWS Program Office.	9.0	AXX-42X							
10	Update the ITWS GSIP and SIP	11.0	AXX-42X							
11	Identify funding requirements to complete Dual OPS Phase tasks	7.0	AXX-42X							
12	Participate in ITWS Orientation Training provided by the Contractor.	8.3	AXX-42X							
13	Participate as required in the Operational Readiness Demonstration for ITWS at each facility.	3.3.5 & 13.2.5	AXX-42X							
14	Participate in the Joint Acceptance Inspection of the ITWS System including both AF and AT operations personnel.	3.3.5 & 13.2.5	AXX-42X AXX-5XX							

Number	DUAL OPERATIONS Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Identify personnel who will be involved in extraneous equipment removal	8.2	AXX-42X							
2	Participate in Contractor-provided cutover plan, as necessary, to ensure smooth transition to the ITWS system operation	13.2.6	AXX-42X							
3	Provide feedback on ITWS System performance to the Site Coordinator who should provide feedback through the RAPM to the ITWS Program Office.	13.2.6	AXX-5XX							
4	Update the ITWS GSIP and SIP	11.0	AXX-42X							
5	Prepare and submit NAS Change Proposals (NCPs)	12.5	AXX-42X							

Number	EQUIPMENT REMOVAL Phase Description	PIP Paragraph Reference	Responsible Organization	Schedule	Labor Category	Associated Time Estimate	Cost Estimates	Other Resource Needs	Total Activity Cost	Comments
1	Revise funding estimates to complete Equipment Removal Phase tasks relating to ITWS	7.0	AXX-42X							
2	Ensure completion of personnel certification requirements/procedures and update of handbooks relating to ITWS	3.2.6	AXX-42X							
3	Ensure removal of HAZMAT items involved with the implementation of ITWS	6.6	AXX-42X							
4	Monitor the removal of extraneous equipment/debris associated with the ITWS installation.	13.2.7	AXX-42X							
5	Refurbish ITWS site(s)	6.9	AXX-42X							
6	Update facility drawings to reflect current "as built" configuration of the ITWS	6.8	AXX-42X							
7	Update the ITWS GSIP and SIP	11.0	AXX-42X							
8	Prepare and submit NAS Change Proposals	12.5	AXX-42X							

APPENDIX B TRANSITION INFORMATION EXCHANGE REPORT

See attached listing.

TRANSITION INFORMATION EXCHANGE (TIE) REPORT SUMMARY

ISSUE NO.	ISSUE SYNOPSIS	ACTION PLAN SYNOPSIS	OPR/NAME PHONE	SUSPENSE DATE	STATUS
001	Who will maintain TDWR during DEM/VAL if TDWR is not commissioned? Is there any way to have our own maintenance person? or to upgrade our priority? Can LL cover this rqmt?	Investigate options and coordinate "fix".	Dave Sankey 202-287-7085	5/1/94	Closed 5/1/94
002	Does ATR have a rqmt to provide ITWS products to pilots in order to reduce controller workload? ASE needs this to produce functional/performance specs and IRDs.	APMR will coordinate with AT to define/coordinate requirement.	Bob Curry 202- 267-3685	7/15/94	Closed 7/15/94
003	The lack of an agreed plan to implement the WARP interface could introduce a significant impact to ITWS schedule.	Program Office will coordinate with WARP program and its sponsors to determine priority of ITWS interface.	Dave Sankey 202-287-7085	7/15/94	I/F Deleted Closed 7/31/94
004	Are there legal restrictions in use by ITWS of MDCRS and lightning data?	Program Office will coordinate with APMC and APMGC to determine course of action.	Carl Durst 202- 488-3045	4/28/95	Open
005	What are the impacts to HVAC requirements due to ITWS?	APMNI will coordinate the completion of an analysis to determine impacts to facilities.	Bill Kiser 202- 651-3220	6/1/95	Open
006	Are there ITWS sites which will not have FAATSAT available?	APMNI will coordinate with FAATSAT Program Office to determine FAATSAT locations.	Bill Kiser 202- 651-3220	9/1/94	Closed 9/1/94
007	Interim maintenance support should be pre-arranged, if necessary, until ITWS is commissioned.	Program Office will coordinate maintenance requirements at least 6 months prior to fielding.	Ken Klasinski 202-287-2708	7/1/98	Open
008	Software/algorithm requirements for ITWS support to MCFs have not been fully developed (multiple inputs from ASR-9s, TDWRs, etc.).	Program Office will work with MIT/LL to ensure adequate software development. Testing in 1995.	Carl Durst 202- 488-3045	8/1/95	Open
009	Implementation/site installation requirements should be included as data item description (DID) specified by Contract Data Requirements List (CDRL) in ITWS RFP.	APMNI will work with ITWS Program Office to ensure inclusion of DID, as necessary.	Bill Kiser 202- 651-3220	6/30/95	Open
010	ITWS MODEM requirements need to be identified and included in Fuschia Book.	APMNI will coordinate a meeting among ASE, ANC, and AOP to validate modem rqmts.	Bill Kiser 202- 651-3220	8/10/94	Closed 8/23/94
011	There is a requirement for a Facility IRD regarding ITWS.	APMSE/SEIC will make Facility IRD a part of ITWS Casefile.	Mike Porter 202- 287-8619	9/30/94	Closed 7/31/94
012	Is there a requirement for an ITWS interface to TATCA?	Program Office will coordinate with TATCA Program Office regarding their requirements.	Dave Sankey 202-287-7085	1/31/95	Closed 11/15/94 Port avail.
013	MIT/LL software/algorithms need to be "hardened" before transfer as GFI to production contractor.	Program Office will investigate the possibility of hiring contractor to "harden" software.	Dave Sankey 202-287-7085	10/1/94	Will Not Do Closed 9/08/94
014	What are the requirements for an ITWS Program Support Facility (PSF)? Can the TDWR PSF accommodate ITWS requirements?	Program Office will investigate PSF requirements.	Carl Durst 202- 488-3045	6/30/95	Open
015	Will APMSC and/or APMFS sponsor ITWS mission need? If not, will current MNS be revalidated by AT prior to KDP-3?	Program Office will coordinate MNS requirements.	Carl Durst 202- 488-3045	4/13/95	Open

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APPENDIX C ACRONYMS

The following acronyms appear in the ITWS PIP:

AAF	Associate Administrator for Airway Facilities
ACF	Area Control Facility
ADAS	AWOS Data Acquisition System
AF	Airway Facilities
AFZ	AAF Directorate for Resource Management
AGFS	Aviation Gridded Forecast System
AND	NAS Development Service
ANS	NAS Transition and Implementation Service
APME	Associate Program Manager for Engineering
APMNI	Associate Program Manager for NAS Implementation
APMP	Associate Program Manager for Procedures
APMR	Associate Program Manager for Requirements
APMSE	Associate Program Manager for System Engineering
APMT	Associate Program Manager for Testing
ARD	Research and Development Service
ARTCC	Air Route Traffic Control Center
ASF	Airway Support Facilities
ASOS	Automated Surface Observing System
ASR-9	Airport Surveillance Radar-9
AT	Air Traffic
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
AWOS	Automated Weather Observing System
BTU	British Thermal Unit
CAI	Contract Acceptance Inspection
CCB	Configuration Control Board
CDRL	Contract Data Requirements List
CI	Configuration Item
CIP	Capital Investment Plan
CM	Configuration Management
CMTF	Contractor's Master Test Plan
COI	Critical Operational Issue
COTR	Contracting Officer's Technical Representative
COTS	Commercial Off-the-Shelf
CSCI	Computer System Configuration Items
CWSU	Center Weather Service Unit
DEA	Drug Enforcement Agency
DLP	Data-link Processor
DoD	Department of Defense
DRR	Deployment Readiness Review
DT&E	Developmental Test and Evaluation

EXCOM	Executive Committee
F&E	Facilities and Equipment
FAA	Federal Aviation Administration
FAALC	FAA Logistics Center
FAATC	FAA Technical Center
FAATSAT	FAA Telecommunications Satellite
FAR	Federal Acquisition Regulation
FRDF	Facility Data Reference File
FSD	Full Scale Development
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFP	Government Furnished Property
GSIP	Generic Site Implementation Plan
HAZMAT	Hazardous Material
HVAC	Heating, Ventilation, and Air Conditioning
ICD	Interface Control Document
ICMLS	Interim Contractor Maintenance and Logistics Support
ILSP	Integrated Logistics Support Plan
IMCS	Interim Monitor Control Software
IMT	Implementation Management Team
INCO	Installation and Checkout
IOC	Initial Operating Capability
IR	Interface Requirement
IRD	Interface Requirement Document
ITWS	Integrated Terminal Weather System
JAI	Joint Inspection
KDP	Key Decision Point
LLWAS	Low-Level Windshear Alert System
LOA	Letter of Agreement
LPATS	Lightning Position and Tracking System
LRU	Lowest/Line Replaceable Unit
MCC	Maintenance Control Center
MCF	Metroplex Control Facility
MDCRS	Meteorological Data Collection and Reporting System
MDFM	Material Delivery Forecasting Module
MDT	Maintenance Data Terminal
MIPS	Million Instructions Per Second
MIT/LL	Massachusetts Institute of Technology/Lincoln Laboratories
MNS	Mission Need Statement
MOA	Memorandum of Agreement
MODEM	Modulator-Demodulator
MPS	Maintenance Processor Subsystem
MRD	Maintenance Requirements Document
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NADIN	National Airspace Data Interchange Network

NAILS	National Airspace Integrated Logistics Support
NAS	National Airspace System
NCP	NAS Change Proposal
NEXRAD	Next Generation Weather Radar
NOTAM	Notice to Airman
NWS	National Weather Service
O&M	Operations and Maintenance
OJT	On-the-Job Training
ORD	Operational Readiness Date
ORD	Operational Readiness Demonstration
ORDoc	Operational Requirements Document
OT&E	Operational Test and Evaluation
P³I	Pre-Planned Product Improvement
PAT&E	Production Acceptance Test and Evaluation
PRE-INCO	Pre-Installation and Checkout
PIP	Program Implementation Plan
PM	Program Manager/Management
PMT	Program Management Team
PSF	Program Support Facility
PTR	Program Trouble Report
PUP	Principal User Processor
RAPM	Regional Associate Program Manager
RE&D	Research, Engineering, and Development
RFP	Request for Proposal
RMP	Risk Management Plan
RMMS	Remote Maintenance Monitoring Subsystem
RPG	Radar Product Generator
RMMS	Remote Maintenance Monitoring System
RMS	Remote Monitoring Subsystem
SD	Situation Display
SEIC	System Engineering and Integration Contractor/Contract
SIP	Site Implementation Plan
SM	Sector Maintenance
SOW	Statement of Work
TATCA	Terminal ATC Automation
TBS	To Be Supplied
TCCC	Terminal Control Computer Complex
TDWR	Terminal Doppler Weather Radar
TE	Transmission Equipment
T&E	Test and Evaluation
TEMP	Test and Evaluation Master Plan
TIE	Transition Information Exchange
TMU	Traffic Management Unit
TOR	Technical On-site Representative
TPRC	Test Policy Review Committee
TRACON	Terminal RADAR Approach Control

VRTM Verification Requirements Traceability Matrix
WSR-88D Weather Surveillance Radar-1988

