



ASOS Product Improvement

Master Implementation Plan

January 31, 2003

**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service/Office of Operational Systems
Field Systems Operations Center/Observing Systems Branch**



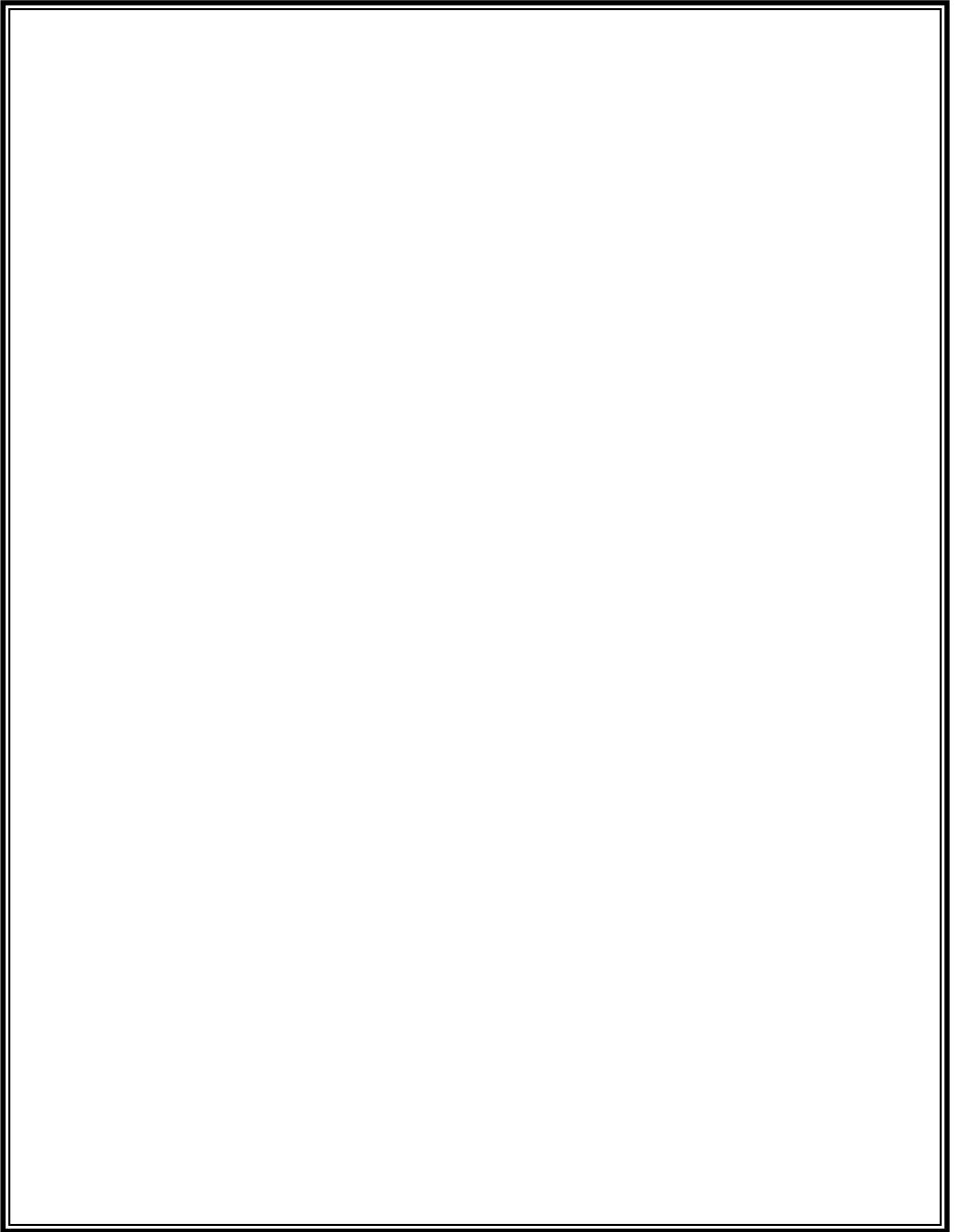


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Executive Summary

With the completion of the full deployment of the Automated Surface Observing System (ASOS) at almost 1,000 National Weather Service (NWS), Federal Aviation Administration (FAA), and Department Of Defense (DOD) locations nationwide, a new phase of Planned Product Improvement (PPI) has begun. These planned improvements will bring even greater observing capability, processing and communications capacity, and reporting accuracy and consistency to the ASOS. The planned improvements for the ASOS include:

- Processor Board Replacement,
- Dew Point Sensor Replacement,
- All-Weather Precipitation Accumulation Gauge,
- Ice Free Wind Sensor,
- Enhanced Precipitation Identification Sensor,
- Ceilometer Replacement, and
- Software Enhancements

Although this document serves as the master implementation plan for all ASOS product improvements, it may also serve as a model or template for implementation of other technologies. This may include the Cooperative Observer Program (COOP), future Improvements to the upper-air radiosonde network, RADAR, lightning detection, and other observing systems. Other documents in this series will describe the implementation process for the specific technology components. Each document completely describes what will be done to successfully bring the product improvement to an operational status.

This document focuses on the overall process and the factors which impact on the operational implementation of ASOS planned product improvements. It provides a framework for producing the specific plans for each planned product improvement. To the extent possible, this document identifies those processes and factors common to all planned product improvements and those which are unique. More specific information on the unique factors are found in each individual implementation plan.

A check list is provided to aid in monitoring progress in completing all necessary activities for Operational Implementation (OI). The check list ensures prerequisite government conducted testing (System Test (ST) and Operational Acceptance Test (OAT) for ASOS are completed prior to start of the OI. It then covers pre-OI planning actions involved in site identification, deployment strategy, maintenance and logistics planning, training, and user notification. The check list identifies executable functions and deliverables in the implementation of the planned product improvements. Finally, any necessary post-OI activities are also covered.

This plan is written from the time perspective of imminent OI. It assumes all necessary activities prior to OI were or *will have been*, completed and that OI activities are about to begin.

List of Organizational Codes

<u>Code</u>	<u>NWS Organization</u>
CCx2	National Logistics Support Center
OPS11	Engineering & Acquisition Branch
OPS12	Maintenance Branch
OPS13	Configuration Branch
OPS14	Logistics Branch
OPS22	Observing Systems Branch
OPS23	Software Branch
OPS24	Test & Evaluation Branch
OPS31	Operations Support & Performance Monitoring Branch
CIO12	Telecommunication Gateway Operations Branch (AOMC)
OS7	Observing Services Division
OST11	Program Management Branch
OST32	SEC Development Branch

<u>Code</u>	<u>FAA Organization</u>
AUA-400	IPT* Lead for Weather/Flight Service Systems
AUA-430	Weather Sensors and Aviation Weather Research Product Team
ATP-300	Flight Service Operations Division
ATP-310	Meteorological Support
AOP-400	Telco Network Planning & Engineering Division
ARU-1	Air Traffic Systems Development Directorate
ARS-100	Aerospace Weather Policy Division
ARS-200	Aerospace Weather Standards Division
ARU-400	Aviation Weather Requirements Division
*IPT =	Integrated Product Team

ACRONYMS

ACCB	ASOS Configuration Control Board
ACU	Acquisition Control Unit
ADAS	AWOS/ASOS Data Acquisition System
AOMC	ASOS Operations and Monitoring Center
APMC	ASOS Program Management Committee
ASOS	Automated Surface Observing System
AWIPS	Advanced Weather Interactive Processing System
AWOS	Automated Weather Observing System
AWPAG	All-Weather Precipitation Accumulation Gauge
CMIS	Configuration Management Information System
CO	Contracting Officer
COTR	Contracting Officer Technical Representative
CPU	Central Processing unit
CSA	Configuration Status Accounting
DAPM	Data Acquisition Program Manager
DCP	Data Collection Package
DOD	Department Of Defense
DRR	Deployment Readiness Review
DTS1	Dew Point Temperature Sensor Replacement - Vaisala Model DTS1
ECP	Engineering Change Proposal
ELC	Expected Life Cycle
EMRS	Engineering Management Reporting System
ET	Electronics Technician
FAA	Federal Aviation Administration
FCA	Functional Configuration Audit
FRU	Field Replaceable Unit
FY	Fiscal Year
IFW	Ice Free Wind Sensor
METAR	Aviation Routine Weather Report
MIC	Meteorologist-In-Charge
MIRS	Management Information Reporting System
MOD KIT	Modification Kit
MOD NOTES	Modification Notes
MTBF	Mean Time Between Failure
NDS	NWS Directives System
NLSC	National Logistics Support Center
NOTAM	Notice To Airmen
NRC	National Reconditioning Center
NSN	National Stock Number
NWS	National Weather Service
OAT	Operational Acceptance Test

OI	Operational Implementation
OIP	Operational Implementation Plan
OPR	Office of Primary Responsibility
OSF	Operational Systems Fielded
PCA	Physical Configuration Audit
PPI	Planned Product Improvement
RAM	Random Access Memory
REL NOTE	Release Note
RC	Request for Change
RFP	Regional Focal Point
SCA	Single Cabinet ASOS
SHEF	Standard Hydrometeorological Exchange Format
SPECI	Selected Special Weather Report
ST	System Test
TCP/IP	Transmission Control Protocol/Internet Protocol
TDWR	Terminal Doppler Weather Radar
TRB	Test Review Board
TRG	Test Review Group
TTR	Test Trouble Report
WFO	Weather Forecast Office
WSOM	Weather Service Operations Manual
WSP	Weather Systems Processor

1. INTRODUCTION

1.1 Description of Technology Improvement Scheduled For Implementation

This section should contain a full description of the Planned Product Improvement (PPI), including its functions, capabilities, and limitations. This description should include all new sensor hardware, processing firmware, and software, as applicable. Additional background information should be included as appropriate. This may include the history leading to the current situation, and the problems, challenges, and opportunities for improvement.

1.2 Purpose

This Section should describe the strategy for implementation of the PPI. This strategy should include a conceptual outline of schedules and responsibilities for the implementation and smooth transition of the product improvement into operations.

Example of description: The purpose of this document is to provide a clear strategy for the implementation of the (name of product improvement) into the ASOS baseline and minimizing field operational impacts resulting from this modification. Furthermore, this plan delineates major implementation activities and organizational responsibilities required for a smooth transition into operations.

1.3 Scope

This section should describe the extent of implementation related activities starting with System Test (ST) preparation and ending with commencement of operations. It should describe all unique additions, exceptions, or limitations. For instance, unlike other improvements, a particular improvement may not require user/operator training or completion of a follow-on Climate Data Continuity Study.

Example of description: This plan describes the extent of implementation related activities: the pre-implementation testing and operational readiness evaluation activities (described in Chapter 2); the pre-operational implementation activities (described in Chapter 3); the operational implementation activities (described in Chapter 4); and the post-operational implementation activities (described in Chapter 5). This plan includes provision for a “Phased Implementation” approach as opposed to a single master schedule for all sites. The phased implementation approach breaks the entire population of sites into discrete implementation batches. Each batch consists of sites with similar characteristics and implementation risks. Implementation risks are changes to the existing suite which are more likely to result in failure. This includes complex modifications, complex configurations, and critical external components such as network communications which are beyond the control of ASOS. Those sites with the least operational risk are placed in the earlier implementation batches, while those sites with the

greater operational risk are placed in the latter implementation batches. Batches are implemented sequentially as confidence is gained. The batches may be implemented with some overlap. Furthermore, this plan describes all unique additions, exceptions, or limitations. For example, unlike other improvements, the (name of PPI) may require completion of a follow-on Climate Data Continuity Study.

This plan applies to all [State Number here] ASOS locations equipped with a (name of product improvement) and all (specify number) WFOs where other key components (specify here) will likewise be installed. The implementation of the (name of product improvement) falls within the overall goal of modernizing the ASOS network. This implementation is phase XX of this modernization. Consequently, this implementation plan is labeled Addendum **XX (FILL IN NUMBER)**.

1.4 Applicable Documents

As applicable, the following documents should be referenced for further guidance and serve as a part of this plan:

- Engineering Modification Note # XX
- Field Release Note
- Operational Acceptance Test Plan

2.0 TEST ACTIVITIES

This chapter should describe those testing activities required to be successfully completed before operational implementation begins. The preamble to this chapter should describe the connection of test activities to implementation activities. Furthermore, it should give an overview of the objective of the chapter and what is contained in each section of the chapter.

Example of description: The (name of product improvement) must undergo successful government testing before operational implementation. This chapter provides a brief overview of pre-implementation test activities leading to Operational Implementation (OI) activities. Pre-implementation test activities are the transition between development activities and OI activities. The sections in this chapter describe test-related activities, are given in general serial order of completion, and identify the primary office(s) responsible for their accomplishment. For ASOS the government test activities are ST activities and OAT activities. These activities are necessary to determine if the product improvement is ready for full production and implementation. Two key decision points result from these test activities. The first key decision point is a full, or series of partial production decisions, usually made as a result of successful completion of the ST. This is a program office decision based on the formal test report and recommendation of a Test Review Group (TRG). The second key decision point is a full, or series of partial deployment decisions. This decision is made by the program manager and the Test Review Board (TRB) consisting of other managers as part of a Deployment Readiness Review (DRR). The decision to deploy is based on successful completion of the OAT for ASOS or the operational readiness evaluation for the COOP. A TRG also provides technical support and advice for this decision.

2.1 Pre-System Test Activities

This section should describe those activities necessary for preparation of the ST.

Example of description: This section describes activities which must be completed before the start of the ST, and identifies the office responsible for completion of each activity. These pre-ST activities include:

1. **Prepare Request For Change (RC):** Example of description: Prior to successful completion of the factory System Integration / Qualification Tests, the Program Management Branch (OST11) will have submitted a Request For Change (RC) for testing activities, through the appropriate Change Management process prior to the ST. The ASOS Program Management Committee (APMC) is the approving management authority for this process.
2. **Prepare ST Plan:** Example of description: The Test & Evaluation Branch (OPS24) prepared and distributed the ST plan prior to start of the ST. This plan includes all activities and deliverables for successful completion of the ST. A TRG was formed to adjudicate and classify all Test

Trouble Reports (TTR) documented during the ST.

3. **ST Locations and Dates:** Example of description: ST locations, schedules, and test procedures are determined and managed by OPS24.
4. **Acquisition of ST Units:** Example of description: Upon successful completion of factory System Integration / Qualification Tests, OST11 will initiate through OPS11 procurement of the (name of product improvement) PPI components. OST1 with OPS11's support will verify (name of product improvement) PPI components perform correctly prior to delivery of these components to the designated ST locations. The Maintenance Branch (OPS12) will ensure delivery of the necessary PPI components to the designated ST locations.
5. **ST Logistic Support:** Example of description: Necessary components, supplies, spare parts, and test equipment will be made available to ST locations by OPS14.
6. **Install PPI Test Units at ST Sites:** Example of description: Installation and maintenance of ST equipment will be coordinated by OPS12.

2.2 System Test Activities

This section should describe those activities which must be completed during or before the end of the ST.

Example of description: This section describes those activities which must be completed during or before the end of the ST and identifies the office(s) responsible for completion of each activity. These ST activities include:

1. **Verify Start of ST:** Example of description: OPS24 will report the start of the ST.
2. **Data Collection and Analysis:** Example of description: All necessary data will be collected, compiled and checked for quality and completeness in accordance with the ST plan. The TRG will review and reconcile all TTRs. This process is managed by OPS24.
3. **Verify Completion of the ST:** Example of description: Where testing identifies serious flaws, additional STs will have to be conducted. During testing, OPS24 will inform the TRG of the results of the test. The TRG will recommend whether or not to proceed to the next phase of testing (i.e., OAT).
4. **ST Report:** Example of description: A preliminary ST report will be prepared and issued for review by OPS24 as the ST nears completion. This includes an assessment of all outstanding TTRs and a recommendation whether to proceed with a follow-on OAT. The program manager will have reviewed the recommendation and made the decision whether to proceed to OAT.

2.3 Pre-Operational Acceptance Test (OAT) Activities

This section should describe the purpose of the OAT and those activities which must be completed before the start of the OAT. This description should identify the office(s) responsible for completion of each activity.

Example of description: This section describes the purpose of the OAT and those activities which must be completed before the start of the OAT, and identifies the office(s) responsible for completion of each activity. The purpose of the OAT is to verify operational performance of the (name of product improvement) under field conditions, ensure there are no adverse systemic effects as a result of integration of the new (name of product improvement) with the ASOS, and verify the viability of the installation MOD NOTES and Release Notes. In effect, this is a “dry-run” for the full implementation for the remaining sites. The following activities must be completed prior to start of the OAT:

1. **RC for OAT:** Example of description: Upon receipt of the preliminary ST report and a recommendation from OPS24 to proceed with the OAT, the Chair of the ASOS Configuration Control Board (ACCB) (i.e., ASOS PPI Manager (OST11)) will have initiated action to prepare and submit an RC for the OAT. This RC lists all locations included in the OAT. The ACCB will adjudicate the RC if the incremental cost for the OAT RC is less than \$1 million; the APMC will adjudicate the RC if the incremental cost for the RC is \$1 million or more.
2. **OAT Management Decision:** Example of description: : Upon formal approval of the RC, and TRB concurrence with the final ST report and recommendation, the ASOS PPI Manager will authorize OPS24 to proceed with the OAT and notify OPS11 to procure the PPI components for the OAT. Under special circumstances to meet critical deadlines, the decision to proceed with the OAT could be made based on the preliminary ST report provided no major changes are expected in the final ST report.
3. **Prepare OAT plan:** Example of description: OPS24 prepared and distributed the OAT plan prior to start of the OAT. This plan identifies OAT locations, dates, schedules, responsibilities, procedures, metrics, evaluation criteria and deliverables (data reports, evaluations, and recommendations) for completion of the OAT. A TRG is formed (same as in ST) to adjudicate and classify all TTRs documented during the OAT.
4. **OAT Locations and Schedule:** Example of description: The 21 OAT locations were determined by OPS24 in coordination with OPS22, the Observing Services Division (OS7), the NWS regions, and the FAA. The sites selected for the OAT were chosen to ensure a representative sample of operational locations are evaluated.
5. **Acquisition of OAT Units:** Example of description: : Upon notification by OST11 to initiated

acquisition of the OAT PPI components, OPS11 (acting as the COTR) will have acquired the OAT PPI components and coordinated with OPS24 and the NWS regions the locations where the PPI components will be delivered prior to the start of the OAT.

6. **OAT Logistic Support:** Example of description: OPS12 ensured all necessary Modification Kits (MOD KIT), maintenance components, supplies, spare parts, and test equipment were delivered to the designated OAT locations and installed prior to the start of the OAT. OPS12 will coordinate the assignment of test equipment part numbers and reference designators with the Configuration Branch (OPS13) and the Logistics Branch (OPS14).
7. **OAT Maintenance Coordination Support:** Example of description: OPS12 coordinated plans for installation and maintenance of the OAT MOD KITS with the NWS regions, and the ET responsible for each OAT site prior to start of the OAT.
8. **Prepare & Provide Modification Notes (MOD NOTES):** Example of description: Draft NWS Engineering Modification Notes (MOD NOTES) will be produced by OPS12 and provided to installation technicians prior to start of installation at the OAT site(s).
9. **OAT Documentation Support:** Example of description: All necessary documentation was delivered to the NWS regions and the test sites prior to start of the OAT. OAT Documentation includes: MOD NOTES produced by OPS12, OAT procedures produced by OPS24, and draft Release Notes (REL NOTE) produced by OPS22.

2.4 Operational Acceptance Test Activities

This section should describe the activities which must be completed during and before the end of the OAT.

Example of description: The OAT may be conducted in either a single phase or a multiple phase mode. In the single phase mode, the OAT is applied simultaneously to all sites. In the multiple phase mode, the OAT is applied sequentially to selected sub-groups of sites until all sites successfully complete the OAT. The successful completion of the OAT for one group does not preclude the start of the OAT for another group; as such OATs for multiple groups of sites can be conducted simultaneously. The initial group consists of similar sites with the greatest chance for successfully completing the OAT. Subsequent groups are incrementally added to the OAT as confidence is gained and necessary modifications are made until all sites successfully complete the OAT. A designated “group” of sites in the OAT is representative of the larger “batch” of subsequent similar sites to be implemented. This section describes the activities which must be completed during and before the end of the OAT. This description identifies the office responsible for completion of each activity. These activities included:

1. **Verify Start of OAT:** Example of description: OPS24 informed the test team of the times,

places, and procedures for the OAT. This was done through ongoing coordination and formal issuance of the OAT plan.

2. **Data Collection and Analysis:** Example of description: All necessary data were collected, compiled and checked for quality and completeness in accordance with the OAT plan. Whenever possible maintenance data shall be collected via the NWS Engineering Management Reporting System (EMRS). The TRG will review and reconcile all TTRs. This process is managed by OPS24.
3. **Verify Draft Operational Implementation Plan (OIP):** Example of description: A key element of the OAT is the verification of the implementation procedures in the draft OIP. In effect, the OAT is a “dry-run” for the OI. All noted procedural discrepancies will be rectified by the responsible office(s) and reflected in the final OIP as appropriate.
4. **Verify Completion of OAT:** Example of description: If the OAT results identify a significant failure, a new ST and OAT are necessary after corrective action is completed. During the OAT, OPS24 will inform the TRG of the results. The TRG will determine whether the OAT was successful and whether to recommend the full or next step in the phased implementation of the (name of product improvement).
5. **OAT Report:** Example of description: A preliminary OAT report was prepared and issued for review by OPS24 as the OAT nears completion. The final OAT report was prepared no later than 1 month after OAT completion and presented to the ASOS PPI Manager (OST11). The OAT report indicates if it applies to all sites, or only a limited subgroup of sites with common characteristics, and also includes an assessment of all outstanding TTRs and a recommendation whether to proceed with the follow-on OI. Upon successful completion of either the full, or partial phased group OAT and receipt of the OAT report from OPS24, the ASOS PPI Manager will conduct a Deployment Readiness Review (DRR) with other managers to make a go-no-go deployment decision for the larger batch of sites in the general population represented by the smaller group of sites referenced in the OAT report.

3.0 PRE-OPERATIONAL IMPLEMENTATION (OI) ACTIVITIES

The preamble to this chapter should give a brief overview of the activities which immediately precede and lead to OI activities. This preamble should describe the critical linkage of the pre-operational implementation activities with the preceding testing activities and the following operational implementation activities.

Example of description: This chapter gives a brief overview of the activities which immediately precede and lead to OI activities. These pre-implementation activities are the transition between the test activities and OI activities. They began during the OAT and are to be completed before the start of the OI. The Deployment Readiness Review (DRR) decision to begin the OI provides the requisite authority, guidance, and direction for their completion. The sections in this chapter describe the pre-implementation activities necessary to initiate the follow-on implementation activities and identify the office(s) responsible for their accomplishment. These activities are: planning/decision, logistic support, and operational support. They are accomplished in parallel and are completed by the start of the OI which occurs when the (name of product improvement) is installed and operationally activated at the first site following completion of the OAT. The following activities should be accomplished before the start of the OI.

3.1 Planning/Decision Activities

This section should describe planning and decision making activities which provide guidance and direction for the follow-on operational implementation activities.

Example of description: This section describes those plans and associated decisions which must be completed before the start of the OI. These plans and decisions are essential for orderly and efficient execution of the operational implementation. This description identifies the office(s) responsible for completion of each plan or related decision. This is a dynamic process with variations from the norm. These planning/decision activities include:

1. **Prepare OI Plan:** Example of description: OPS22 will develop and coordinate the execution of the overarching OIP for all ASOS PPIs, and the specific OIP for each PPI component. This OIP addresses the OI for the new ASOS (name of product improvement) upgrade. It defines all activities for successful completion of the (name of product improvement) OI and, as such, forms a part of the overall OIP
2. **Depot Spares Modeling:** A Mean Time Between Failure (MTBF) of [State Number Here] years, a system Expected Life Cycle (ELC) of [State Number Here] years, and a base number of [State Number Here] operational systems fielded (OSF) are among the variables used by OPS14 to run a depot spares model to determine how many spares are needed to operationally support the (name of product improvement). This number will be provided to the ASOS PPI Manager

(OST1) prior to full scale production and acquisition management decision.

3. **RC for OI:** Example of description: Concurrent with preparation of the preliminary OAT report and a recommendation from OPS24 to proceed with the OI, the Chair of the ACCB (i.e., the ASOS PPI Manager (OST1)) will initiate action to prepare and submit an RC for the OI. This RC contains an Engineering Change Notice with parts to be added and/or deleted to/from the baseline and lists all locations included in the OI. The ACCB will consider the preliminary OAT report and recommendation in their deliberations and voting on the RC.
4. **Full Scale Production and Acquisition Management Decision:** Example of description: If the RC is not approved by the ACCB, it will be referred back to the submitter for rectification and resubmission in accordance with established ACCB procedures. Upon ACCB approval of the RC for the OI, the ASOS PPI Manager (OST1) will endorse the RC and recommend to the ASOS Program Management Committee (APMC) approval of the RC. As the Chair of the APMC, OPS2 will coordinate the APMC management decision making process. Upon receiving the APMC management decision, OST1 will notify the ASOS PPI Contracting Officer's Technical Representative (COTR), OPS11, to procure the planned quantity of equipment components necessary for the OI. This notification will customarily be made upon receipt of the final OAT report and recommendation to proceed with the OI. If the final OAT report does *not* support proceeding with the OI, then OST1 will suspend procurement activity until the critical issue(s) cited in the report are satisfactorily resolved. The actual procurement may occur in batches with staggered delivery dates. The planned deployment schedule will phase with the actual delivery dates and lag slightly to allow adjustment and alignment of the delivery and installation schedules.
5. **OI Deployment Decision.** Example of description: Upon successful completion of either the full, or partial phased group OAT and receipt of the OAT report from OPS24, the ASOS PPI Manager will conduct a Deployment Readiness Review (DRR) with other managers to make a "go-no-go" deployment decision for the larger batch of similar sites in the general population represented by the smaller group of sites referenced in the OAT report. A "Go" deployment decision will be announced by the ASOS PPI Manager to all concerned parties. This will allow deployment planning and execution activities to continue to completion for the designated batch of sites.
6. **Identify OI Installation Locations:** Example of description: The ASOS PPI Manager will coordinate the selection of locations for each procurement batch with the appropriate NWS and FAA offices and solicit their input to this decision. This implementation plan addresses the 882 ASOS locations in the combined NWS and FAA base program plus 3 other FAA locations added to the base. All these locations are identified in Appendix II.
7. **Develop OI Strategy:** Example of description: A key element of the OIP is the implementation strategy. Since not all (name of product improvement) MOD KITs will be available initially to all technicians, an overarching installation strategy is needed to ensure equitable distribution of

MOD KITs during the production cycle. OPS22 will establish the draw rate strategy for the (name of product improvement) MOD KITs and the installation sequence strategy. The basic elements of these strategies are described below.

- A. Draw Rate Strategy:** Example of description: Initially, OPS12 will issue the first two (name of product improvement) kits to each Weather Forecast Office (WFO) as stock is received at the National Logistics Support Center (NLSC). These first two kits are the spare kit and the first installation kit. The spares kit only includes those critical Field Replaceable Unit (FRU) components which are most likely to fail. Other components will be available from NLSC. Concurrent with this initial distribution, the receiving WFOs will be instructed on how to draw additional kits from the NLSC (CCx2) in accordance with the MOD NOTE # **XX** issued by OPS12. Upon completion of the initial issue of two (name of product improvement) kits to each WFO, NLSC will distribute subsequent (name of product improvement) kits to WFOs upon receipt of a draw request from the WFOs. The NWS regions are responsible for establishing a regional draw rate strategy in consonance with the region's share of the national total, and monitoring and for modifying the WFO monthly draw requests as necessary. The NWS regions will provide guidance to their WFOs on the draw sequence within the region. The NWS regions will inform OPS12 of the draw sequence within the region and will report the regional monthly draw rate status to OPS22.

WFOs are to draw only those additional kits they plan on installing within the next 30 days. No more than one draw request should be submitted by each WFO to NLSC in a calendar month. NLSC will strive to fill the draw requests in the order they are received.

- B. Installation Sequence Strategy:** Example of description: The initial kit acquired by each WFO must be the spares kit. The spares kit includes those components most likely to require maintenance, repair, or replacement, whereas the operational MOD KIT contains all components needed for complete installation and operation. The succeeding operational MOD KITs may be implemented with consideration of the following criteria:
1. The OI may be conducted in either a single phase or a multiple phase mode. In the single phase mode, the OI strategy is applied simultaneously to all sites. In the multiple phase mode, the OI strategy is applied sequentially to selected sub-groups of sites until all sites successfully complete the OI. The successful completion of the OI for one group does not preclude the start of the OI for another group. The initial group consists of similar sites with the greatest chance for successfully completing the OI. Subsequent groups are incrementally added to the OI as confidence is gained and necessary modifications are made until all sites successfully complete the OI.
 2. The first group of sites to be implemented are those (state number) sites included

in the OAT for the (state product improvement). This group includes the (state number) climate continuity sites needed for the (state product improvement) sensor OAT. These sites are operationally implemented at the conclusion of the OAT process.

3. The last group of sites to be implemented are those which must retain the old processor, sensor, or software in support of specialized field operations. At the conclusion of these operations the new (state product improvement) sensor/software will be installed and implemented.
4. The vast majority of sites fall between the first and the last group. The implementation order of this middle group is left to the regions. Preference should be given to sites with greater maintenance problems and maintenance costs associated with the new sensor/software. Consideration should also be given to scheduling sites on the same day which are closely spaced wherever possible. No special trip is necessary when installing the new (state product improvement). The (state product improvement) should be installed when a preventative or corrective maintenance is otherwise initiated.

3.2 Logistic Support Activities

This section should describe those logistic activities which must be completed before the start of the OI. This description should identify the office responsible for completion of each activity. These activities include:

Example of description: This section describes those logistic activities which must be completed before the start of the OI. This description identifies the office responsible for completion of each activity. These activities include:

1. **Procurement:** Example of description: Full production and procurement of the (name of product improvement), associated equipment, and their delivery to NLSC will be managed by OPS11. This function includes serving as the COTR. Upon notification of approval of the full production contract award by the ACCB, OPS11 will coordinate the issuance of the production contract with the Contracting Officer (CO). A production rate and procurement schedule will be established by OPS11 at time of contract award.
2. **Supply Support Strategy:** Example of description: All procured full production (name of product improvement) will be entered into the supply channel through the NLSC. OPS14 will establish a national stock number for the (name of product improvement) kit. The MOD NOTE for this installation issued by OPS12 will inform field technicians how to order this kit. **Note:** Each WFO having an ASOS technician must have a spare kit on hand before installing their first site.

3. **Installation and Maintenance Coordination:** Example of description: OPS12 will coordinate all activities for installation and maintenance of operational (name of product improvement) at designated locations in consonance with the planned OI installation sequence. These activities include scheduling for technician installation and check-out of the (name of product improvement), ensuring all PPI and support equipment are available for the technicians, ensuring all necessary maintenance documentation is provided to the technicians and ensuring all necessary maintenance training is conducted. Note: If no maintenance training is required, enter “Not Applicable” and explain why no maintenance training is required. Example: In the case of the (name of product improvement), there is no functional change and therefore no maintenance training is required.

3.3 Configuration Management Activities

This section should describe the Configuration Management activities prior to OI.

Example of description: This section describes CM activities for the (name of product improvement) during the pre- and post-OI period. The CM activities assure the (name of product improvement) functional and physical characteristics are identified and documented. All changes to (name of product improvement) and related equipment are documented in EMRS and go through the NWS Change Management process. The Requirements and Change Management Branch (OS12) performs periodic audits to ensure the (name of product improvement) still conforms to its specifications, engineering drawings, interface control documents, etc.

1. **Audits:** Audits will be accomplished to verify that the final tested and accepted configuration of the (name of product improvement) meets all of its approved requirements.
2. **Functional Configuration Audit:** The Functional Configuration Audit (FCA) will be performed on the production unit and should be one of the units used during the OAT. The test results of the unit tested must conform to the requirements specifications and will represent the baseline of all units implemented. Any changes required during this implementation must be re-audited and baselined in order to assure total compatibility throughout the entire network.
3. **Physical Configuration Audit:** The Physical Configuration Audit (PCA) will be completed after the FCA to assure that the configuration baseline will comply to all required configurations and markings and that the documentation reflect the individual components and that the engineering documentation represents the baselined system and interfaces. The FCA must end before PCA ends, but PCA can start before FCA ends.

4. **Configuration Status Accounting:** Configuration Status Accounting (CSA) tracks the installation of the (name of product improvement) at the individual ASOS sites. The current status of MOD NOTE (State # here) implementation may be viewed at the ASOS CM Web site: <http://cmhome.nws.noaa.gov/asos/index.asp>
Then select the “site information” option.

3.4 Operational Support Activities

This section should describe those activities which support initiation and ongoing operational activities after installation.

Example of description: This section describes those documentation, training, user notification, and validation activities which must be completed before the start of the OI. This section identifies the office(s) responsible for completion of each activity. These activities include:

1. **Documentation:** Example of description: The following documentation will be provided to the implementation and operational personnel at the responsible WFO prior to OI of a given site:
 - A. Engineering MOD NOTES will be provided to WFO technicians by OPS12 for installation and follow-on maintenance activities. This will occur prior to the start of scheduled OI of the first full production (name of product improvement) in the WFO’s area of responsibility.
 - B. Operational Release Notes will be provided by OPS22 to the NWS ASOS Regional Focal Point (RFP) for distribution to affected WFOs prior to the start of the scheduled OI of the first (name of product improvement) in their region. These release notes will also be distributed by OPS22 to designated FAA and DOD focal points for distribution to their affected facilities.
 - C. Operational Release Notes will be provided by OPS22 to WFOs prior to the start of the scheduled OI of the first in their region. These release notes will also be distributed by OPS22 to designated FAA and DOD focal points for distribution to their affected facilities.
 - D. Any update to NWS Directives System (NDS) Chapters will be provided by the appropriate Weather Service Headquarters Office to the WFOs prior to OI. OS7 will coordinate production and distribution of the updates. OPS22 will monitor and ensure timely compliance.
 - E. Any update to the ASOS Users’ Guide and other related ASOS documents will be funded by the agency requiring the update and production management provided by OPS22. Updates will be provided to the WFOs and key focal points in other affected

Federal agencies (FAA, DOD) prior to OI . Note: This section can be deleted if no ASOS Users' Guide or other documentation changes are planned for the product improvement.

2. **Training:** Example of description: The schedule for any necessary training will be linked to the “phased implementation” sequence for the product improvement. At each individual site, all training for responsible operators and maintenance personnel will be completed prior to OI at that site. This will include production and delivery of all training materials, completion of training sessions, and documentation/certification of completion of training. All maintenance training materials will be provided to the responsible WFO and the appropriate agency office responsible for providing formal maintenance training. All observer training materials will be provided by the appropriate agency office responsible for providing formal observer training. Note: If no training is required, enter “Not Applicable” in the appropriate checklist block (see Appendix I), and explain why no training is required. Example: In the case of the (name of product improvement), there is no functional change and therefore no training is required.
 - A. Maintenance training materials are provided by OPS12.
 - B. Observer training materials are provided by FAA.
 - C. The NWS Training Center is responsible for providing formal maintenance and observing training to NWS staff. The FAA Academy is responsible for training FAA observing staff. Other agencies are responsible for training their maintenance and observing staff. NWS WFO staff will provide assistance to FAA in training their local observing staff when requested to do so. Maintenance procedures are covered in the MOD NOTES.
3. **Pre-Implementation User Notification:** Example of description: Any planned change in operations or disruption in service must be documented and distributed to the affected user community prior to actual execution of the change. This notification is intended to give users ample time to make any necessary adjustments to automated equipment and procedures prior to the implementation. This notification should take many forms including, Public Notification Statement via Advanced Weather Interactive Processing System (AWIPS), notification via Family of Services, Notice To Airmen (NOTAM), notification of local airport authority, and notification of national and international user community through NWS Telecommunications Gateway. OPS22 will coordinate with various organizations to ensure these notifications are disseminated. Note: If no notification is required, enter “Not Applicable” and explain why no notification is required. Example: In the case of the (name of product improvement), there is no functional change and therefore no notification is required.
4. **Verify completion of all Pre-Operational Implementation Activities:** Example of description: The preceding activities must be completed before commencement of the OI activities. The OPS22 Implementation Manager will ensure all prerequisite activities are

verified as completed. Furthermore, OPS22 will have informed the implementation team of the schedules, responsibilities, and procedures for the OI. This was done through ongoing coordination and formal issuance of the OIP.

4.0 OPERATIONAL IMPLEMENTATION (OI) ACTIVITIES

The preamble to this chapter should give an overview of the activities involved in the operational implementation. It should list the activities needed to execute the operational implementation.

Example of description: This chapter gives a comprehensive description of the OI activities. The sections in this chapter describe the implementation activities necessary to initiate operational activation of the product improvement and identify the office(s) responsible. These activities include: Implementation Management, Activities, Acquisition Activities, Installation Activities, and Implementation Activities. They are accomplished in parallel during the OI activity phase.

4.1 Implementation Management Activities

This section should describe those activities necessary to monitor, coordinate, and adjust the implementation process to insure timely and effective completion of all implementation activities.

Example of description: This section describes those activities to initiate, monitor, coordinate, and manage change during the implementation process. The main aspects of implementation management are initiation, oversight, and monitoring. Initiation responsibilities are described in subsection 1. Oversight responsibilities and the office(s) responsible for carrying out the oversight are described in subsection 2, and check list monitoring and documentation responsibilities are described in subsection 3.

1. **Implementation Management Decision:** Example of description: Upon a “go” deployment decision made by the DRR Group for the batch of deployment sites represented by the approved OAT group, the ASOS PPI Manager will initiate implementation activities. OPS22 will identify the specific sites in each batch approved for deployment and post the list on the Surface Observation Program Web page: <http://www.nws.noaa.gov/ops2/Surface/index.htm>
2. **Oversight Responsibilities:** Example of description: OPS22 has overall responsibility for managing and coordinating the OI activities. These responsibilities include ensuring the implementation is executed according to plan and coordinating any necessary adjustments with other key participants. This includes coordination with: OPS24 for managing the successful completion of all prerequisite testing prior to OI; OPS11 for monitoring acquisition and delivery of MOD KITS and other material necessary for implementation to NLSC; OPS13 for tracking MOD NOTE 78 completions; OPS14 for managing the logistics supply, repair; OPS12 for managing the distribution of OI MOD KITS and other materials, and the installation and maintenance activities; and the NWS Regional Focal Point (RFP) for managing and coordinating all implementation activities within their respective regions. Several

implementation data base reports were created to track site implementation changes. These reports are routinely updated and made available to OPS22 and other offices involved in implementation activities. Examples of these reports are in Appendix II. OPS22 will manage the data bases and coordinate their availability to other implementation partners.

The RFPs have a unique responsibility to fine tune and manage the implementation sequence within the region, and coordinate with the local WFO to resolve implementation issues and ensure a successful implementation. The RFPs will compile and forward 30-day implementation status reports to OPS22 via e-mail. These status reports will include the newly completed Checklist, Part B and the 30-day Evaluation Reports from the WFO. The status reports will only be forwarded to OPS22 when the problems noted by the WFO either cannot be resolved at the regional level or have national impact.

3. **Check List:** Example of description: A key component of the oversight responsibilities is monitoring the status and progress of the implementation. A two part check list tool has been developed to assist in this activity. The purpose of the check list is to ensure that all essential activities described in this document are completed as scheduled. The check list follows the general organization of this plan. The Check List is found in Appendix I.

Part A: This part is completed once by OPS22. It applies to all locations subject to OI. It is completed prior to the beginning of the OI process for the first full or partial phased deployment of the (name of product improvement).

Part B: This part is initially completed by the responsible WFO for each site which is implemented. The Meteorologist-In-Charge (MIC) at each WFO is responsible for ensuring this check list is completed and sent forward in a timely manner. This includes annotating the check list with the completion dates (mm/dd/yy) of those items for which the WFO is designated as the Office of Primary Responsibility (OPR), and attaching a brief narrative which describes any problems encountered and any solutions found or recommended. Both the check list and narrative will be retained on site for 6 months. A copy will be forwarded via E-Mail to the RFP upon completion only when the problems either cannot be resolved at the local level or have regional or national implications. The RFP will compile these check lists and narratives into a monthly E-Mail status report to OPS22 only when the problems noted by the WFO either cannot be resolved regionally or have national implications. OPS22 will coordinate with the designated OPRs to ensure the remaining items are completed.

4.2 Acquisition Activities

This section should describe those activities associated with acquisition, stocking and distribution of the operational units being deployed.

Example of description: This section describes those activities involved in acquisition,

stocking, and distribution of the operational (Name of product improvement) MOD KITS.

1. **Verify Start of OI:** OPS22 will verify the start date of the OI.
2. **Monitor & Validate Delivery:** Example of description: As the COTR, OPS11 will monitor and ensure timely delivery of all planned production units to the NLSC. Any discrepancies or delays in scheduled delivery of the (name of product improvement) to NLSC will be reported by NLSC to OPS11 in a timely manner. Throughout the production cycle OPS11 will perform a quality assurance function on units being delivered to the NLSC, report any discrepancies and provide remediation recommendations to the CO.
1. **Stock Kits at NLSC:** Example of description: The new (name of product improvement) and associated parts needed for installation will be stocked as a kit at NLSC. A National Stock Number (NSN) will be established by the Logistics Branch (OPS14) for this kit. Procedures for requisitioning this kit will be disseminated to field installation technicians by OPS12 at the start of the OI. OPS14 will manage all logistic support for the implementation of the new ASOS (name of product improvement). NLSC will manage inventory of all necessary supplies, spares, and modification kits, and filling orders from field technicians for dissemination of (name of product improvement) kits.
2. **Requisition Kits from NLSC:** Example of description: The first two kits will be issued to each WFO by OPS12 from the stock at NLSC. These kits are the spares kit and one initial kit for installation. The spares kit only includes those critical Field Replaceable Unit (FRU) components which are most likely to fail. Other components will be available from NLSC. For all subsequent installation kits, the WFO ET will requisition the (name of product improvement) Mod kit from NLSC when they are ready to install the (name of product improvement) in accordance with the Draw Rate Strategy described in Section 3.1, paragraph 5A.

4.3 Installation Activities

This section should describe where to find the appropriate documentation which governs archive downloading, and system installation.

Example of description: This section describes the appropriate documentation source which governs downloading of archive, installation, and checkout of the operational system.

1. **Downloading of Archive:** Example of description: At the start of the installation process, prior to system power down and installation of the new (name of product improvement), the ET will download the ASOS archive data sets to a laptop and copy these files to a disc using direct command mode as described in the installation MOD NOTES. These data sets include, but are not limited to, the 5-minute observations, the SYSLOG, the Edit Log, the Daily and Monthly Summary Data, and the SHEF data. The disc containing this archive data will be provided to

the Data Acquisition Program Manager (DAPM) at the local responsible WFO. The DAPM, the lead Hydrometeorological Technician, or the Information Technology Manager, as appropriate, will extract current climate records from the disc and forward them to NCDC for archive, and retain the Disc for 60 days for possible future use.

2. **Installation & Checkout:** Example of description: Field technicians will perform installation and checkout of the (name of product improvement) in accordance with the Engineering MOD NOTE #____. Generally this process will take about two hours or less.

4.4 OI Monitoring & Coordination Activities

This section should describe monitoring and coordinating activities for operational implementation

Example of description: This section describes the monitoring and coordination activities associated with the operational implementation which follow installation and checkout. These activities are executed in consonance with the oversight and check list activities described in section 4.1.1. They include installation notification, initiate maintenance monitoring and confirm operations, installation status reporting, and any necessary post implementation notification to users.

1. **Installation Notification:** Example of description: Upon successful completion of installation and checkout, the Electronic Technician (ET) will update the Engineering Management Reporting System (EMRS) in accordance with MOD NOTE **XX** and notify, via e-mail, the responsible WFO and the RFP of this occurrence. A sample A-26 is included as part of Appendix IV.
2. **Initiate Maintenance Monitoring and Confirm Operations:** Example of description:
 - A. **WFO Status Monitoring:** The WFO, in conjunction with the AOMC will begin routine maintenance monitoring.
 - B. **30-Day Evaluation Report:** The WFO will also conduct a close 30 consecutive day meteorological monitoring and evaluation of the data from the newly implemented site to ensure the data are complete, consistent with expected local conditions or independently confirmed as representative of unique meso-scale phenomena, and the system is operating normally. All discrepancies will be noted and reported to the RFP in a timely manner. Upon the conclusion of the 30-day monitoring period, the WFO will complete and forward to the RFP a narrative report on the results of the monitoring and evaluation, along with any recommendations. The report shall include the identification of the location evaluated, the dates of the evaluation, the office and person conducting the evaluation, and the narrative. The narrative shall include a description of any discrepancies found which relate in any way to the implemented change, and

any solutions which act on the discrepancy.

C. RFP Status Monitoring: The RFP will closely monitor the status of the installation, checkout and OI. The RFP will conduct periodic teleconferences with the field to assess installation, maintenance, and meteorological performance. When necessary, they will initiate timely corrective actions which are beyond the capability of the local WFO. They will also collect and compile the 30 day implementation Evaluation Reports from the WFOs and forward them in monthly status reports to the OPS22 Implementation Manager via e-mail.

D. AOMC Status Monitoring: The AOMC will monitor the operational status of the newly implemented ASOS site for 30 days to ensure proper functioning and availability of data from that site. The AOMC will monitor and report on the status of the implementation and apprise the OPS22 Implementation Manager of any unusual ASOS performance related to the implemented improvement during the 30-day close monitoring period.

3. Installation Status Reporting Coordination: Example of description:

A. The AOMC will monitor the installation and implementation status of every site and provide daily reports. These reports will be provided through the ASOS Implementation List Server (ASOS_Implementation@infolist.nws.noaa.gov).

B. OPS22 will monitor the status and track the progress of the implementation from daily AOMC reports, periodic reports from the EMRS, Configuration Management Information System (CMIS), and Management Information Reporting System (MIRS), and monthly reports provided by the RFP. OPS22 will use these reports to provide weekly staff note updates for mid- and upper-level management on the status of the implementation, and initiate remedial coordination actions to resolve any difficulties and keep the implementation on schedule. The ASOS PPI Manager will use these reports to update monthly/quarterly management Quad Chart reports for senior management briefings. OPS22 will also ensure that drafts, updates, data bases, and other documents related to the formal Implementation Plan which are too large for the list server will be announced on the list server and posted on the Surface Observing Program Web Site: <http://www.nws.noaa.gov/ops2/Surface/index.htm>.

5.0 POST OI ACTIVITIES

This chapter should describe those activities which occur after operational implementation is successfully completed.

Example of description: The completion of the OI at each location marks the transition to post implementation activities. This chapter gives a comprehensive description of the post-OI activities. The sections in this chapter describe the post-implementation activities necessary to integrate the new (name of product improvement) into routine ongoing operations, and identify the office(s) responsible. These activities include: Post-Implementation User Notification, Operational Quality Control, Documentation, Disposition of Old Equipment, and Climate Continuity Study. They begin immediately upon operational activation and are accomplished in parallel.

1. **Post-Implementation User Notification:** Example of description: Upon notification of successful initiation of service by the AOMC, OPS22 will issue notification of the change and its impact to all affected users on a monthly basis until all scheduled sites have been implemented. Note: If there is no impact to users, no notification is required. In this case enter “Not Applicable” and explain why no notification is required. Example: In the case of the (name of product improvement), there is no functional change and therefore no notification is required.
2. **Operational Quality Control:** Example of description: The responsible WFO will continue with normal monitoring of the operation of the newly installed PPI beyond the initial 30 day close monitoring period. This will ensure proper ongoing operation of both the installed unit and the entire system. The WFO will perform maintenance on system components for which they are responsible. Any PPI parts returned to National Reconditioning Center (NRC) which are still under warranty will be reported by NRC (OPS16) to the PPI COTR, OPS11.
3. **Documentation:** Example of description: Three operations are necessary to ensure proper documentation of changes to ASOS. They are:
 - A) Data entry into the EMRS;
 - B) Data entry into the CMIS;
 - C) Data entry into the MIRS; and
 - D) Data entry into ASOS SYSLOG

The EMRS Form A-26 update is accomplished by the ET as part of the OI. A sample Form A-26 is included as part of Appendix IV. The Regions will ensure the EMRS update is accomplished. The CMIS will be updated from new information in the EMRS. OPS13 will ensure this action is accomplished. The MIRS will be updated through the EMRS input to the CMIS. OPS22 will ensure that the MIRS staff makes timely updates to the MIRS. Upon completion of the installation, the ET will enter appropriate remarks into the ASOS SYSLOG to document this change in accordance with MOD NOTE # XX.

4. **Disposal of Old Equipment:** Example of description: The NWS disposal policy for the old equipment being replaced is contained in the NWS disposal document written by OPS1 (OPS12, OPS14) in coordination with OS7.. Specific procedures for disposal, in accordance with the disposal guidance, is included in the MOD NOTE # 78. Note: Disposal policy/procedure may include returning some or all of old equipment to stock at NRC.

5. **Climate Continuity Study:** Example of description: At a sub-set of implemented sites, a climate continuity study will be conducted to ensure no biases or meteorological discontinuities are introduced into the climate record which are not documented. This study will last 2 years or more. Sites will be selected based on climatic considerations. OS7 will manage this activity. Note: If no climate continuity study is required, enter “Not Applicable” and explain why no study is required. Example: In the case of the (name of product improvement), there is no functional change and therefore no climate continuity study is required.

APPENDIX I

ASOS Operational Implementation Check List

For

(Name Of Product Improvement)

**ASOS Planned Product Improvement
OI Check List - Part A**

Planned Product Improvement: _____

Office completing this check list: _____ **Date:** _____

Item #	Item Description	OPR	Validation Date
2.1 Pre- System Test (ST) Activities			
1.	Submit RC for ST & obtain APMC approval to proceed	OST1	
2.	Prepare ST plan & draft outline for ST report	OPS24	
3.	Identify ST locations & dates	OPS24	
4.	Initiate procurement/delivery of PPI test units to ST sites	OST1	
5.	Deliver logistic supplies & test equipment to ST sites	OPS12	
6.	Provide draft MOD NOTES to ST sites	OPS12	
7.	Install PPI test units at ST sites	OPS12	
2.2 ST Activities			
1.	Verify start date for ST	OPS22	
2.	Complete ST data collection & analysis	OPS24	
3.	Verify completion date for ST	OPS22	
4.	Provide ST report to ACCB	OPS24	
2.3 Pre-Operational Acceptance Test (OAT) Activities			
1.	Submit RC to ACCB for OAT	OST1	
2.	OAT management decision by ACCB/APMC	OST1/ OPS2	
3.	Prepare OAT plan	OPS24	
4.	Determine OAT locations and schedule	OPS24	
5.	Initiate procurement/delivery of OAT units	OST1	
6.	Coordinate OAT logistics support	OPS12	

7.	Coordinate OAT maintenance support	OPS12	
8a.	OAT Documentation: Deliver MOD NOTES to OAT sites	OPS12	
8b.	OAT Documentation: Deliver OAT procedures to OAT sites	OPS24	
8c.	OAT Documentation: Deliver draft Release Notes to OAT sites	OPS22	
2.4 OAT Activities			
1.	Verify start date for OAT	OPS22	
2.	Complete OAT data collection and analysis	OPS24	
3.	Verify efficacy of draft OI plan	OPS24	
4.	Verify Completion date for OAT	OPS22	
5.	Provide OAT Report to ACCB	OPS24	
3.1 Pre- Operational Implementation (OI) Planning Activities			
1.	Prepare RC for OI	OST1	
2.	Production and acquisition management decision by APMC	OPS2	
3.	Prepare OI plan	OPS22	
4.	Identify OI locations	OPS22	
5.	Develop OI draw rate/installation sequence strategy	OPS22	
3.2 Pre-OI Logistic Support Activities			
1.	Initiate procurement/delivery of OI production units to NLSC	OPS11	
2.	Initiate logistic support process for OI production units	OPS12	
3.	Coordinate installation & maintenance of OI production units	OPS12	
3.3 Pre-OI Configuration Management Activities			
2.	Perform Functional Configuration Audit	OPS13	
3.	Perform Physical Configuration Audit	OPS13	
3.4 Pre-OI Operational Support Activities			
1a.	Provide MOD NOTES to WFOs	OPS12	
1b.	Provide Release Notes to WFOs	OPS22	
1c.	Provide updates of appropriate NDS chapters to WFOs	OS7	

1d.	Provide updates of ASOS Users' Guide and other appropriate user information materials to WFOs, FAA, DOD	OPS22	NA
2a.	Provide maintenance training materials to WFOs	OPS22	NA
2b.	Provide observer training materials	FAA ATP- 310	NA
2c.	Conduct local operator/maintenance training	WFOs	
3.	Provide pre-implementation user notification	OPS22	
4.	Verify completion of all pre-OI activities	OPS22	
4.1 Implementation Management Activities			
1.	Implementation Management Decision	OST1	
4.2 Acquisition Activities			
1.	Verify start date for Operational Implementation (OI)	OPS22	
2.	Monitor & validate delivery of all production units to NLSC	OPS11	
3.	Stock production units and spare kits at NLSC	OPS14	
4.4 OI Monitoring & Coordination Activities			
2.a	Begin routine maintenance monitoring	AOMC	
3.a	Begin monitoring and reporting implementation status for all sites	AOMC	
3.b	Begin monitoring implementation status reports and initiate coordination	OPS22	
4.	Issue post-implementation notification to affected users	OPS22	

**ASOS Planned Product Improvement
Operational Implementation (OI) Check List - Part B**

Planned Product Improvement: _____

Location (SID, Name, State): _____

Office completing this check list: _____ **Date:** _____

Item #	Item Description	OPR	Validation Date
4.2 Acquisition Activities			
4.	Requisition PPI production units and kits from NLSC as needed	WFO	
4.3 OI Installation Activities			
1.	Download files for NCDC archive	WFO	
2.	Perform installation & checkout in accordance with MOD NOTE	WFO	
4.4 OI Monitoring & Coordination Activities			
1.	Installation Notification	WFO	
2.b	Begin 30-day monitoring & coordination	WFO	
2.c	Begin 30-day monitoring & coordination	RFP	
2.d	Begin 30-day monitoring & coordination	AOMC	
5.0 Post OI Activities			
1.	Operational Quality Control: Monitor ongoing meteorological performance	WFO	
2a.	Ensure system changes are documented through EMRS	WFO	
2b.	Ensure new EMRS data are documented in the CMIS	OPS13	
2c.	Ensure CMIS documentation changes are entered into MIRS	OPS22	
3.	Dispose of old equipment in accordance with Mod Note	WFO	
4.	Conduct climate continuity study at selected locations (Begin 1-2 year study)	OS7	

APPENDIX II

ASOS Implementation Data Base Reports

For

New (Name of Product Improvement)

- OAT Sites
- ASOS Site Configuration Data Base
- ASOS Site Implementation Status Data Base
- ASOS Sensor Firmware Version Report
- ASOS Implementation Status Report

OAT Sites for (Name of Product Improvement)

Example of description: These are the WFOs responsible for the (name of product improvement) OAT sites.

OAT Site	Responsible WFO
1V4 St. Johnsbury, VT	Burlington, VT
CLE Cleveland, OH	Cleveland, OH
DCA Washington, DC	Sterling, VA
GFL Glens Falls, NY	Albany, NY
GSP Greer, SC	Greer, SC
PWM Portland, ME	Gray, ME
BIS Bismarck, ND	Bismarck, ND
CNK Concordia, KS	Topeka, KS
CYS Cheyenne, WY	Cheyenne, WY
MDW Chicago, IL	Romeoville, IL
ATT Austin, TX	New Braunfels, TX
BNA Nashville, TN	Old Hickory, TN
BVE Boothville, LA	Slidell, LA
CSM Clinton, OK	Norman, OK
DFW Dallas-Ft. Worth, TX	Fort Worth, TX
GDP Guadalupe Pass, TX	Midland, TX
GUY Guymon, OK	Amarillo, TX
MEM Memphis, TN	Memphis, TN
MIA Miami, FL	Miami, FL
MOB Mobile, AL	Mobile, AL
VRB Vero Beach, FL	Melbourne, FL
AST Astoria, OR	Portland, OR
BOI Boise, ID	Boise, ID
CZZ Campo, CA	San Diego, CA
PHX Phoenix, AZ	Phoenix, AZ
SFO San Francisco, CA	Monterey, CA
SLC Salt Lake City, UT	Salt Lake City, UT
SNT Stanley, ID	Pocatello, ID
PABR Barrow, AK	Barrow, AK
PAFA Fairbanks, AK	Fairbanks, AK
PHTO Hilo, HI	Hilo, HI

ASOS SENSOR FIRMWARE VERSION REPORT

DATE: 11-06-02

SID	CEIL	VIS	TA TD	PWX	WND	PRESS	PZRA	SNOW	HAIL	SUN	L PRECIP	TSTM
12N	0000.00	0000.00	2.46	0000.00	4.0	N/A	0000.00	SD		SS	N/A	0000.00
1V4	0000.00	0000.00	A92/F91	0000.00	4.0		0000.00	SD		SS		0000.00
2WX	0000.00	0000.00	B91/F91	0000.00	4.0	N/A	0000.00	SD		SS	N/A	0000.00
40J	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
6R6	0000.00	0000.00	A92/F91	0000.00	4.00	N/A	0000.00	SD		SS	N/A	0000.00
79J	0002.46	0039.00	A92/F91	0003.64	0004.00	0000.00	0002.00	SD		SS	0000.00	0001.06
87Q	0000.00	0000.00	B91AF91	0000.00	4.0	N/A	0000.00	SD		SS	N/A	0000.00
8D3	0000.00	0000.00	A92/F91	0000.00	4.0	N/A	0000.00	SD		SS	N/A	0000.00
9V9	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
AAF	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
AAO	0002.46	0040.00	A92/F91	0003.64	0004.00	0000.00	0002.00	SD		SS	0000.00	0000.00
AAT	2.46"	039"	A92/F91	3.64"	4.0"	N/A"	"	"	"	"	N/A"	"
ABE	2.46"	040"	A92/F91	3.64	4.0	N/A	0000.00	SD		SS	N/A	0000.00
ABI	2.46	039	B91/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
ABQ	2.46.00	0040.00	B91/F91	0003.64	004.00	0000.00	0000.00	SD		SS	0000.00	0000.00
ABR	2.46	039	B91/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
ABY	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
ACK	2.46"	040	A92/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
ACT	2.46	039	A92/F91	3.64	40	N/A	0000.00	SD		SS	N/A	0000.00
ACV	2.46	039	B91/F91	3.64	4.0	N/A	0000.00	SD		SS	N/A	0000.00
ACY	2.46	040	A92/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
ADG	2.46	040	A92/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
ADQ	2.46	039	A92/F91	3.64	4.00	N/A	2	SD		SS	N/A	0000.00
AEX	K.46	040"	A9K/F91	3.64	4.0	N/A	3	SD		SS	N/A	0000.00
AFAC1	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
AFN	2.46	040	A92/F91	3.64	4.00	N/A	2	SD		SS	N/A	0000.00
AFW	2.46	040	B91AF91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
AGC	2.46	040	A92/F91	3.64	4.0	N/A	0000.00	SD		SS	N/A	0000.00
AGS	2.46	040	A92/F91	3.64	4.0	N/A	2	SD		SS	N/A	0000.00
AHN	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	0000.00	SD		SS	0000.00	0000.00
DAB	2.46	040	A92/F91	3.64	4.00	0000.00	0000.00	SD		SS	0000.00	0000.00

ASOS Count: 887

ASOS PORT CONFIGURATION REPORT

DATE: 11-06-02

SID	PORT NUM	FUNCTION	STATUS	BAUD RATE	PARITY	BITS	STOP BITS	HANDSHAKE	CONNECTION	MODEM SLOT	DIAL TYPE
XNA	2-1	ACU-DCP A	Enabled	2400	NONE	8	1	RTS/CTS	Radio		
XNA	2-2	Pressure 1	Enabled	2400	NONE	8	1	None	Hard-Wire		
XNA	2-3	OID-4 User 1	Enabled	2400	NONE	8	1	None	Phone	4	Tone
XNA	2-4	VOICE	Enabled	9600	NONE	8	1	None	Hard-Wire		
XNA	3-1	ACU-DCP B	Enabled	2400	NONE	8	1	RTS/CTS	Radio		
XNA	3-2	Pressure 2	Enabled	2400	NONE	8	1	None	Hard-Wire		
XNA	3-3	OID-5 User 2	Enabled	38400	NONE	8	1	None	Phone	5	Tone
XNA	3-4	OID-1 Local	Enabled	9600	NONE	8	1	None	Hard-Wire		
XNA	4-1	UPS	Enabled	9600	NONE	8	1	None	Hard-Wire		
XNA	4-2	Pressure 3	Enabled	2400	NONE	8	1	None	Hard-Wire		
XNA	4-3	GTA Radio	Enabled	1200	NONE	8	1	None	Hard-Wire		
XNA	4-4	OID-2 Secondary	Enabled	9600	NONE	8	1	None	Hard-Wire		
XNA	5-1	ADAS	Enabled	2400	NONE	8	1	Synchronous	Hard-Wire		
YIP	1-3	RVR	Disabled	2400	EVEN	7	1	None	Hard-Wire		
YIP	2-1	ACU-DCP A	Enabled	2400	NONE	8	1	RTS/CTS	Radio		
YIP	2-2	Pressure 1	Enabled	2400	NONE	8	1	None	Hard-Wire		
YIP	2-3	OID-4 User 1	Enabled	2400	NONE	8	1	None	Phone	4	Tone
YIP	2-4	VOICE	Enabled	9600	NONE	8	1	None	Hard-Wire		
YIP	3-1	ACU-DCP B	Enabled	2400	NONE	8	1	RTS/CTS	Radio		
YIP	3-2	Pressure 2	Enabled	2400	NONE	8	1	None	Hard-Wire		
YIP	3-3	OID-5 User 2	Enabled	38400	NONE	8	1	None	Phone	5	Tone
YIP	3-4	OID-2 Secondary	Enabled	9600	NONE	8	1	None	Hard-Wire		
YIP	4-1	UPS	Enabled	9600	NONE	8	1	None	Hard-Wire		
YIP	4-2	Pressure 3	Enabled	2400	NONE	8	1	None	Hard-Wire		
YIP	4-3	CVD-1	Enabled	1200	NONE	8	1	None	Leased	6	Tone
YIP	4-4	OID-1 Local	Enabled	2400	NONE	8	1	None	Leased	2	Tone
YIP	5-1	Printer	Enabled	9600	NONE	8	1	XON/XOFF	Leased	1	Tone
YIP	5-3	ADAS	Enabled	2400	NONE	8	1	Synchronous	Hard-Wire		

ASOS Count: 976

Date: 11/27/02		ASOS Implementation Status Report																	
AOMC Update 136																DTS1	IFW	AWPAG	ALDARS
SID	City	ST	Region	Agency	Svr Lv	Processor	Installation	Previous ACU S/W	Previous Installed	ACU S/W	S/W Installed	Ta Sensor	Td Sensor	Installation	Installation	Installation	Turn-On		
12N	Andover	NJ	E	NWS	C	Synergy	10/01/02	2.6		2.6A-3	10/01/02	H083	H083						
1V4	St. Johnsbury	VT	E	NWS	C	Synergy	09/28/01	2.6		2.6A-3	05/10/02	1088	1088						
2WX	Buffalo	SD	C	NWS	C	Xycom		2.6A-3	09/27/02	2.6	10/02/02	HO83	HO83						
6R6	Dryden	TX	S	NWS	C	Synergy	10/03/02	2.6		2.6A-3	10/03/02	1088	1088						
AAF	Apalachicola	FL	S	NWS	D	Xycom				2.6		1088	1088						
AAT	Alturas	CA	W	NWS	D	Xycom				2.6		1088	1088						
ABE	Allentown	PA	E	NWS	C	Xycom		2.62l	12/19/01	2.6	06/03/02	1088	1088						
ALB	Albany	NY	E	NWS	A	Xycom		2.6		2.63	03/28/02	1088	1088						
ARR	Chicago - Aurora	IL	C	FAA	C	Xycom				2.6		1088	1088				3/19/01 A		
ASD	Slidell	LA	S	FAA	D	Synergy	01/29/02	2.6		2.6A-3	05/16/02	1088	1088				5/11/00 A		
ATT	Austin (Camp Mabry)	TX	S	NWS	C	Synergy	08/12/02	2.6A-5	08/13/02	2.7A-3	11/20/02	1088	DTS1						
AUS	Austin (Bergstrom)	TX	S	FAA	C	Xycom		2.6		2.63	04/01/02	1088	1088				5/10/00 A		
AVL	Asheville	NC	E	NWS	C	Xycom		2.6		2.62l	12/19/01	1088	1088				8/01/01 A		
BDL	Windsor Locks	CT	E	NWS	A	Xycom				2.63	08/27/02	1088	1088						
BFF	Scottsbluff Heilig	NE	C	NWS	D	Xycom				2.6		1088	1088						
BGM	Binghamton	NY	E	NWS	C	Xycom		2.6		2.62l	12/12/01	HO83	HO83				10/01/02 A		
BHM	Birmingham	AL	S	FAA	B	Xycom		2.6		2.63	04/16/02	1088	1088						
BIS	Bismark	ND	C	NWS	C	Synergy	01/22/02	2.6		2.6A-5	08/09/02	H083	DTS1				10/01/02 A		
BLU	Blue Canyon	CA	W	NWS	D	Synergy	10/04/02	2.7A-1	10/04/02	2.7A-3	11/19/02	1088	1088		10/30/02				
BNA	Nashville	TN	S	NWS	A	Synergy	03/27/02	2.6		2.6A-3	03/27/02	1088	1088						
BOI	Boise	ID	W	NWS	C	Synergy	01/23/02	2.6		2.6A-5	08/12/02	1088	DTS1						
BRW	Barrow	AK	A	NWS	D	Xycom				2.6		1088	1088						
BTV	Burlington	VT	E	NWS	B	Synergy	09/03/02	2.7A-1	09/03/02	2.7A-3	11/19/02	1088	1088		09/13/02				
BUF	Buffalo	NY	E	NWS	A	Xycom		2.6		2.63	09/06/02	H083	H083						
BVE	Boothville	LA	S	NWS	C	Synergy	09/24/01	2.6V	09/24/01	2.6A-5	08/28/02	1088	1088						
CAK	Akron	OH	E	NWS	A	Xycom		2.6		2.62l	12/13/01	1088	1088						
CAC	Clayton	NM	S	NWS	D	Xycom				2.6		1088	1088						
CAR	Caribou	ME	E	NWS	D	Synergy	09/12/02	2.6		2.7A-1	09/12/02	1088	1088		09/26/02				
CDJ	Chillicothe	MO	C	NWS	C	Synergy	06/27/02	2.6		2.6A-3	06/27/02	1088	DTS1						
CHA	Chattanooga	TN	S	NWS	B	Xycom		2.6		2.62l	12/19/01	1088	1088						
CID	Cedar Rapids	IA	C	FAA	C	Xycom		2.6		2.63	03/21/02	HO83	HO83				03/08/01 A		
CLE	Cleveland	OH	E	NWS	A	Synergy	05/15/02	2.6A-3	05/15/01	2.7A-3	11/13/02	1088	1088						
CMX	Hancock	MI	C	FAA	D	Synergy	11/26/02	2.6		2.7A-3	11/26/02	1088	1088				10/14/99 A		
CNK	Concordia	KS	C	NWS	D	Synergy	09/12/02	2.7A-2	10/15/02	2.7A-3	11/07/02	1088	DTS1						
CSM	Clinton	OK	S	FAA	C	Xycom		2.6A-5	08/14/02	2.6	05/28/02	1088	1088				3/09/00 A		
CUT	Custer	SD	C	NWS	D	Xycom				2.6		1088	1088						
CYS	Cheyenne	WY	C	NWS	C	Synergy	01/22/02	2.6A-3	04/12/02	2.6	08/21/02	1088	1088				11/01/02 A		
CZZ	Campco	CA	W	NWS	C	Synergy	02/20/02	2.6		2.6A-3	05/24/02	1088	DTS1						
DFW	Dallas / Ft Worth	TX	S	NWS	A	Synergy	09/05/02	2.6		2.6A-3	09/05/02	H083	H083						
DMH	Baltimore	MD	E	NWS	C	Synergy	12/20/01	2.6		2.6A-3	07/02/02	1088	DTS1						
DSM	Des Moines	IA	C	NWS	A	Xycom		2.6		2.63	09/11/02	1088	1088						
ELP	El Paso	TX	S	NWS	B	Xycom		2.6		2.63	04/04/02	1088	1088						
ER	Erie	PA	E	NWS	C	Xycom		2.6		2.62l	12/12/01	1088	1088				10/01/01 A		
EYE	Indianapolis	IN	C	FAA	D	Synergy	01/22/02	2.6		2.6A-5	08/09/02	1088	1088						

APPENDIX III

Description Of Product Improvements

Addendum I

ASOS Processor Board

The Automated Surface Observing System (ASOS) processor upgrade consists of a new single Processor Board with expanded memory and processing capability to handle new high performance sensors with higher speed, greater reliability, and communication enhancements. These improvements are necessary to keep pace with the expanding demands placed on the ASOS for timely, accurate delivery of more observation parameters to more external users in real time. The existing Processor Board is based on a design over 10 years old. It cannot handle the expanded demands for data processing of new sensors, and dissemination of a myriad of data to more operational users in real time. The new Processor Board will serve as the launch platform for a host of new software and sensor applications. As part of the NWS modernization effort, key bottlenecks in the ASOS hardware platform are being upgraded. In particular, the Central Processing Unit (CPU) board is being upgraded from a 68010 at 10 MHz to the PowerPC at 300 MHz, the Random Access Memory (RAM) is enhanced, Flash memory is being added, and the underlying kernel is being upgraded to include support for Transmission Control Protocol/ Internet Protocol (TCP/IP) connectivity.

Addendum II

ASOS Dew Point Sensor

The Automated Surface Observing Systems (ASOS) are equipped with a Technical Services Laboratory (TSL) hygrothermometer (either Model 1063 or Model 1088) for the measurement of temperature and dew point. For measurement of dew point, the TSL 1063/1088 sensors use chilled mirror technology and, in order to maintain satisfactory dew point

measurement performance, an Electronics Technician (ET) must visit the site and clean the mirrors much more frequently than the normal 90-day maintenance interval prescribed for other ASOS components. For this reason, the NWS ASOS Planned Product Improvement (PPI) Program has identified an alternate technology replacement Dew Point Temperature Sensor, the Vaisala Model DTS1 (DTS1) which, in testing to date, has satisfied all ASOS DTS1 range/accuracy requirements and is expected to extend the periodic



maintenance intervals to 90 days or more. Since the DTS1 measures only dew point temperature, the TSL 1063/1088 will remain installed on ASOS to provide the site's operational temperature data while the DTS1 will provide the operational dew point data. The DTS1 can only be installed at sites equipped with the new ASOS Processor Board upgrade and the software load to accommodate the new Dew Point Sensor. The software load on the new Processor Board, version 2.6A, has been verified to successfully support the new Dew Point sensor.

Under NWS contract, Vaisala developed the DTS1 dew point temperature sensor to meet the requirements of NWS Specification H300-SP100. The DTS1 is based on an existing Vaisala commercial sensor (the HMP243), modified to meet the requirements of H300-SP100. During the DTS1 development, Vaisala redesigned critical components in the probe and interface electronics as a result of anticipated obsolescence issues with the HMP243. Revisions included a stainless steel, hermetically sealed probe; incorporation of the latest Humicap 180 RH sensor; and redesign of the probe interface electronics from a hybrid to a printed circuit board design. Prism Communications developed ACU software (V2.6A) for the upgraded ASOS processor to support the DTS1 interface. This software incorporates no other changes.

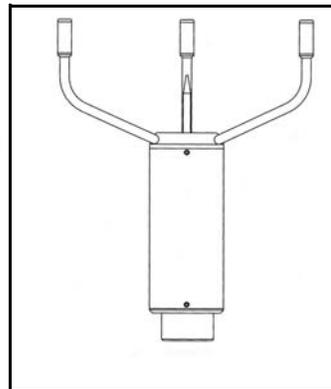
The Automated Surface Observing System (ASOS) processor upgrade consists of a new single Processor Board with expanded memory and processing capability to handle new high performance sensors with higher speed, greater reliability, and communication enhancements. These improvements are necessary to keep pace with the expanding demands placed on the ASOS for timely, accurate delivery of more observation parameters to more external users in real time. The existing Processor Board is based on a design over 10 years old. It cannot handle the expanded demands for data processing of new sensors, and dissemination of a myriad of data to more operational users in real time. The new Processor Board will serve as the launch platform for a host of

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Addendum III

ASOS Ice Free Wind Sensor

The program objective is to acquire a commercial off-the shelf (COTS) sensor that could be modified to meet NWS requirements. This instrument is to be “Ice-Free” and have no moving parts. After evaluating different technologies the ultrasonic wind sensors were chosen as the most promising technology. Evaluation of different COTS ultrasonic wind sensors resulted in the selection of the Handar Inc. Ice Free ultrasonic wind sensor. This COTS sensor was then modified in a development program to make it meet NWS requirements. During this time period, Handar Inc. was purchased by Vaisala Inc. The sensor is now referred to as the Vaisala 425NWS Ice Free Wind Sensor.



The Vaisala 425NWS Ice Free ultrasonic wind sensor is an array of three equally spaced transducers which radiate and receive ultrasonic pulses in a horizontal plane. The sensor measures transit times in both directions for each of the three transducer pairs. The wind speed and direction are then derived from these six transit time measurements.

The 425 NWS Ice Free Wind Sensor is capable of providing the WMO standard 3 second gust, whereas the existing cup anemometer provided a 5 second gust. This capability will improve responsiveness and more accurately reflect the gusts. the Vaisala 425NWS Ice Free ultrasonic wind sensor is also referred to as Ice Free Wind (IFW).



Addendum IV

ASOS All Weather Precipitation Accumulation Gauge



This is Ott's commercial off the shelf precipitation gauge, as tested by NWS last winter. The final AWPAG will be a modified version and may not be identical in appearance.

Addendum V

Enhanced Precipitation Identification Sensor

The current ASOS precipitation identifier sensor detects and reports rain, snow, and unidentified precipitation types. The enhanced precipitation identifier sensor must also be able to detect and report those precipitation types plus drizzle, ice pellets, and hail. The enhanced precipitation identifier must provide an update of precipitation type at least once each minute.

Addendum VI Ceilometer Replacement

The replacement ceilometer shall be designed to detect and report cloud base height over a range from 100 to at least 12,000 feet above ground level. Independent cloud hit data shall be obtained at least once every 30 seconds. Serial digital data shall be transmitted to the ASOS ACU for report processing.