ASOS Product Improvement Implementation Plan

(Addendum V)

For

Software Version 2.80

August 01, 2004 (as of 008/21/04)

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

Note: * These sensors are dependent on successful implementation of the new processor board

A series of implementation plans are needed for these improvements. This document describes the implementation plan for the ASOS Software Version 2.80 (V2.80). It describes the overall process and the factors which impact on the Operational Implementation (OI) of the new ASOS V2.80.

A check list is provided to aid in monitoring progress in completing the necessary activities for the OI. The check list ensures that prerequisite government conducted testing (System Test (ST) and Operational Acceptance Test (OAT)) activities 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 the executable functions and deliverables needed for the implementation of the new V2.80. Finally, any necessary post-OI activities are also covered.

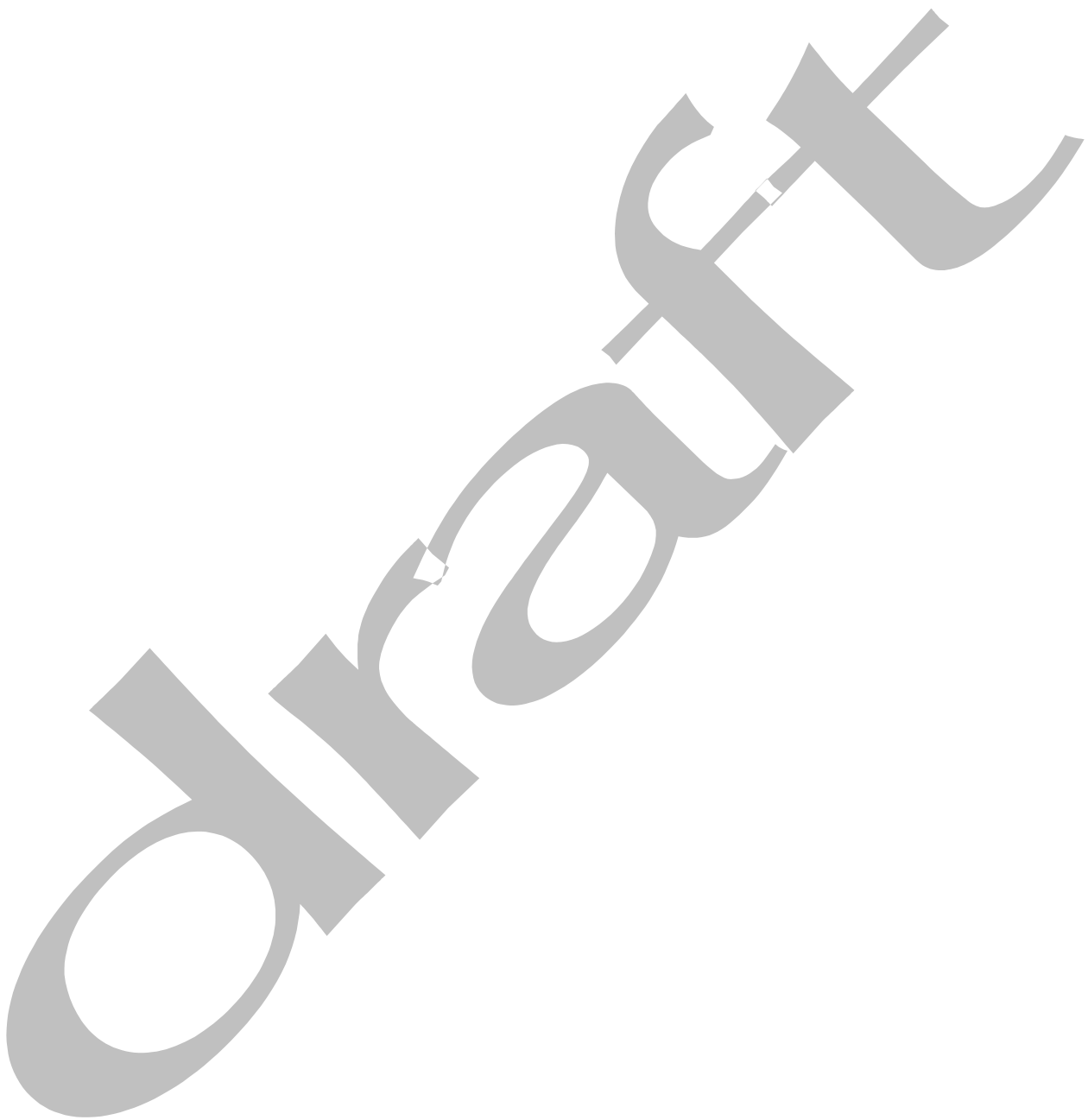
Although the activities described in this plan are written well in advance, this plan is written from the time perspective of imminent OI. It assumes all necessary activities prior to OI were or will have been completed and that OI activities are about to begin.

List of Organizational Codes

Code	NWS Organization
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)
OS12	Requirements and Change Management Branch
OS61	NWS Training Center (NWSTC)
OS7	Observing Services Division
OST11	Program Management Branch
OST32	SEC Development Branch

Code	FAA Organization
AUA-400	IPT* 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
AOS-700	Network Engineering Management Division
ARU-1	Air Traffic Systems Development Directorate
ARS-100	Aerospace Weather Policy Division
ARS-200	Aerospace Weather Standards Division
ATB-400	Surveillance IPT

*IPT = Integrated Product Team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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
ASWG	ASOS Software Working Group
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 NOTE	NWS Engineering Modification Note
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

NWSTC	NWS Training Center (OS61)
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
SEC	Systems Engineering Center
SHEF	Standard Hydrometeorological Exchange Format
SPECI	Selected Special Weather Report
ST	System Test
V2.80	Software Version 2.80
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

Since the development of software version 2.60 (V2.60), ASOS has benefitted from the development and implementation of the new single-board processor in the Acquisition Control Unit (ACU), as well as by the deployment of the following sensors: Dew Point Temperature (DTS1); Ice Free Wind (IFW); and the All Weather Precipitation Accumulation Gauge (AWPAG). The new processor board and sensors were supported by software version 2.7B (V2.7B) which was approved for national deployment. This version supports the DTS1, IFW, and AWPAG and features numerous software and processing algorithm improvements. Additional software improvements were added to software version 2.80 (V2.80) using version 2.79 (V2.79) as its baseline. V2.79 was developed as an interim software solution to implement high-priority capabilities and functions prior to V2.80.

At most sites, software version 2.80 (V2.80) will be the first software upgrade that will not require the installation of new hardware since V2.60. Version 2.80 will include improvements to: 1) encode the METAR / SPECI reports in better accordance with the FMH-1; 2) enable the observer to transmit a special anytime; 3) provide observers the capability to report more varied sky conditions; 4) improve quality control logic for wind, present weather, and precipitation accumulation; 5) enable communications with the FAA Weather Systems Processor, and; 6) display weather data and products in a more user-friendly manner. See Appendix I for a detailed description of V2.80 software algorithms.

************TO BE PROVIDED BY OS7*************

The V2.80 can only be installed at sites equipped with the ASOS PPI processor upgrade. The processor upgrade incorporates numerous approved software enhancements and provides the increased processing capability needed to support the ASOS PPI components:

- **o** replacement dew point sensor (the DTS1),
- **o** ice free wind sensor (the Model 425),
- **o** AWPAG,
- **o** enhanced precipitation identifier, and
- **o** ceilometer replacement

1.2 Purpose

The purpose of this document is to provide a clear strategy for the implementation of V2.80 and to minimize 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 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). The implementation strategy calls for no special trip to a site to install and implement V2.80, instead installation supplies will be provided in advance to field technicians and installation/implementation accomplished, as opportunity permits, concurrent with other scheduled or event driven maintenance visits.

This plan applies to 885 locations including all 313 NWS sponsored ASOS locations and all 572 FAA sponsored ASOS locations. The implementation of V2.80 falls within the overall goal of modernizing the ASOS network. This implementation is phase V of this modernization. Consequently, this implementation plan is labeled Addendum V.

1.4 Applicable Documents

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

- Approved Request For Change (RC) for V2.80 deployment
- ASOS Engineering Modification Note (MOD NOTE) # 80 for V2.80
- ASOS Release Note for V2.80
- Operational Acceptance Test Plan

2.0 TEST ACTIVITIES

The V2.80 must undergo successful government testing before Operational Implementation (OI). This chapter provides a brief overview of the prerequisite test activities leading to 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 System Test (ST) activities and Operational Acceptance Test (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 manager decision based on the formal test report and recommendation of a Test Review Group (TRG). The second key decision point is full, or series of partial deployment decisions. A recommendation for this decision is made by the program manager in consultation with the Test Review Board (TRB) consisting of other managers. This recommendation is based on support and advice provided by the TRG. The decision to deploy is made at a formal Deployment Readiness Review (DRR). The DRR team consists of three office directors and selected division chiefs. The decision to deploy is based on successful completion of the OAT.

2.1 Pre-System Test (ST) Activities

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:

A. **Prepare Request For Change (RC):** Prior to successful completion of the factory System Integration / Qualification Tests, the Director, Observing Services Division (OS7), serving as Chair of the ASOS Software Working Group (ASWG) will have submitted a Request For Change (RC) for ST activities, through the Change Management process prior to start of the ST. The ASOS Program Management Committee (APMC) is the approving management authority for this process. The approved RC is the formal authorization to begin the ST.

B. **Prepare ST Plan:** 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 and a draft outline of the ST report. A TRG was formed to adjudicate and classify all Test Trouble Reports (TTR) documented during the ST.

C. **ST Locations and Dates:** ST locations, schedules, and test procedures are determined and managed by OPS24.

D. **Acquisition of ST Units:** Upon successful completion of factory System Integration / Qualification Tests, OS7 will initiate through OPS23 (acting as the COTR) procurement of the

V2.80 PPI components consisting of CDs with new software load. OS7 with OPS23's support will verify V2.80 PPI components perform correctly prior to delivery of these components to the designated ST locations.

E. **ST Logistic Support:** V2.80 components will be made available to ST locations by OPS23.

F. **Install PPI Test Units at ST Sites:** Installation and maintenance of ST V2.80 components will be coordinated by OPS23.

2.2 System Test Activities

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:

A. **Verify Start of ST:** OPS24 will report the start of the ST.

B. **Data Collection and Analysis:** 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.

C. **Verify Completion of the ST:** 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).

D. **ST Report:** 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 Chair, ASWG reviewed the recommendation and made the decision weather to proceed to OAT.

2.3 Pre-Operational Acceptance Test (OAT) Activities

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 V2.80 under field conditions, ensure there are no adverse systemic effects as a result of integration of the new V2.80 with the ASOS, and verify the viability of NWS Engineering Modification Note (MOD NOTE) and Release Note (REL NOTE). 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:

A. **RC for OAT:** Upon receipt of the preliminary ST report and a recommendation from OPS24

to proceed with the OAT, the Chair, ASWG initiated action to prepare and submit an RC for the OAT. This RC lists all locations included in the OAT. The ASWG adjudicates an RC if the incremental cost for the RC is less than $1 million; the APMC adjudicates the RC if the incremental cost for the RC is $1 million or more. In the case of the V2.80, the incremental cost for the OAT is less than $1M and therefore the ASWG will adjudicate this RC.

B. **OAT Management Decision:** Upon formal approval of the RC, and TRG concurrence with the final ST report and recommendation, the Chair, ASWG will instruct OPS24 to proceed with 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. This decision is made by the Chair, ASWG.

C. **Prepare OAT plan:** 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.

D. **OAT Locations and Schedule:** The **XX** OAT locations were determined by OPS24 in coordination with OPS22, the Observing Services Division (OS7), and NWS regions. The sites selected for the OAT were chosen to ensure a representative sample of operational locations are evaluated.

E. **Acquisition of OAT Units:** Upon notification by OS7 to initiate acquisition of the OAT PPI components, OPS23 (acting as the COTR) will have acquired the OAT PPI components and coordinated with OPS24 and NWS regions the locations where the PPI components will be delivered prior to the start of the OAT.

F. **OAT Logistic Support:** OPS12 ensured NWS logistics support is in place prior to the start of the OAT. This includes all necessary V2.80 components, maintenance components, supplies, spare parts, and test equipment were delivered to the designated OAT locations and installed. OPS12 will also coordinate the assignment of test equipment part numbers and reference designators with the Configuration Branch (OPS13) and the Logistics Branch (OPS14). This ensures the OAT measures the effectiveness of the support and provides OPS14 information on failures during this period.

G. **OAT Maintenance Coordination Support:** OPS12 coordinated plans for installation and maintenance of the V2.80 with NWS regions, and the ET responsible for each OAT site prior to start of the OAT.

H. **Prepare & Provide Modification Notes (MOD NOTES):** Draft MOD NOTES will be produced by OPS12 and provided to installation technicians prior to start of installation at the OAT site(s).

I. **OAT Documentation Support:** All necessary documentation was delivered to NWS regions

and the test sites prior to start of the OAT. OAT Documentation includes: MOD NOTE produced by OPS12, OAT procedures produced by OPS24, and draft REL NOTE and draft V2.80 implementation Plan produced by OPS22.

2.4 Operational Acceptance Test Activities

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. The threshold criteria for transitioning from one OAT phase to another phase are established by the TRG and coordinated by OPS24 with and other responsible offices via e-mail correspondence. 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 include:

A. **Verify Start of OAT:** 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.

B. **Data Collection and Analysis:** 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 NWS Engineering Management Reporting System (EMRS). The TRG will review and reconcile all TTRs. This process is managed by OPS24.

C. **Verify Draft Operational Implementation Plan (OIP):** A key element of the OAT is the verification of the implementation procedures in the draft OIP. To the extent possible, 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.

D. **Verify Completion of OAT:** 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 V2.80.

E. **OAT Report:** Upon successful completion of either the full, or partial phased group OAT an OAT report will be provided by OPS24 to the Chair, ASWG.

3.0 PRE-OPERATIONAL IMPLEMENTATION (OI) ACTIVITIES

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, configuration management, and operational support. They are accomplished in parallel and are completed by the start of the OI which occurs when the V2.80 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 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. These planning/decision activities include:

A. **Prepare OI Plan:** 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 V2.80. It defines all activities for successful completion of the V2.80 OI and, as such, is labeled as Addendum V to the overall OIP.

B. **RC for OI:** Concurrent with preparation of the preliminary OAT report and a recommendation from OPS24 to proceed with the OI, the Chair, ASWG (OS7) will initiate action to prepare and submit an RC for the OI. This RC lists all locations included in the OI, contains cost and schedule information. The ASWG will consider the preliminary OAT report and recommendation in their deliberations and voting on the RC.

C. **Full Scale Production and Acquisition Management Decision**: If the RC is not approved by the ASWG, it will be referred back to the submitter for rectification and resubmission in accordance with established ASWG procedures. Upon ASWG approval of the RC for the OI, the Chair, ASWG will endorse the RC and recommend to the ASOS Program Management Committee (APMC) approval of the RC. The Chair of the APMC, OPS2 will coordinate the APMC management decision making process. Upon receiving the APMC management decision approving V2.80 operational procurement, The Chair, ASWG will notify the ASOS

Software Development Contracting Officer's Technical Representative (COTR), OPS23, to procure the planned quantity of V2.80 CD components necessary for the OI. This notification may be made before the final OAT report provided the preliminary OAT report is favorable, however the 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 The Chair, ASWG will suspend procurement activity until the critical issue(s) cited in the report is/(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.

D. OI Deployment Decision: Upon successful completion of either the full, or partial phased group OAT, receipt of the OAT report from OPS24, and receipt of the appropriate ASWG/APMC management approval for full scale production and acquisition, the Chair, ASWG 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. The DRR decision team will consist of managers from various Weather Service Headquarters offices and will specifically be identified by the Chair, ASWG. A "Go" deployment decision will be announced by the Chair, ASWG to all concerned parties. This will allow other ongoing deployment planning and execution activities to continue to completion for the designated batch of sites.

E. Identify OI Installation Locations: The Chair, ASWG 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 all 313 NWS ASOS locations. And all 572 FAA sponsored ASOS locations. These locations are identified in Appendix II.

F. Develop OI Strategy: A key element of the OIP is the implementation strategy. The V2.80 software and associated Mod Note # 80 will be burned on t a CD-R disc. The disc and associated cable(s) will be bundled into an installation kit and stocked at NLSC for field requisition. A similar spares kit will also be provided as initial issue to field technicians. The basic elements of the implementation strategy are described below.

1. Initial Issue Rate Strategy: Initially, OPS12 will issue the first V2.80 kits to each Weather Forecast Office (WFO). This kit will contain a CD-R disc with V2.80 and the MOD NOTE instructions installation.

2. Installation Sequence Strategy: The initial kit acquired by each WFO may be implemented with consideration of the following criteria:

A. The V2.80 suite is divided into 3 development priority groups. The components in group 1 will be factory tested before to adding components from group 2 to the V2.80 suite. This combined group (components 1,2) will be factory tested before adding the components from group 3 to the V2.80 suite for factory testing. The ST and OAT may or may not run in parallel with factory testing.

Consequently, the OI may be conducted in either a single phase (complete suite of components, group 1,2,3) or a multiple phase mode (group 1, then combined group1,2, then combined group 1,2,3). 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 for the full compliment of components (group 1,2,3). The successful completion of the OI for one group does not preclude the start of the OI for another group.

B. The first group of sites to be implemented are those **XX** sites included in the OAT for the V2.80. These sites are operationally implemented at the successful conclusion of the OAT process and affirmative DRR decision. See Appendix II for list of these sites.

C. The composition of the sites within in subsequent groups is decided by the Chair, ASWG in coordination with headquarters regional offices. Generally, 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. Additional scheduling preference should be given to V2.80 installation at cold weather sites over warm weather sites to benefit from new ice accretion algorithms.. No special trip is necessary when installing the new V2.80. The V2.80 should be installed when a preventative or corrective maintenance is otherwise initiated.

D. The implementation of the V2.80 load will occur over a 13 month period, depending on available funds. OPS22 will manage and post schedule changes to the ASOS Implementation data base and make this information available to regional and headquarters offices. OPS22 will also coordinate completion of Implementation check list items.

3.2 Logistic Support Activities

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:

A. Procurement: Full production and procurement of the V2.80, associated equipment, and their delivery to NLSC will be managed by OPS23. This function includes serving as the COTR. Upon notification of formal approval of the full production contract award via the RC/Change Management process, OPS23 will coordinate the issuance of the production contract with the Contracting Officer (CO). The deliverables will include a CD-R disc with V2.80 and MOD NOTE # 80, and associated cable(s). Sufficient quantities of the deliverables will be procured

to support required stocking at NLSC for installation kits and spare kits. A production rate and procurement schedule will be established by OPS23 at time of contract award. Current plans are to procure the V2.80 for all 313 NWS and 572 FAA sponsored ASOS locations.

B. **Supply Support Strategy:** All procured full production V2.80 kits will be entered into the supply channel through the NLSC. OPS14 will establish a national stock number for the V2.80 kit. The MOD NOTE for this installation issued by OPS12 will inform field technicians how to order this kit. OPS12 will ensure spares needed to support fielded systems are in stock at NLSC.

C. **Installation and Maintenance Coordination:** OPS12 will coordinate all activities for installation and maintenance of operational V2.80 at designated locations in consonance with the planned OI installation sequence. These activities include scheduling for technician installation and check-out of the V2.80, 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.

3.3 Configuration Management Activities

This section describes CM activities for the V2.80 during the pre- and post-OI period. The CM activities insure technical details and funding commitments are properly coordinated with affected organizations. CM activities also insure the V2.80 functional and physical characteristics are properly identified and documented. All changes to the V2.80 and related equipment are documented in NWS Configuration Management baseline via EMRS. NWS Requirements and Change Management Branch (OS12) coordinates the review and approval of the Request for Change to formally authorize the development and implementation of the new technology. NWS Configuration Branch (OPS13) updates configuration management baselines and performs periodic audits to insure the V2.80 still conforms to its specifications, interface control documents, etc.

A. **Audits:** Audits will be accomplished to verify the final tested and accepted configuration of the V2.80 meets all of its approved requirements.

B. **Functional Configuration Audit:** The Functional Configuration Audit (FCA) will be performed on the production unit and should be one of the units produced for 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.

C. **Physical Configuration Audit:** Not required for V2.80

D. **Configuration Status Accounting:** Configuration Status Accounting (CSA) tracks the

installation of the V2.80 at the individual ASOS sites. The current status of MOD NOTE 80 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 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:

A. **Documentation:** The following documentation will be provided to the implementation and operational personnel at the responsible WFO prior to OI of a given site:

1. 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 V2.80 in the WFO's area of responsibility.

2. Operational Release Notes will be provided by OPS22 to NWS ASOS Regional Focal Point (RFP) for distribution to affected WFOs prior to the start of the scheduled OI of the first V2.80 in their region. These release notes will also be distributed by OPS22 to designated FAA focal points and made available (as appropriate) to DOD offices for distribution to their affected facilities.

3. 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.

4. 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 key focal points in affected agencies prior to OI. Currently no updates are planned.

5. OPS22 will post the Final V2.80 Implementation Plan on the Surface Observation Program Web site: http:///www.nws.noaa.gov/ops2/Surface/index.htm

B. **Training:** In the case of the V2.80, there are numerous functional changes in operational algorithms. These changes need to be understood to properly diagnose and fix a malfunction. Therefore maintenance training is required. OPS12 will provide maintenance procedures documentation and guidance in V2.80 MOD NOTE # 80. The NWS Training Center (NWSTC), W/OS61, will incorporate this material, as appropriate, in maintenance training classes, and distant learning modules provided by NWSTC.

C. Pre-Implementation User Notification: 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 may 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. OS7 will issue a general notice prior to start of operational implementation (see example below). This notice will be used as a template for follow-on notices issued by each WFO. Each WFO will issue a Public Notification Statement (PNS) describing the change and its impact to all affected users on a case-by-case basis until all scheduled sites in their area of responsibility have been implemented. The PNS for each site should be issued 48-72 hours prior to implementation. OPS22 will coordinate with various organizations to ensure these notifications are disseminated. The following template should be modified as appropriate and used for this PNS:

[TO BE UPDATED BY OS7]

NOUS4 KWBC XXXXXX
PNSWSH

PUBLIC INFORMATION STATEMENT...TECHNICAL IMPLEMENTATION NOTICE 03-XX
NATIONAL WEATHER SERVICE HEADQUARTERS WASHINGTON DC
HMM EDT DAY MON DD 2003

TO FAMILY OF SERVICES /FOS/ SUBSCRIBERS...NOAA WEATHER WIRE SERVICE /NWWS/ SUBSCRIBERS...EMERGENCY MANAGERS WEATHER INFORMATION NETWORK /EMWIN/ SUBSCRIBERS...OTHER NATIONAL WEATHER SERVICE /NWS/ CUSTOMERS OF AVIATION...CLIMATOLOGICAL DATA AND FORECASTS...NWS EMPLOYEES

FROM RAINER DOMBROWSKY
CHIEF...OBSERVING SERVICES DIVISION

SUBJECT AUTOMATED SURFACE OBSERVING SYSTEM /ASOS/ PRECIPITATION ACCUMULATION SENSOR REPLACEMENT

THE FOLLOWING CHANGES HAVE NO DIRECT IMPACT ON NOAA WEATHER WIRE SERVICE SUBSCRIBERS.

THE ASOS PRODUCT IMPROVEMENT PROGRAM WILL SOON BEGIN REPORTING DATA FROM A NEW PRECIPITATION GAUGE ...THE ALL WEATHER PRECIPITATION

ACCUMULATION GAUGE /V2.80/.

THE PRESENT GAUGE...A HEATED TIPPING BUCKET/HTB/ GAUGE IS PRONE TO UNDER REPORTING FROZEN AND FREEZING PRECIPITATION. THE V2.80 IS A HEATED WEIGHING GAUGE AND IS MORE ACCURATE IN MEASURING AND REPORTING FREEZING AND FROZEN PRECIPITATION.

THE V2.80 HAS BEEN IN FIELD TESTS THROUGHOUT THE PAST WINTER. WHILE STILL IN AN OPERATIONAL TEST...IN LATE MAY AND JUNE OF 2003 THE V2.80 WILL BECOME THE OPERATIONAL GAUGE AT THE FOLLOWING 16 OPERATIONAL ACCEPTANCE TEST LOCATIONS.

MOB	MOBILE	AL	FCA	KALISPELL	MT
MCN	MACON	GA	AVP	WILKES BARRE	PA
BOI	BOISE	ID	ERI	ERIE	PA
SPI	SPRINGFIELD	IL	ABE	ALLENTOWN	PA
BOS	BOSTON	MA	ABR	ABERDEEN	SD
PWM	PORTLAND	ME	TRI	BRISTOL	TN
LAN	LANSING	MI	AMA	AMARILLO	TX
MKG	MUSKEGON	MI	GRB	GREEN BAY	WI

IF YOU HAVE ANY QUESTIONS ABOUT THIS CHANGE...PLEASE CONTACT ONE OF THE FOLLOWING INDIVIDUALS AT NWS HEADQUARTERS

STEVEN PRITCHETT
SURFACE OBSERVATIONS PROGRAM MANAGER
SILVER SPRING MD
PHONE 301-713-1792 X181
E-MAIL STEVEN.PRITCHETT@NOAA.GOV

OR

DAVID MANNARANO
SURFACE OBSERVING SYSTEMS IMPLEMENTATION MANAGER
SILVER SPRING MD
PHONE 301-713-2093 X103
E-MAIL DAVID.MANNARANO@NOAA.GOV

OR

RICHARD AHLBERG

ASOS PRODUCT IMPROVEMENT PROGRAM MANAGER
SILVER SPRING MD
PHONE 301-713-1975 X160
E-MAIL RICHARD.AHLBERG@NOAA.GOV

THIS AND OTHER NWS TECHNICAL IMPLEMENTATION NOTICES ARE AVAILABLE ON THE INTERNET AT /USE LOWER CASE LETTERS/

HTTP://WWW.NWS.NOAA.GOV/OM/NOTIF.HTM

MORE DETAILED IMPLEMENTATION INFORMATION IS AVAILABLE ON THE SURFACE OBSERVATION PROGRAM WEB PAGE AT /USE LOWER CASE LETTERS EXCEPT S IN SURFACE/

HTTP://WWW.NWS.NOAA.GOV/OPS2/SURFACE/INDEX.HTM

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NNNN

D. Verify Completion of all Pre-Operational Implementation Activities: 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 this OIP.

4.0 OPERATIONAL IMPLEMENTATION (OI) ACTIVITIES

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 OI Monitoring and Coordination Activities. They are accomplished in parallel during the OI activity phase.

4.1 Implementation Management Activities

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.

A. **Implementation Management Decision:** The Chair, ASWG will initiate implementation activities upon receipt of a "go" deployment decision by the DRR Group for the batch of deployment sites represented by the OAT group considered for deployment by the DRR Group. 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

B. **Oversight Responsibilities:** 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; OPS23 for monitoring acquisition and delivery of MOD KITS and other material necessary for implementation to NLSC; OPS13 for tracking MOD NOTE 80 completions in accordance with this implementation plan; 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 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 III. 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.

C. **Check List:** 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 IV.

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 V2.80.

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 (within 24hours, see below). 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 within 24 hours 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 describes those activities involved in acquisition, stocking, and distribution of the operational V2.80 MOD KITS.

A. **Verify Start of OI:** OPS22 will verify the start date of the OI.

B. **Monitor & Validate Delivery:** As the COTR, OPS23 will monitor and ensure timely delivery of all planned production units to the NLSC. Any discrepancies or delays in scheduled delivery of the V2.80 to NLSC will be reported by NLSC to OPS23 in a timely manner. Throughout the production cycle OPS23 will perform a quality assurance function on units being delivered to the NLSC, report any discrepancies and provide remediation recommendations to the CO.

C. **Stock Kits at NLSC:** The new V2.80 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 prior to the start of the OI. OPS14 will manage all logistic support for the implementation of the new ASOS V2.80. NLSC will manage inventory of all necessary supplies, spares, and modification kits, and filling orders from field technicians for dissemination of V2.80 kits.

D. Requisition Kits from NLSC: The first kit will be issued to each WFO by OPS12 from the stock at NLSC. This kit is the spares kit. For all subsequent installation kits, the WFO ET will requisition the V2.80 Mod kit from NLSC when they are ready to install the V2.80 in accordance with the Draw Rate Strategy described in Section 3.1, paragraph F2.

4.3 Installation Activities

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

A. Downloading of Archive:

*** NEED INPUT HERE! OPS12, and CIO12 please comment. ***

B. Site Preparation: Not required.

C. Installation & Checkout: Field technicians will perform installation and checkout of the V2.80 in accordance with the Engineering MOD NOTE # 80. Generally this process will take about 2 hours or less.

4.4 OI Monitoring & Coordination Activities

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.C. They include installation notification, initiate maintenance monitoring and confirm operations, installation status reporting, and any necessary post implementation notification to users.

A. Installation Notification: Upon successful completion of installation and checkout, the Electronic Technician (ET) will update the Engineering Management Reporting System (EMRS) in accordance with MOD NOTE 80 and notify, via e-mail, the responsible WFO and RFP of this occurrence. A sample A-26 is included as part of Appendix V.

B. Initiate Maintenance Monitoring and Confirm Operations:

1. WFO Status Monitoring: The WFO, in conjunction with the AOMC will begin routine maintenance monitoring.

2. 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 (usually within 2 business days). 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 only for those sites which they deem merit regional or national attention. 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.

3. 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 those which they deem merit national attention in monthly status reports to the OPS22 Implementation Manager via e-mail.

4. 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.

C. Installation Status Reporting Coordination:

1. 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). Those wishing to join this list server are asked to submit their request to: david.mannarano@noaa.gov

2. 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 corrective actions to resolve any difficulties and keep the implementation on schedule. The Chair, ASWG will use these reports to update monthly/quarterly management Quad Chart reports for senior management briefings. OPS22 will also ensure 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

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 V2.80 into routine ongoing operations, and identify the office(s) responsible. These activities include: Post-Implementation User Notification, Operational Quality Control, Documentation, and Data Continuity Study. They may begin immediately upon operational activation and are accomplished in parallel.

A. **Post-Implementation User Notification:** 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.

B. **Operational Quality Control:** The responsible WFO will continue with normal monitoring of the operation of the newly installed V2.80 beyond the initial 30 day close monitoring period. This will ensure proper ongoing operation of both the installed software and the entire system. The WFO will perform maintenance on system components for which they are responsible.

C. **Operations And Maintenance:** The WFO will perform maintenance on system components for which they are responsible.

D. **Documentation:** Five operations are necessary to ensure proper documentation of changes to ASOS. They are:

1. Data entry into the EMRS;
2. Data entry into the CMIS;
3. Data entry into the MIRS; and
4. Data entry into ASOS SYSLOG
5. Completion of and submission to NCDC of WS Form A-1, A-3, B-44, etc. to document meta data change at site.

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 V. 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 # 80. The WFO will complete applicable WS Forms A-1, A-3, B-44 and forward them to Regional Headquarters within 5 working days after implementation for review and submission to NCDC. Note: A-1 and A-3 forms are required for all ASOS locations; B-44 forms are also required for ASOS Local Climate Data (LCD) sites.

E. Disposal of Old Equipment: Not applicable for V2.80.

F. Climate Continuity Study: At a sub-set of implemented sites, a data 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 one to two years or more. Sites will be selected based on climatic considerations. OS7 will manage this activity.