



SYSTEM TEST PLAN

for the

Automated Surface Observing System

(ASOS)

Acquisition Control Unit (ACU)

Version 3.05

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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Acronyms

ACCB	ASOS Configuration Control Board
ACE	ASOS Controller Equipment
ACU	Acquisition Control Unit
ADAS	AWOS Data Acquisition System
AFOS	Automation of Field Operations and Services
ALDARS	Automated Lightning Detection and Reporting System
AMR	ASOS Meteorological Report
AOMC	ASOS Operations and Monitoring Center
AWPAG	All Weather Precipitation Accumulation Gauge
APMC	ASOS Program Management Committee
ARCH2	Archive-2
ASENSE	ASOS Sensor Emulation Software
ASOS	Automated Surface Observing System
ASW	Airports – Southwest Region
ASWG	ASOS Software Working Group
ATC	Air Traffic Controller
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
AWIPS	Advanced Weather Interactive Processing System
AWOS	Automated Weather Observing System
BKN	Broken
CAB	Cabinet
CD	Compact Disc
CL31	Replacement Ceilometer
CLI	Climate Report
CLR	Clear
CM	Change Management
COR	Corrected
CR	Central Region
CVD	Controller Video Display
DAPM	Data Acquisition Program Manager
DCA	Washington National Airport, ASOS Site
DCP	Data Collection Package
DCM	Direct Command Mode
DOD	Department of Defense
DS	Daily Summary
DSM	Daily Summary Message
DTS1	Dew-Point Sensor
ECP	Engineering Change Proposal
ET	Electronics Technician
EPI	Enhanced Precipitation Identifier Sensor
EPROM	Erasable Programmable Read-Only Memory
FAA	Federal Aviation Administration
FAAO	FAA Order
FAATC	FAA Technical Center
FAT	Factory Acceptance Test

FMH-1	Federal Meteorological Handbook # 1
FSOC	Field Systems Operations Center
FTI	FAA Telecommunication Infrastructure
FZRA	Freezing Rain
FZRANO	Freezing Rain Not Available
GENOB	Generate Observation
GTA	Ground to Air Radio
IAW	In Accordance With
ICD	Interface Control Document
IDS	Integrated Display System
IFW	Ice-Free Wind
ITB	Integrated Test Bed
LDAD	Local Data Acquisition and Dissemination
LEDWI	Light Emitting Diode Weather Identifier
LINT	An error checking software package used before compilation
LST	Local Standard Time
METAR	Meteorological Aviation Routine Weather Report
MS	Monthly Summary
MSM	Monthly Summary Message
NCDC	National Climatic Data Center
NGRVR	Next Generation Runway Visual Range
NMTW	National Meteorological Test Weather
NP	No Precipitation
NWS	National Weather Service
NWSTC	National Weather Service Training Center
OBS	Observations
OID	Operator Interface Device
OMO	One-Minute Observation
OND	Operator Notification Device
OOS	Office of Operational Systems
OPS12	Maintenance Branch
OPS22	Observing Systems Branch
OPS23	Software Branch
OPS24	Test and Evaluation Branch
OPS32	Data Dissemination Branch
OST11	Programs Management Branch
OS7	Observing Systems Division
OT&E	Operational Test and Evaluation
OTR	Operations Trouble Report
OVC	Overcast
PACE	PC-Based Asynchronous Communications Extension
PC	Personal Computer
PHYS	Physical
PL	Ice Pellets
PNO	Precipitation Not Available
PWINO	Precipitation Identifier Information Not Available
PWX	Present Weather
QC	Quality Control

RC	Request for Change
RVR	Runway Visual Range
RVRNO	Runway Visual Range Not Available
SAO	Surface Aviation Observation
SCA	Single-Cabinet ASOS
SCD	Supplemental Climatological Data
SCT	Scattered
SEB	System Evaluation Branch
SFSC	Sterling Field Support Center
SHEF	Standard Hydrometeorological Exchange Format
SP1	Silver Spring, MD, ASOS system
SPAWARSYSCEN	Space and Naval Warfare Systems Center, U.S. Navy
SPECI	Aviation Selected Special Weather Reports
SSMC2	Silver Spring Metro Center Bldg. 2
ST	System Test
ST0	Sterling, VA ASOS System 2
ST1	Sterling, VA ASOS System 3
SYSLOG	ASOS System Maintenance Log
TRG	Test Review Group
TSNO	Thunderstorm Not Available
TTR	Test Trouble Report
UPS	Uninterruptible Power Supply
USN	U.S. Navy
USP	Urgent Special Observation
USAF	U.S. Air Force
UTC	Universal Time Coordinated
V	Version
VDU	Video Display Unit
WSH	Weather Service Headquarters
WSP	Weather Systems Processor
WT	ASOS Software Command for IFW diagnostic data
WX	Weather

1.0 Introduction

The National Weather Service (NWS) National Headquarters (WSH) Office of Operational Systems (OOS), Field Systems Operations Center (FSOC), Test and Evaluation Branch (OPS24) will conduct a System Test (ST) of the Automated Surface Observing System (ASOS) software load Version (V)3.05, dated 10/28/2010. This new load is based on the V2.79, V2.8, and V3.0 software families of interim loads for the new Acquisition Control Unit (ACU)'s single-board processor. It will replace earlier software versions for all operational ASOSs. This load supports the existing ASOS sensor suite, including the following new ASOS sensors: All Weather Precipitation Accumulation Gauge (Ott AWPAG); the Dew-point Temperature Sensor (Vaisala DTS1); the Ice-Free Wind (Vaisala 425 IFW) sensor; and the replacement Ceilometer (Vaisala CL31). It also provides an interface for a Handar 25K Ceilometer to support the USAF operations, including display of visibility in metric units for international sites. In addition, the new load provides 57 new functionalities to ASOS and 24 operational fixes to the current operational baseline V2.79B, V2.79D, including fixes for V2.79X-Y (CL31 Ceilometer), a new Quality Control (QC) algorithm for the IFW, and new software security features.

Since 1992, when the first ASOS sites were commissioned, ASOS users have used group passwords. Group passwords do not meet the password policy and procedures as defined in NOAA IT Security Manual 212-1302, DOC IT Security Program Policy, and DOC IT Minimum Implementation Standards (2009). Since the operating system in ASOS, PSOS was not designed to provide more than a few basic security functions and it has not been supported by industry since 2005, the NWS was limited in its ability to comply with the DOC password policy. Another consideration was that NWS could not lock out users without impacting the availability of ASOS-generated weather data. Also, because FAA personnel in ATC towers and radar facilities did not have individual accounts on the FAA IT systems, the FAA would not allow individual passwords. In 2008, the NWS CIO waived the password policy to allow ASOS to continue to use group accounts and passwords. The waiver stipulated that the ASOS group passwords must comply with the DOC policy for group passwords and imposed an additional requirement that NWS change the group passwords every 60 days.

In 2008, the ASOS Configuration Control Board approved five requests for change (RC) submitted by NWS to modify the ASOS IT security capability, in part to comply with the terms of the password waiver. The ASOS Program Management Committee (APMC) agreed to fund the IT Security RCs. RC 10336 provided an improved password management capability. NWS awarded a task to its software contractor and the capability was developed in 2009 and tested (during Factory Acceptance Testing) in early 2010. NWS installed an interim version of the software (i.e., Build 3.03) on an ASOS at Sterling Field Support Center (SFSC). SFSC personnel used Build 3.03 to prepare and test the Operating Procedures for ASOS Password Management for V3.05. The security features and the Operating Procedures will be system tested.

The test methodology as well as personnel and system resources needed to conduct the tests are identified in this plan. Schedules for the tests to be completed are also included.

1.1 Test Plan Organization

This ST plan is composed of three sections and five attachments.

Section 1.0 contains introductory material dealing with ASOS V3.05 contents, test strategy, objectives, result analysis, and prerequisites.

Section 2.0 describes the schedule and methodology for conducting the ST, test facilities, pre- and post-test activities, and supporting documentation. This section also contains information on personnel and their responsibilities.

Section 3.0 discusses how a recommendation for Operational Test and Evaluation (OT&E) will be made and how the ST report will be written.

Attachment 1 lists regression test procedures to be performed.

Attachment 2 lists specific test procedures to verify new functions and fixes.

Attachment 3 lists On-Line Data Sets to be used for testing.

Attachment 4 contains the Test Trouble Report (TTR) form.

Attachment 5 contains the Test Log form.

1.2 Software Build 3.05 Contents

The V3.05 software contains some 57 new functions and 24 fixes. These new functions and fixes were partially provided in the interim loads which this load will replace. They are summarized in this section. More details are given in the ASOS Release Note for V3.05, available on-line through the following URL:

http://www.nws.noaa.gov/ops2/ops24/documents/asos_v3.htm

1.2.1 Software Versions Leading to V3.05

The following list shows the chronological order of all the test software builds leading up to V3.05 (latest to earliest):

Version #	Description
3.05	- This release includes: V3.03, 2.79Y ceilometer related fixes, RC12246 (Incompatibility of ASOS Software Version 3.01 with IFW Sensor Firmware), 8 TTR fixes from V3.01 (TTR#232, 233, 234, 236, 237, 238, 240, 242), and OTR1098 (Incorrect layer height report from CL31).
3.03	- Implemented following RCs: 1. RC11761 - Removal of unnecessary SYSLOG messages

- 2. RC 10336 - Encrypted Password Management
 - 3. RC 10651/10497 - Audit log and Generation of Audit log messages.
 - 4. RC 10496 - Implementation of Warning banner for remote access.
 - 5. RC 10577 - Secure Elevation changes via remote access.
-
- 2.79Y** - 2.79X with fix for OTR1093 (incorrect layer heights processing for CL31)
 - 2.79X** - 2.79V with fix for IFW firmware V4.54
 - 2.79V** - 2.79D with support for CL31 sensor
 - 2.79D-E** - 2.79B with changes to address erroneous peak wind reporting
- Archive of 5 second wind data and WT response
 - 2.85** - 2.84E capabilities plus
- Automated Data Acquisition System (ADAS) 1-minute data missing fix
 - 2.84E** - V2.83E capabilities plus
- LINT Phase I remove present weather
- Ice accretion latent defects
- Implement modified ice accretion algorithm
- V2.90 changes [3 Requests for Change (RCs), 1 OTR]
- TTR 159 – Tower visibility missing
- IFW Path Error Fix
- Missing CAB temperature on Single Cabinet ASOS (SCA) [also RVR, Automated Lighting Detection and Reporting System (ALDARS), Dewpoint]
 - 2.83E** - V2.80E and V2.82 capabilities plus
- Fixes pressure sensor problem
- TTR 154 – Audio alarms, hourly pending not displayed
- Modified freezing drizzle algorithm
- Fix Data Collection Platform (DCP) download problem (appl. Code size exceeded)
 - 2.80E** - V2.80 capabilities plus
- Implement Enhanced Precipitation Identifier (EPI) sensor
- Modify present weather Quality Control (QC) algorithm for LEDWI & EPI
 - 2.82** - V2.80 capabilities plus
- TTR 153 – METAR sent prematurely
- TTR 155 – Erroneous message dew point with missing ambient
- Auto Enable/Disable of freezing rain sensor
- USAF Modifications [Handar ceilometer, visibility in meters, 5-second Video Display Unit (VDU) wind]

1.2.2 New functions (Relative to the V2.7D baseline)

A brief description of the new functions contained in V3.05 follows:

Transmissions during the edit time

- Allow specials to be manually generated and transmitted during the edit time for the METAR [i.e., "SPECI anytime" - (S00705)].
- Eliminate a Clear (CLR) entry before an augmented entry in the sky field – (S00786).
- Display the last transmitted METAR/Aviation Selected Special Weather Reports (SPECI) on the 1-minute screen of the Operator Interface Device (OID) during the edit time of the pending report - (S00874).
- Remove inappropriate additive data from specials transmitted during METAR edit time - (S00788).
- Allow manual entry of "000" in the sky condition field - (S00914).
- Add cursor control (tab and shift-tab) during edit process - (S00983).

Changes affecting the "remarks" area

- Standardize the reporting format used by ASOSs (configured with or without a precipitation discriminator) in the METAR remarks field - (S00703).
- A01 will be in the METAR remarks field if there is no present weather sensor - (S00703).
- A02 will be in the METAR remarks field if there is a present weather sensor - (S00703).
- Add precipitation accumulation remark in all 5-minute observations when precipitation is occurring - (S00706).
- Allow information to be added to a precipitation begin/end remark after it has been transmitted - (S00719).
- Encode the beginning/ending times of thunderstorms after the beginning/ending times of precipitation - (S00790).
- Provide ice accretion information via Direct Command Mode access - (S01164).

Changes affecting the reporting of data

- Reduce inaccurate reports of snow when current temperature data are not available to ASOS, such as when a warm boot occurs - (S00704).
- Separate report processing control for each sensor in a multiple sensor configuration (with the exception of pressure sensors) - (S00815).
- Report multiple FEW layers in the sky field - (S00830).
- Generate SPECI for BEGIN/END/CHANGE of intensity of Ice Pellets - (S00789).
- Connect to Processor (WSP) and report 10 second wind - (S01018).
- Include Temperature/Dewpoint temperature remark in all OBS - (S01078).
- Add "LST" label to date field on the PHYSICAL and OID screens - (S01113).
- Add Ice Accretion remark to METAR/SPECI reports - (S01126).
- Change to RVR reporting to comply with FAA0 7900.5 - (10055).

Changes affecting the Daily Summary Message (DSM)/Monthly Summary Message (MSM)

- Allow for the automated entry for the following weather codes in the Daily Summary (DS) product: 1 (mist/fog), 2 (fog reducing visibility to 1/4 mile or less), 3(thunder), 4 (ice pellets), 5 (hail), 6 (glaze), 8 (haze), 9 (blowing snow), and X (tornado) - (S00707).
- Ensure corrected "COR" DSM/MSMs are not transmitted unless SITE-PHYS page has times of transmission entered - (S01152).
- Change Daily Summary product SKY COVER labels - (S01105).

Changes made to algorithms

- Display and voice all values of density altitude - (S00791).
- Eliminate the computation of sunshine normals for sites at latitudes greater than 60 degrees - (S00847).
- Validation of Precipitation Accumulation - (S01110).
- Allow the entry of negative pressure reduction constant on the pressure reduction ratio page - (S01005).
- Modification to the wind data quality algorithm to account for ambient temperature - (S01016).

- Modification of Precipitation Accumulation algorithm to ensure trace reporting - (S00994).
- Adaptive Baseline Frequency for freezing rain sensor - (S01055).
- Prevent use of sensor data when REPORT PROCESSING is OFF - (S01107).
- Change Thunderstorm reporting threshold for SPECI reports - (AA292).
- Modify SKY condition algorithm - (AA713).
- Redesign of tasking and inter-task communications - (10395).
- IFW Data Quality Control (QC) algorithm - (11443).

Changes affecting errors and logs

- Generate an error message when a dew point temperature is entered while the ambient temperature is missing - (S00836).
- Increase size of the cloud statistic archive from 24 hours to 48 hours - (S00898).
- Improve time changes in SYSLOG entry - (S01106).
- Store data that cause a DATA QUALITY error in brackets - (S01109).

Changes affecting passwords and log-in

- Improve access security and password management - (RC10336)
- Warning message to those accessing ASOS remotely – (RC10496).
- Audit logs reports – (RC10497).
- Additional security for elevation changes – (RC10577).
- Unsuccessful login attempts – (RC10651).

Miscellaneous changes

- Change the VDU display format for temperature/dew point to be consistent with that of the OID - (S00837).
- Remove Surface Aviation Observation (SAO) logic from ACU software - (S00972).

- USAF modifications to incorporate the Handar 25K ceilometer into the software baseline. Visibility maybe transmitted in statute miles or meters. Display of 5- second winds on the VDU - (AB419).
- Seasonal Auto enable/disable of freezing rain sensor - (AC302).
- Removing IFW path errors from system maintenance log (SYSLOG) - (AC919).
- Increase number of LOCAL sensor ports to support testing - (S01124).
- Eliminate unnecessary OID function calls - (S01125).
- Provide Technician Authorization to set DSM/MSM Transmit Times - (S01133).
- Generate GTA radio Tone at Technician level - (AA618).
- Store software versions for ASOS Operation and Monitoring Center (AOMC) uploads - (AA824).
- Expand operational periods for freezing rain sensor from six to nine - (10325).
- MAINTENANCE page IFW Path error count - (10601).
- Merge Replacement Ceilometer (CL31) interface into ACU software - (11606).

1.2.3 Software Fixes

ASOS ACU V3.05 software contains 24 fixes for problems in the earlier software versions. These problems are summarized below:

- If PRESENT WX field is in manual mode when freezing rain ends and field is reset, ASOS would carry FZRA when none exists - (OTR1001).
- EDIT LOG contains date time without any log entry - (OTR1002).
- PEAK WIND REMARK not encoded during transmission of observation - (OTR1004).
- Temperature rounding inconsistencies - (OTR 1011).
- EDIT LOG does not record aborted entries correctly - (OTR1012).
- Missing Edit Log entry for manual SPECI reports - (OTR1013).
- Incorrect rounding of Monthly Precipitation Departure from Normal on the Monthly Summary (MS) product - (OTR1014).

- ASOS does not correctly update the present weather field and makes incorrect entries in the EDIT LOG - (OTR1016).
- Missing Edit Log entries - (OTR1021).
- ASOS automatically deletes "PL" from present weather - (OTR1022).
- ARCH2 Function not archiving requested 5-minute observations - (OTR1033).
- Correction to visibility computations - (OTR1040).
- Pressure parameters reported using only one pressure sensor - (OTR1041).
- Correction to Funnel Cloud logic - (OTR1044).
- Incorrect function present weather - (OTR1047).
- Incorrect rounding of negative temperatures - (OTR1054).
- Inaccurate data basing of Ground to Air (GTA) frequencies - (OTR1056).
- Handling of Precipitation Accumulation data quality - (OTR1056B).
- Incorrect ending dates and times reported on the Monthly Summary product for the short duration precipitation amounts - (OTR1057).
- Visibility missing from METAR/SPECI reports - (OTR1061).
- Invalid wind information in daily summary product - (OTR1070).
- ASOS ACU Processor status nomenclature - (OTR1074).
- Warm Boot errors on Navy ASOS systems - (OTR1075).
- IFW wind speed data not rounding correctly - (OTR1079).

1.3 Test Strategy

The ST will consist of validation of new functions and fixes, regression testing, system stability testing, climate data validation, and validation of the draft NWS Engineering Modification Notes. Communications, sensors, and peripheral interfaces to the ASOS will also be tested.

The primary test systems include the Sterling Field Support Center (SFSC), Sterling, VA, ASOS Test Systems SCA, ST0, and ST1. The ASOS Sensor Emulation Software (ASENSE V2.06) program will be used to emulate specified ASOS sensors when needed. Additional ASOS systems will be used to perform "baseline" and stability tests (See Attachment 6) and validation of the draft installation documentation. These will be selected from the following

facilities: The NWS Training Center, Kansas City, MO, and the U.S. Navy SPAWARSSYSCEN, Charleston, SC.

The test systems will be configured to simulate, to the extent possible, system configurations used in the field.

1.4 Test Objectives and Evaluation Criteria

The specific test objectives and criteria for V3.05 ST are:

- A. Verify the ASOS V3.05 software installation instructions (Engineering Modification Note).

Criterion: The Engineering Mod Notes for installation of V3.05 are complete and accurate.

- B. Verify all existing ASOS functions, except the ones modified or corrected, remain available and operational.

Criterion: All existing functionalities from previous builds are still operational in V3.05 through regression testing.

- C. Verify the new functions and fixes for ASOS V3.05 per official release notes.

Criterion: All the new functions and fixes work as designed.

- D. Verify V3.05 provides expected and repeatable observations per given data sets.

Criterion: All observations, climate products, 5-minute and 1-minute observations (OMO), and SYSLOGs are judged by meteorologists to be correct based on given inputs.

- E. Verify ASOS communication interfaces for NWS and FAA systems.

Criterion: All METARs, SPECIs, and OMO data are reliably transmitted and received on time.

1.5 Test Result Analysis

On Thursday of each test week, all Test Trouble Reports (TTR) will be collected and the Test Review Group (TRG) will meet to classify the problems. The TRG is a group of subject-matter experts and is chaired by the Chief, Test and Evaluation Branch (OPS24) or his designee. The TTRs may be assigned numerical scores to indicate the severity of the defect, (i.e. the Impact, and the Priority). A 5-point grading system is typically used with 1 being the most severe and 5

being the least severe.

A typical assignment scheme for Impact follows:

1. Prevents successful observation; no workaround.

ACTION: The TRG will recommend the immediate suspension of ST. The software will be turned over to the developer to resolve the problem. The ST may be resumed at the recommendation of the TRG after an appropriate fix or workaround has been developed. The Test Team may develop new Test Case Procedures and/or repeat selected Test Case Procedures to fully evaluate the proposed solutions.

2. Prevents successful observation; reasonable workaround.

ACTION: The TRG may recommend continuing the ST with an approved workaround in place until an appropriate fix is developed. If a fix becomes available during the ST, the TRG may recommend the immediate implementation of the fix. The test Team may develop new Test Case Procedures and/or repeat selected Test Case procedures to fully evaluate the fix.

3. Less critical degradation of data.

ACTION: The ST may continue at the discretion of the TRG. An approved workaround may be authorized until the problem is fixed, but is not mandatory. Routine deficiencies are documented and prioritized by the proper authority for future fixes.

4. Degradation of system capabilities - No data affect

ACTION: The TRG may recommend that the ST continues. The Test Team may develop new Test Case Procedures and/or repeat selected Test Case Procedures in and attempt to reproduce the problem. Any further observations are documented and submitted to the TRG for review.

5. Minimal to no impact - Nice to have

ACTION: The TRG forwards the recommended change to the System Program Manager for consideration under the Configuration Management process.

6. Undetermined - The impact has not been determined.

ACTION: None

The Priority addresses how the problem is to be solved. A typical assignment scheme for the Priority follows:

§ Priority 1 – Needs immediate emergency fix.

ACTION: All appropriate resources are directed to resolve the problem as soon as possible.

§ Priority 2 – Includes in next maintenance release.

ACTION: The available resources are directed to resolve the problem.

§ Priority 3 – Includes in future maintenance release.

ACTION: Resources are directed to resolve the problem as allowed.

§ Priority 4 – Includes in next major build.

ACTION: The item is deferred to the next major release.

§ Priority 5 – Includes in future major release.

ACTION: The item is deferred to future system improvements.

§ Priority 6 – Undetermined: The Priority has not yet been assigned.

ACTION: None.

No recommendation will be made to proceed to the OT&E if any critical Impact 1 or 2 deficiency remains open.

1.6 Test Review Group (TRG) Responsibilities

The TRG will assist the ASOS software manager in the Office of Operational System, Software Branch (OPS23) in deficiency resolution. The role of the TRG is to evaluate each observed deficiency as documented by a TTR.

During the ST, the TRG Chair will convene the TRG weekly to:

- a) Review, clarify, and evaluate deficiencies documented in the TTRs;
- b) Prioritize, validate deficiencies, and recommend corrective actions to the ASOS Software manager; and
- c) Coordinate the resolution of other test-related issues.

If a critical problem occurs between weekly meetings and requires a vote of the members whether to suspend the ST, the ST Director shall convene an emergency TRG meeting.

The TRG will be composed of the personnel identified in Table 1. The “voting” members will forward a recommendation to the ASOS Configuration Control Board (ACCB) chair whether V3.05 is ready for OT&E.

Table 1 – ASOS Test Review Group

Name	Function	Telephone
Richard Thomas (OPS23)	Chair Voting	301-713-0191 x108
Bert Vioria (OPS24)	Alternate Chair/ ST Lead Voting	301-713-0326 x137
Khien Nguyen (OPS24)	ST Director/ Secretariat	301-713-0326 x177
Richard Parry (OPS22)/ Chet Schmitt (OPS22-Alternate) Jen Dover (OPS22-Alternate)	Voting	301-713-2093 x 109
James McNitt (OPS22)	Voting	301-713-2093 x 102
Greg Dalyai (OPS12)/ Greg Sikora (Alternate)	Voting	301-713-1833 x 147
Sergio Marsh (OS7)/ Beth McNulty(OS23 - alternate)	Voting	301-713-1792 x 124
Bing Huang (FAA/ ATO-T)	Voting	202-385-8579
Tuyen Kieu (FAA/ATO-W)	Voting	202-267-9435
Capt. William Lacroix (USAF)/ Todd Allen (alternate)	Voting	402-294-0866
Wayne Knight (U.S. Navy)/ Ron Heatherdale (alternate)	Voting	843-218-4818
Dan Lester (W/CR4) (NWS Regional Rep)	Voting	816-540-5147 x 381
John Monte (OST32 - ASOS Product Improvement)	Voting	301-713-1570 x 125
Christopher Stark (OPS32)	Voting	301-713-0864 x 151
Robert Retzlaf (NWSTC)	Voting	816-880-9368
James Brand (FAATC)	Voting	609-485-8185

The following describes the major roles and responsibilities of the TRG personnel:

TRG Chair – The TRG Chair convenes the meetings of the TRG and works with the ST Director and the members of the TRG to ensure that tests are conducted efficiently. The Chair works to resolve any issues that may arise during the conduct of the ST.

System Test Director – The Test Director is the primary point of contact for the ST. The test

Director manages the development and coordination of the ST Plan, oversees the conduct of the tests, and manages the development and coordination of the ST Report which documents the test results and recommendations. As a voting member, the ST Director solicits inputs from the ASOS test team for any issues which require a decision by the TRGs voting members.

ASOS Software Manager – The ASOS Software manager is responsible for providing technical support and information as required when ASOS questions arise, as well as scheduling investigations and solutions of ASOS discrepancies.

ASOS Test Team – The ASOS Test Team is comprised of subject matter experts from WSH, NWSTC, and designated DOD personnel representing test sites. The ASOS test Team installs the V3.05 software and conducts the ST.

1.7 Prerequisites and Assumptions

The following are specific items required for the ST to commence and assumptions made prior to entering the ST:

- a. OPS23 successfully completes ASOS Factory Acceptance Testing with no outstanding critical deficiencies.
- b. A draft version of all ASOS V3.05 documentation is available, including the Software Note and Release Notes.
- c. The certification form for ASOS V3.05 has been completed by OPS23.
- d. An ST Test Readiness Review is conducted and the TRG determines the system is ready to begin the ST (See Section 2.3.1 Pre-ST Activities).

2.0 Method of Accomplishment

The following sections provide the test schedule, descriptions of the test facilities, test system configurations, test resources required, and methodology for ST conduct.

2.1 Schedule

The ST will start with a “kick-off” TRG meeting to discuss test strategies and schedules. The ST will be performed as specified in Table 2. Test dates for communication, sensor, and peripheral interfaces will be coordinated between the WSH and appropriate test coordinators. The ST will conclude with a “wrap-up” meeting to finalize recommendations to the ACCB Chair.

Test team members will use all test systems as required. On Thursdays, during the ST, a meeting will be convened by the Test Director to review the problems documented on Test Trouble Report forms during the week and to assess the status of the ST. If the TRG deems deficiencies to be critical Impact 1/urgent Priority 1, these test trouble reports will be forwarded to the ACCB Chair for review and approval. If the ACCB Chair agrees the deficiencies are “urgent”, the Chair will task the Software Branch (OPS23) to correct them. Revised software

will be subject to a limited ST retest. Depending on the time required for deficiency correction, revisions to the test schedule will be required. At the end of the ST, the TRG will recommend to the ACCB Chair whether to proceed to OT&E.

Table 2 - Test Schedule

Dates	Duration	Action
Delivery of V3.05 for ST		(1) Successful completion of FAT (2) ASOS version 3.05 ready (3) Updated documents ready
Day 1	1 day	ST kick-off meeting
Begin Phase I Testing		
Day 2	1 day	Install V3.05 at SFSC(per mod notes)
Day 3 - Day 100	97 days	ST at WSH and SFSC
Day 101 - Day 111	10 days	Fix ST problems (if necessary)
Day 112 - Day 122	10 days	Retest (if necessary)
Begin Phase II Testing		
Day 30	92 days	Install and testing V3.05 at NWSTC
Day 30	92 days	Install and testing V3.05 at SPAWARSYSCEN, Charleston, NC
Day 123	1 day	Wrap-up meeting
Day 124 - Day 144	20 days	Prepare ST test report

2.2 Test Facilities

The SFSC, FAATC, U.S. Navy, and NWSTC will participate in the ST. The primary test systems include SFSC SCA, ST0, and ST1. The ASOS Sensor Emulation Software (ASENSE V2.06) program will be used to emulate specified ASOS sensors when needed. Additional ASOS systems will be used to perform “baseline” and stability tests; these will be selected from either the NWS Training Center, Kansas City, MO, and/or the Charleston Naval Shipyard, SC.

2.2.1 SFSC

The SFSC, an NWS facility for testing surface and upper air observation systems, is located in Sterling, Virginia. The SFSC has three ASOSs that will be used for testing – 1) SCA 2) ST0 and 3) ST1. ST0 (Figure 1) will be used to perform regression tests and to validate specific software fixes and enhancements; it is configured as an operational system.

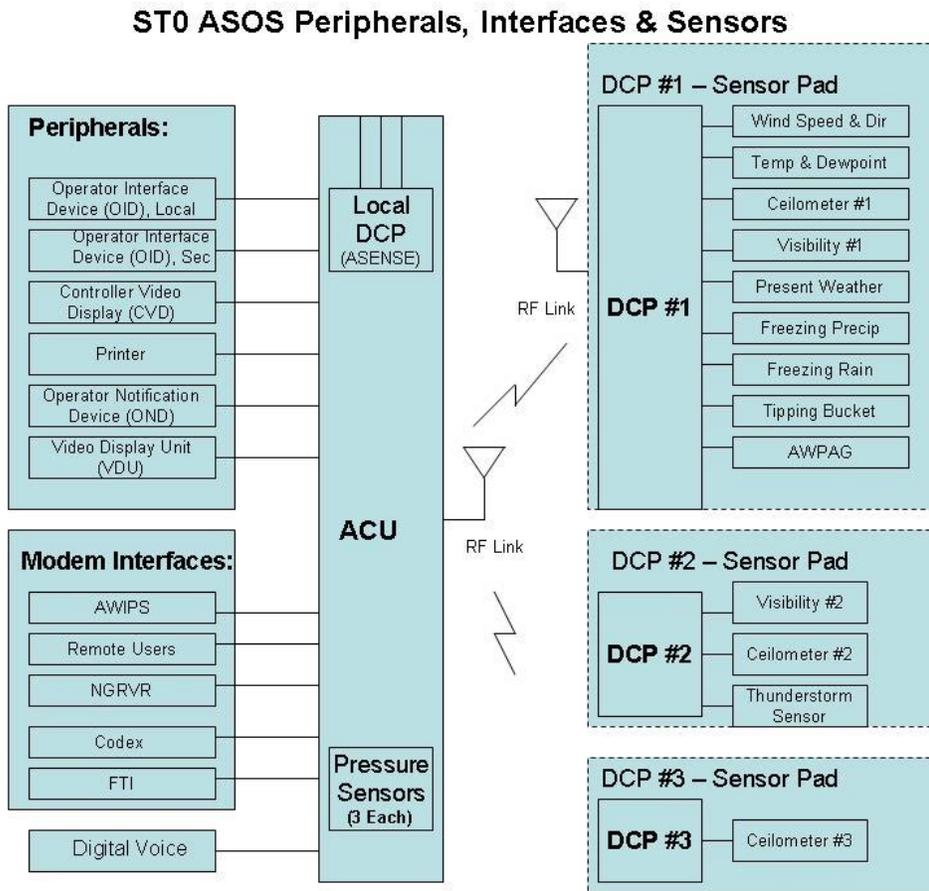
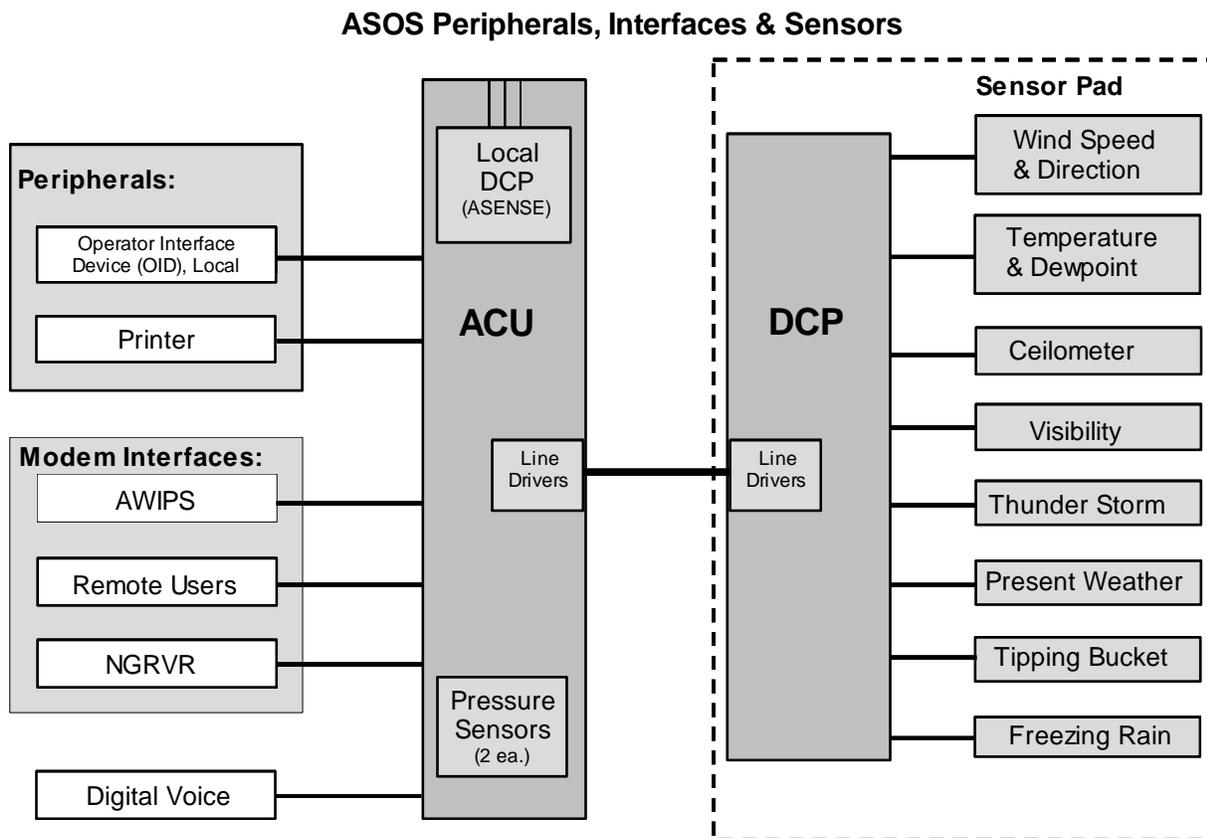


Figure 1 - ST0 Configuration

ST1 (see Figure 2) will be used as a control system to monitor the reporting of naturally occurring atmospheric phenomena. Test procedures not requiring data and time changes may be run on ST1.



* AWPAG and CL31 are available but not shown in diagram

Figure 2 - ST1 Configuration

The SCA ASOS at SFSC will be used during the ST to perform regression tests and to validate ASOS V3.05 functionality in an SCA environment.

2.2.2 WSH

The WSH is located in Silver Spring, Maryland and has one ASOS test system (SCA), the ASOS Operations and Monitoring Center (AOMC), and the Advanced Weather Interactive Processing System (AWIPS) National Meteorological Test Weather (NMTW) planned for use during the ST. The AWIPS NMTW system on the 7th floor of SSMC2 will be used to test the AWIPS interface to ASOS.

The SCA ASOS (Figure 3) resides on the 6th floor of SSMC2. This system is normally used by ASOS software programmers to develop and test all future ACU software loads/releases. The SCA will be used during the ST to validate the ASOS V3.05 functionality in an SCA environment.

ASOS Peripherals, Interfaces & Sensors

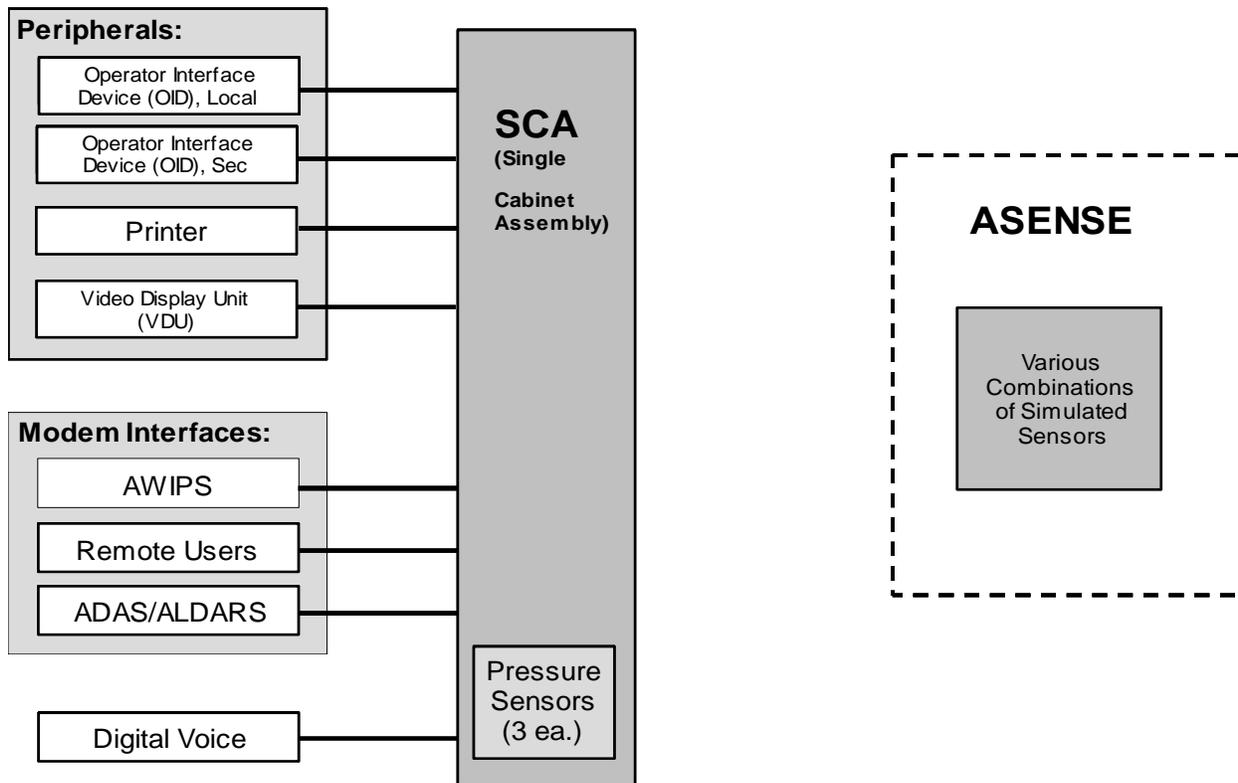


Figure 3 - SCA Configuration

The AOMC is located on the 6th floor of SSMC2. AOMC has primary responsibility for monitoring and detecting failures of fielded ASOSs and initiating corrective maintenance action. The AOMC will be used to ensure that ASOS test systems can be upgraded from the baseline software builds V2.7x to the current build V3.05 and back to the original build. The OPS23 Test AOMC will be used for the ST.

2.2.3 National Climatic Data Center (NCDC)

The NCDC, located in Asheville, NC, will check out the new security features and validate the capability to collect daily and monthly pages and summaries, hourly and specials, 5-minute observations, 1-minute data, ceilometer data, and SYSLOG records. NCDC will dial into ST1 and download the data needed for their operation. NCDC will use these data/products to validate their processing software can accommodate any changes in data format introduced by ASOS ACU V3.05. In addition, NCDC will perform quality control on the end-of-the-month data.

2.2.4 Federal Aviation Administration Technical Center (FAATC)

The FAATC conducts all FAA-approved tests to certify all external user interfaces to the FAA communication system. FAATC is located in Atlantic City, New Jersey. During the ST, FAA personnel at FAATC will assist WSH personnel in testing FAA communications and ASOS sensor interfaces, such as the AWOS Data Acquisition System (ADAS), the ALDARS, and the Weather Systems Processor (WSP). They will also monitor the 1-minute observations from ASOS to ADAS and 10-second wind data from ASOS to WSP.

2.2.5 NWSTC's ASOS

The NWSTC, located in Kansas City, MO, has three ASOS systems:

TC1 is a Class I (two pressure sensors) ASOS and one DCP.

TC2 is a Class II (three pressure sensors) ASOS and one DCP.

TC3 is a Single Cabinet ASOS (SCA).

The SCA TC3 system at NWSTC (Figure 4) will be used to evaluate the V3.05 Installation Note to support "free-play" testing of the V3.05 ACU software. The configuration for this system is given below:



* CL31 is available but not shown in picture

Figure 4 - NWSTC Single Cabinet ASOS (SCA) Configuration

TC3 has a Visibility sensor, AWPAG, DTS1, 1088, CL31 Ceilometer, IFW, and Present Weather sensor with 2 additional sensor pads.

2.2.6 U.S. Navy (USN) ASOS'

The USN ASOS system at the Charleston Naval Shipyard, SC (Figure 5), will be used for "baseline" and stability testing of the V3.05 software build and for evaluation of the Installation Note.

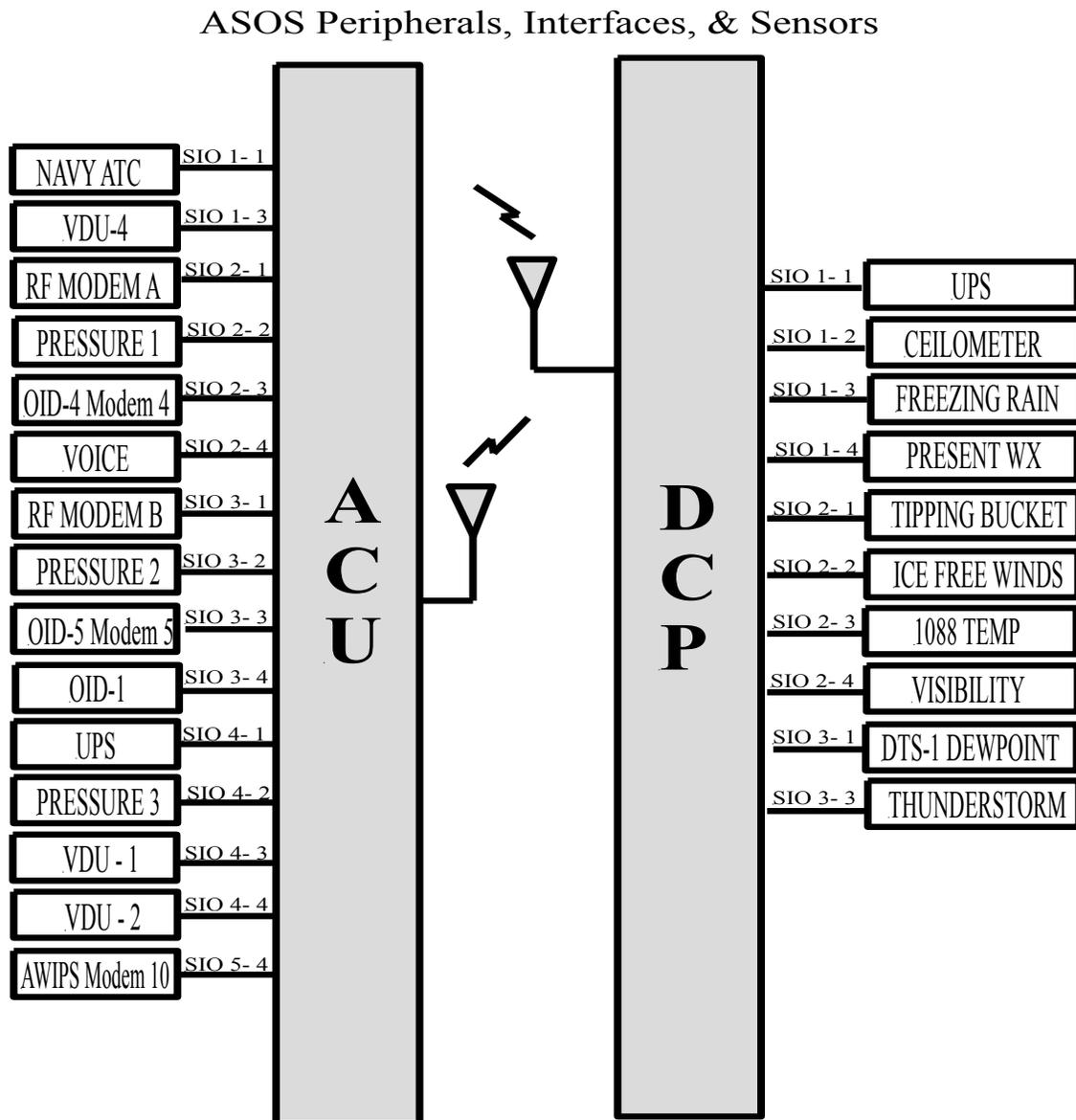


Figure 5 - Navy 1(Gold) ASOS Configuration

2.3 Test Methodology

The following sections provide a description of how the ST will be conducted. It will be the responsibility of the Test Director to ensure the test is performed as outlined. Any deviation from the test methodology will be documented and provided to the ST testers prior to conduct of the affected tests.

2.3.1 Pre-ST Activities

Prior to ST conduct, OPS24 will develop the ST Plan and test procedures. The Test Director will conduct a “kick-off” meeting for the ASOS TRG detailing testing, discrepancies, documentation, and test schedules. After the “kick-off” meeting, the Test Director will commence the ST.

The start of the ST is contingent upon the delivery of the following:

- § A CM-approved software build RC documenting all RCs and OTRs contained in the load and requiring an ST and OT&E (CM).
- § V3.05 software on a CD (OPS23).
- § Factory Test procedures for each change and fix in V3.05 (OPS23).
- § Engineering Modification Note on installation of V3.05 (OPS12).
- § Provide OPS24 with a signed ASOS V3.05 ST Certification (OPS23).
- § SCA, ST0, and ST1 ASOS systems readiness (SFSC).
- § SCA ASOS system readiness (OPS23).
- § NWSTC ASOS system readiness (OPS24).
- § Charleston Naval Shipyard, SC ASOS system readiness (OPS24).

2.3.2 Resources

This section identifies the personnel, documentation, test responsibilities, and division of resources among the ASOS test systems at WSH and SFSC. Test personnel from various sections within WSH, NCDC, NWSTC, FAATC, and USN will conduct the ST.

2.3.2.1 Hardware/Software

The ASOS V3.05 software will be tested in accordance with the ST test schedule defined in section 2.1 and the procedures identified in this document.

No specific test will be conducted at the other agencies' ASOSs except for stability tests and for verification of proper operation of the Handar Ceilometers for USAF ASOSs.

The WSH and SFSC ASOS test systems will be setup to simulate configurations found in use at operational field sites. In particular, the following configurations will be tested: Three-DCP's; Two-DCP's; Single DCP; SCA; also "Local" and "Remote" Pressure sensors.

The following sections describe the types of tests performed on each of the ASOS test systems and their respective interfaces used during the ST.

ST0 ASOS at SFSC:

ST0 will be used to test sensor and algorithm functionality. ST0 has three DCPs and is configured as a large hub airport system with meteorological discontinuity sensors. This system can be re-configured to represent additional ASOS configurations. One DCP is configured with a collocated backup visibility sensor and ceilometer. Radio links are used for communications between the ACU and DCP. ST0 will be used during the ST to:

Conduct regression tests related to the normal interaction with the ASOS at the various sign-on levels, including editing and augmenting at the observer and air traffic levels, maintenance actions at the technician level, and system manager level functions

- § Conduct regression tests related to the normal interaction with the ASOS at the various sign-on levels, including editing and augmenting at the observer and air traffic levels, maintenance actions at the technician level, and system manager level functions.
- § Conduct regression tests on the meteorological algorithms. These tests will verify that the METAR/SPECI observations are correct.
- § Perform specified validation and regression tests. ST0 will be used to test specified procedures if any of the following are required of the ASOS configuration:
 - Multiple DCPs
 - Physical reconfiguration of sensors or DCPs.
- § Test the Runway Visual Range (RVR) edit and NGRVR interface. ST0 will be configured with ASENSE to provide RVR data. (Note: ST1's RVR will be configured with no input to verify that "RVRNO" is generated). Interface testing on ST0 will be conducted to assess compliant operation by alternately disabling the visibility and RVR sensors to ensure proper system reporting. When ST0 is not being used for test procedures or regression testing (editing and augmenting), the RVR values will be changed routinely to provide varied outputs, including RVRNO.
- § Test the "Remote" and "Local" pressure sensor configurations.

- \$ Test the ice accretion function using ASENSE and apriori data sets.
- \$ Test with FAATC all required FAA system interfaces to ASOS [ADAS(1-minute Obs.), ALDARS, WSP, ACE/IDS].
- \$ ST0 will be configured to emulate unique systems in the field.

ST1 ASOS at SFSC:

ST1 is configured as a small airport (one DCP) system with a pair of line drivers (digital repeaters with hard wire connections) between the ACU and the DCP. ST1 will be used during the ST to:

- \$ Operate as a “control” system for archive data during the test. Some tests may be run on this system as long as the date and time are not changed to preserve data integrity. Observations will be checked to assess whether they are representative of site conditions.
- \$ Test DSM/MSM using validation procedures in which real sensor data are needed.
- \$ Verify AWIPS Application program can use Daily Summary (DS) or Monthly Summary (MS) pages to generate the local CLIMATE REPORT (CLI) for AWIPS distribution.

SCA ASOS at WSH:

The SCA system in the WSH’s ASOS Development Laboratory (and at the SFSC) will be used during the ST for both regression and validation tests of the V3.05 software as needed.

ASOS Interfaces

The following items will be configured as part of the ST:

- \$ ADAS
- \$ ALDARS
- \$ ACE
- \$ Navy ATC
- \$ NGRVR
- \$ WSP
- \$ AWIPS communication using Local Data Acquisition and Dissemination (LDAD)

§ FTI communication between ST0 and FAATC

The FAATC will be used in conjunction with the ST0 to test the FAA communication interfaces, including but not limited to ADAS. Additionally, the FAA NGRVR sensor interface will be validated. The ST0 test system will be used to establish these interfaces and validate their performance using V3.05. Specific test dates will be arranged with the FAATC. The communication connections will be dialed using a Codex Modem or through a dedicated T-1 telecommunications as installed by the FAA (i.e. FTI using a GDC Modem).

The WSH AWIPS system will be used to test the ASOS-to-AWIPS communication interfaces through LDAD.

ASOS Sensor Emulation Software (ASENSE)

ASENSE can emulate up to eight ASOS sensors when connected to an ACU or SCA. This allows test team members to manually enter sensor values or read "canned" data sets from specified input files. The sensors emulated are: heated tipping bucket for precipitation collection, AWPAG, atmospheric pressure, ambient and dew-point temperatures, Belfort wind, Ice-Free Wind, RVR, visibility, freezing rain, ceilometers (CT12K and CL31), thunderstorm (polled), and Light Emitting Diode Weather Indicator (LEDWI).

ASENSE will be used to emulate sensors on ASOSs when the natural local weather phenomena are not present or a specific sensor is not available. ASENSE will also be used to simulate thunderstorm and NGRVR reporting. For the most part, ASENSE will be used at WSH and SFSC as needed.

2.3.2.2 Documentation

Updated support documentation and test procedures will be used in the ST and reference to these documents will be made as required throughout the test. The list of documentation (with the office of responsibility in parenthesis) and procedures includes, but is not limited to, the following documents:

- S System Test Plan for the Automated Surface Observing System Acquisition Control Unit Version 3.05 (OPS24)
- S System Test Procedures and associated data sets (located at each ASOS Test System) (OPS24)
- S NWS Engineering Modification Note for the firmware installation (OPS12)
- S Operating Procedures for ASOS Password Management in Build 3.05(OPS22)
- S ASENSE User's Manual (OPS23)
- S Updated ASOS Site Operator's Manual (FAA)

- S Updated ASOS Site Maintenance Manual (OPS12)
- S Version 3.05 Release Notes (OPS22)
- S Updated Automated Surface Observing System Direct Command Mode (DCM) instructions (OPS22).
- S ICD Between ADAS and ASOS, Revision E (FAA).
- S ACE Specification for the ASOS, August 1994 (OPS12).

2.3.3 Personnel and Responsibilities

The following describes the major roles and responsibilities of the test personnel.

Test Director - Ensures all tests defined for the ST are completed and the results properly documented in the ST report. Responsible for collecting and presenting all test trouble reports to the TRG for classification. Following completion of the ST, the Test Director will call a “wrap-up” meeting for the TRG, detail to the ACCB Chair what was tested, report the ST conclusions, and recommend whether to proceed with the OT&E. Ensures all test trouble reports documented and classified during the ST are forwarded to the proper WSH organization or board for adjudication.

Test Coordinator - Responsible for the daily conduct of the ST to ensure testers assigned are present, test procedures are conducted, a log of all completed test procedures is kept (see Attachment 5), test trouble report forms are provided to the testers on duty, and all completed forms are provided to the Test Director each day; informs the Test Director of any problems encountered not resolved and briefs the director on the status of the test; writes the ST report to document the test results and recommendations.

Test Team Member - Responsible for performing individual test procedures as assigned; documents the results of each test and completes trouble report forms when problems/discrepancies are observed. Provides the test coordinator with comprehensive technical information on how the tests were conducted and any problems encountered. For interface testing, the tester is responsible for the setup of the various FAA and NWS communication interfaces. Ensures that all observations are provided to the assigned WSH personnel for analysis.

Electronic Technician (ET) - Responsible for maintaining the ASOSs under test, installing software and other hardware as appropriate, and commenting on NWS Engineering Modification Notes used during the installation of software/hardware. Configures the ASOS test system(s) for individual tests, reports any problems observed to the test coordinator, and takes maintenance action when hardware failures occur.

Data Analyst - On request by the Test Director, responsible for reviewing all METAR/SPECI observations and Standard Hydrometeorological Exchange Format (SHEF) products for

correctness.

The ST test team will consist of the following personnel:

Table 3 - Test and Technical Support Personnel

Name	Function	Telephone
Khien Nguyen (OPS24)	Test Director/testing	301-713-0326 x177
Aaron Poyer (OPS24)	Testing	301-713-0326 x112
Joseph Fiore (OPS24)	Testing	301-713-0326 x 119
Jennifer Dover (OPS22)	SFSC coordinator/testing	703-661-1259
James Brand (FAATC)	ADAS/ALDARS coordinator/testing	609-485-8185
Anna Merkel (FAATC)	WSP testing	609-485-4838
James Elwell (FAATC)	ADAS/ALDARS testing	609-485-8790
Wayne Knight (SPAWARSYSCEN)	Navy testing	843-218-4818
Robert Retzlaff (NWSTC)	NWSTC testing	816-880-9368
Joe Devost (OPS12)	NWS Mod Notes 80 and 92	301-713-1833 x 156
Dave Eckberg (Cyber Data)	SFSC hardware support	703-661-1288
Peggy Hoch/Hak Kim (OPS23)	ACU V3.05 and DCP 2.0 EPROMS – ASOS Software coordinator	301-713-0191 x 165
Richard Parry/Chet Schmitt – (OPS12)	ASOS data analysis	301-713-2093 x 109/ 301-713-2093 x 214
Joel Williams (OST11)	Ceilorometer sensor coordinator	301-713-3400 x 114
Christopher Stark (OPS32)	AOMC ASOS operations	301-713-0864 x 151
James Lane	AWIPS testing	301-713-0211 x 139
Blake Lasher (NESDIS/NCDC/SCSD/CAB)	NCDC Operations	828-271-4460

2.3.4 Installation Procedures Validation, Archive Retrieval, and AOMC Test

The ST will commence at WSH and SFSC concurrently. V3.05 software will be installed by a designated ET using the NWS Engineering Modification Note provided by the Maintenance Branch(OPS12). OPS24 recommends the installation at SFSC be performed by an ET not familiar with the V3.05 load (such as Jim Tekllinski, ET at the Sterling WFO). The note will be annotated with clarifications, inaccuracies, and omissions for return to the OPS12. The comments will be used to prepare a final note to be evaluated during the OT&E.

After each firmware version is initialized, testers will verify that all station constants and information are correct. The testers will compare the AOMC site-specific data files against the station constants to ensure their agreement.

NOTE: A "COLD RESTART" WILL BE REQUIRED ON THE ASOS TEST SYSTEMS WHEN THE V3.05 SOFTWARE IS INSTALLED. When a cold restart is performed, all METAR/SPECIs, SHEFs, and daily/monthly summaries are lost. For this ST, a download of archive data will be performed on at least one of the WSH or SFSC ASOS test systems per the NWS Engineering Modification Note.

After the V3.05 software is installed, the ASOS test systems will operate unattended for 3 days to confirm stability prior to the initiation of: 1) conduct of formal regression test procedures, 2) conduct of formal validation test procedures; and 3) "free-play" operation. The "free-play" will consist of experienced ASOS users interacting with the ASOS to validate system performance and quality of the observations.

The OPS24 will download the following from ST0, ST1: the 12-hour archive (1-minute data), 5-minute data, SYSLOG, EDIT LOG, COMMS LOG, DSM report, intermediate DSM, MSM report, DS page, MS page, METAR and SPECI reports, and the SHEF products. Data from the test systems will be used to validate changes introduced by V3.05 software or will be referenced when analyzing problems documented during the ST.

The WSH AWIPS NMTW will be configured to print all METAR/SPECIs and SHEF products as well as the DSM and MSM products from ST0, and ST1 test systems during ST. Each day, copies of these products will be provided to the Test Review Group (TRG) personnel knowledgeable in surface observations, for review of format and internal consistency.

2.3.5 Test Conduct

Prior to ST commencement, OPS23 must successfully complete a FAT test and deliver V3.05 software and related Release Note on a CD to OPS24. In accordance with the schedule contained in Table 2, on the first day of ST, the Test Director will conduct a ST readiness review with the TRG to ensure all the prerequisites are in place before the ST can begin.

At the start of ST, the Test Team will baseline and install V3.05 software on all primary test systems (ST0, ST1, SCA), in accordance with the instructions contained in the Engineering Modification Note. Also, at this time the modification note will be evaluated and comments forwarded to the test director.

The ST will be conducted in three phases as follows:

Phase-I: 72-hour stability test (no “hands-on” tests performed); conduct regression tests; and validate fixes and new capabilities; include tests using real ASOS data (i.e., temp, wind, precip, etc.) from archived weather events (e.g., Winter weather and thunderstorms) to validate V3.05 in simulated, controlled weather conditions; and, perform FAA system interface tests with the FAATC.

Phase-II: Validate Installation Modification Note on "Baseline" test systems including ability to go back to a previous baseline software version. V3.05 will operate on various non-operational ASOS at various locations for 30 day period with no "hands on" testing. These systems would also be used to validate the climate data summaries produced by ASOS.

The candidate “Baseline” systems include both the USN ASOS systems at Charleston, SC, and an NWSTC, Kansas City, MO, if their training schedule permits.

Any abnormalities or indications of non-compliant functional operations observed during the ST will be logged and called to the immediate attention of the ST Director. The Test Director will present the discrepancies to the TRG for adjudication. The Test Director will forward all discrepancies to the ASOS Software manager for resolution. A copy of any discrepancies still pending at the conclusion of the ST will be provided to the OT&E Director as “Known Problems”. Any critical problems may result in the TRG suspending the ST until they are fixed.

2.3.5.1 Phase 1 Specific Tests

Ninety nine V3.05 specific test procedures (i.e., those which validate the new capabilities and fixes) will be obtained from the OPS23. These procedures will be updated as appropriate for use to verify the changes introduced by V3.05. A copy of the V3.05 specific test procedures applicable to each individual ASOS test system will be available at that site. Attachment 2 provides the list of specific test procedures to be used for V3.05.

2.3.5.2 Phase 1 Regression Tests

Attachment 1 lists 100 regression test procedures. These regression tests will verify that V2.79 functionality remains in the V3.05 load. These tests are independent and can be performed in any order. The order in which these tests are conducted during the ST will be dependent upon testing resources and availability of the test systems. The major categories that will be tested are:

s Basic Observing Functions

Test procedures that exercise the systems ability to generate observations using the DCP as well as the ASENSE sensor simulator. All observations are checked for accuracy as well as correct archiving.

s Edit/Augment Test Procedures

These procedures evaluate the responses of the ASOS software as the observer edits

(corrects) or augments (adds to) observations. ASOS must produce valid and appropriate products (METARs, SPECIs, etc.) based on both sensor data and observer input. Valid observer input (edit or augmentation) must be correctly reflected in the ASOS products and must result in the issuance of SPECIs/CORs when appropriate. Invalid observer input must be rejected and an error message must be displayed. The observer edit function is also used to confirm proper issuance/nonissuance of SPECIs based on changes in ceiling, sky condition, visibility, wind, and present weather.

S Screen Test Procedures

These procedures confirm the availability and format of all screens including the administrative and maintenance screens.

S DCM Test Procedures

This section is in table format and verifies all possible Direct Command Mode instructions for each of the possible log on modes. This test is performed from a remote PC with a modem.

S Voice Test Procedures

These procedures verify that all elements of the ASOS vocabulary are correctly voiced. Additionally, the following functions are verified:

- METAR observation generation
- Voicing of variable visibility remarks, along with the non-voicing of the “not operational” visibility remarks
- Voicing of the ceiling, variable ceiling, and clouds lower remarks
- Non-voicing of the not operational sky remarks
- Automatic clearing of the Automatic Terminal Information Service (ATIS) message

S Generate Observation (GENOB) Function Verification

These procedures verify that all elements of the GENOB function are tested. Various combinations of GENOB functionality are tested.

S Hot Key Function Verification

The procedures in this section test the following:

- The hot keys are available to the Air Traffic Controller (ATC), but are not available to any other user.
- Some of the restrictions present when an ATC and an Observer are both logged on at the same time.
- Exercises the GENOB and HOT KEY functions for a tornado event.
- Generates and ends thunderstorm events with different combinations of the thunderstorm hot key, edit, and use of ASENSE.
- Exercises different combinations of keys to generate hail events.
- Exercises the VIRGA hot key, in combination with the edit function.
- Different combinations for generating a volcanic ash event.

S Present Weather (PWX) Augment/GENOB Interaction

These procedures demonstrate the following:

- When F6 is used to end a tornado event, any changes in present weather due to sensors since last edit do not disappear until second 23.
- Different methods of generating a tornado event, exercises the GENOB FUNNEL CLOUD Function, exercises the GENOB TORNADO Function, exercises the GENOB WATERSPOUT Function, generating tornado functions through different methods and combinations, exercises the volcanic ash hot key, exercises the VIRGA hot key and verifies that no SPECI is generated, and exercises the thunderstorm hot key and verifies it produces a SPECI.

S Visibility Algorithm On-Line Data Set Procedures

These procedures check for the proper operation of the visibility algorithm. Visibility data are provided to ASOS through ASENSE to obtain certain predictable results. The generation of Special and Local alerts are checked for transmission at the appropriate times. This section also is used to verify the proper interaction between a primary, backup, and meteorological discontinuity visibility sensors.

S Sky Algorithm On-Line Data Set Procedures

These procedures check for the proper operation of the sky algorithm. Known ceilometer data are provided to ASOS through ASENSE for the purpose of generating certain sky conditions. The generation of Specials is checked. The generation of vertical visibility reports during low visibility conditions is checked. This section is also used to check the interaction between the primary, backup, and met discontinuity sensors.

S Present Weather Algorithm Test Procedures

These procedures check the proper operation of the Present Weather algorithm. Various present weather scenarios are used in testing. Present Weather identifier and remarks are verified. The generation of Specials is checked as well as the generation of 15-minutes SHEFs, hourly SHEFs, hourly Precipitation Remarks, and Daily/Monthly information.

S Wind Algorithm On-Line Data Set Procedures

These test procedures verify the basic operation of the wind algorithm (squall, wind speed and direction limits, etc.) by performing a combination of manual data entry and running on-line data sets. This is not a detailed test of the wind algorithm, but serves as a baseline regression test.

S Temperature/Dew point Algorithm On-Line Data Set Procedures

These test procedures verify the basic operation of the temperature and dew point algorithm, including basic checks of the Relative Humidity calculation as well as analysis of the Daily and Monthly Summary Message values. Portions of the test require manual

analysis of test data. Relevant information for analysis is provided where needed in the procedure.

S Pressure Algorithm On-Line Data Set Procedures

These procedures verify the basic derived values of the pressure algorithm by performing manual analysis using the average pressure sensor values, ambient temperature, station and sensor elevations. It is not a detailed check of the pressure algorithm, but serves as a base-line verification check.

S ASOS Interfaces Test Procedures

These test procedures evaluate the ASOS systems ability to communicate with external devices. All data streams and protocols are verified for accuracy on the ASOS end as well as the receiving end. These devices include, but are not limited to, AWIPS, ACE, NGRVR, and ADAS/ALDARS.

2.3.5.3 Phase 1 “Weather Event” Specific Data Sets Tests

These tests employ ASENSE and several extensive data sets to examine the accuracy of ASOS observations in response to known inputs. The data sets were derived from actual events collected from ASOSs in the field. The data were then reformatted for use by ASENSE to provide input data to ASOS. The events of interest include, but are not limited to, tropical conditions, fog, winter conditions, severe weather, freezing rain and drizzle, and ice accretion.

IFW Datasets:

These datasets validate that the IFW QC algorithm is functioning properly. Additional test procedures validate that wind speed and direction are being properly computed and that reported wind character parameters are properly reported in the ASOS observations.

Ice Accretion Datasets:

These datasets validate that ice accretion amounts are being computed properly and are being properly encoded in the ASOS observations.

Sky Condition Datasets:

These datasets verify that ceilometer data are being processed properly and that V3.05 provides proper sky condition observations.

Present Weather Datasets:

These datasets verify that the present weather algorithms are functioning properly, that various algorithms are working together correctly and that V3.05 provides proper observations under changeable weather conditions.

Precipitation Verification Datasets:

These datasets validate that the precipitation verification QC algorithm is functioning properly.

Temperature and Dewpoint Datasets:

These datasets verify that the temperature and dewpoint to be reported in ASOS are averaged, rounded and reported properly.

Visibility Datasets:

These datasets verify that visibility is calculated and reported properly by ASOS.

Pressure Verification Datasets:

These datasets verify that pressure is calculated and reported properly by ASOS.

2.3.5.4 Real-time Monitoring of Observations

Testers will monitor observations/products as they are generated by ASOS, paying particular attention to any observations containing remarks or additive data (e.g., precipitation amounts, maximum/minimum temperatures, and three-hour pressure changes) and observations generated during periods when failed sensors are being backed up (either by the observer or the backup sensors). For observations containing remarks or additive data, review the 5-minute observations and the 1-minute data to verify their appropriateness and accuracy of the remarks. Periodically call the FAA voice phone and verify the observations (including the required remarks) are being voiced properly.

2.3.5.5 Review of Observations

The observations will be reviewed periodically in the same manner in which an observer would check the observations taken during the previous shift. For example, check temperature, dewpoint, wind shifts, pressure remarks, variable ceilings, and visibilities. Determine whether specials were taken properly. Evaluate the consistency of precipitation and temperature data from hourly data through 3-hour, 6-hour, daily, and monthly data. Specifically:

- Hourly/Special Observations -- During each shift, review the ASOS METARs and SPECIs from the previous shift.
- Daily Summaries -- Once per day, review the daily summary page to verify consistency with the additive data appearing in the hourly observations. Note: if the daily summary has been manually edited, agreement cannot be expected.
- Monthly Summaries -- Periodically review the monthly (to date) page to verify consistency with the daily pages.

2.3.5.6 Review SYSLOG Messages

Periodically review the SYSLOG, verifying that all messages correctly reflect system status.

Follow up on all “CHECK THE SYSLOG” messages whenever they appear at the bottom of the OID One Minute display. Document any messages which are not routine.

Whenever a maintenance flag (\$) is appended to a METAR or SPECI, check the SYSLOG to verify that the \$ is warranted, determine the cause of the \$, and take appropriate action. Actions range from signing on as “Technician” and clearing a data quality error to requesting maintenance.

2.3.5.7 Problem Reporting

All TTRs discovered during ST will be entered using TestTrackPro software as soon as possible so that the information is available to the test team and the software developer in a timely manner. User accounts and passwords will be available for the test members to access TestTrackPro by using either the work station located near ST0 and ST1 or the website <http://www.weather.gov/ops2/ops24/tools.htm>

For help with TestTrackPro, please contact Bert Vilorio by phone, 301-713-0326 x137, or email: Bert.Vilorio@noaa.gov).

2.3.6 Post-ST Activities

Following completion of the ST, the Test Director will conduct a final meeting for the TRG detailing all testing and a summary of any discrepancies found, major findings, and recommendations. The TRG will review the materials presented by the Test Director and make a recommendation to the ASOS Software manager whether to proceed with the OT&E. The decisions of the TRG are based on a simple majority vote conducted among the voting members present. The voting members of the TRG are listed in Table 1. A copy of all outstanding deficiencies will be provided to the OT&E Test Team and the TRG.

3.0 Test Recommendations and Report

A formal ST Report will be generated by OPS24 to document all test activities, including details of any deficiencies and final recommendations.

Attachment 1 - ASOS V3.05 REGRESSION TESTS CHECKLIST

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
1	01_01	Pre-Installation Routines		4 hrs		HQ	SP1	Joe F.	
2	02_01	UI_Help				HQ	SP1	Joe F.	
3	02_02	UI_Print				SFSC	ST0/1	SFSC	
4	02_4	Command - Observation - The CMD-OBS function allows the observer to generate corrected METAR/SPECI reports, transmit a pending SPECI before the edit time expires, and cancel a pending SPECI report before it is transmitted.	Either	30 min		SFSC	ST0/1	SFSC	
5	02_06	UI_CMD_Phone				SFSC	ST0/1	SFSC	
6	02_07	UI_CMD_PASSW				SFSC	ST0/1	SFSC	
7	02_08	Command - Time - Verifies or corrects the ASOS site's time. The TIME function calls the AOMC and synchronizes the site's time to the AOMC's time.		15 min		SFSC	ST0/1	SFSC	
8	02_13	REVUE SITE VERSN				SFSC	ST0/1	SFSC	
9	03_01	SPECI_Generation				SFSC	ST0/1	SFSC	
10	03_03	Single_Cab_Mods				SFSC	ST0/1	SFSC	
11	03_04	12_Hr_ARC				SFSC	ST0/1	SFSC	
12	03_06	LST_Updates_in_OBS_ARC				SFSC	ST0/1	SFSC	
13	03_07	Edit_presentWX_During_Hourly				SFSC	ST0/1	SFSC	
14	03_13	Edit_during_SPECI_Gen				SFSC	ST0/1	SFSC	
15	03_19	Runway_Designator_for_RVR				SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
16	04_26p	Sensor_Edit_Interaction				SFSC	ST0/1	SFSC	
17	04_34p	Celsius_Temp				SFSC	ST0/1	SFSC	
18	04_35p	Fahrenheit_Temp				SFSC	ST0/1	SFSC	
19	04_36p	Celsius_Dewpoint				SFSC	ST0/1	SFSC	
20	04_37p	Fahrenheit_Dewpoint				SFSC	ST0/1	SFSC	
21	04_39p	Wind Remark/REPRO		1 hr		SFSC	ST0/1	SFSC	
22	04_40p	Wind Edit Data Validation		30 min		SFSC	ST0/1	SFSC	
23	15_01	Wind Algorithm Regression Test -Tests basic functions of the wind algorithm by performing a combination of manual data entry and running on-line data sets [Stop after Step 61].	ASENSE	2 hrs		SFSC	ST0/1	SFSC	
24	03_01	SPECI Generation during hourly edit time and during edit time of another SPECI.	Either	45 min		SFSC	ST0/1	SFSC	
25	03_07	Editing Present Weather during hourly	Either	½ hr		SFSC	ST0/1	SFSC	
26	04_27p	Ceiling Special (Falling Below Threshold)	Either	½ hr		SFSC	ST0/1	SFSC	
27	04_31p	Visibility Special (Falling Below Threshold)	Either	1 hr		SFSC	ST0/1	SFSC	
28	04_33p	Present Weather Edit/Augment Test Procedure	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
29	14_02p	15-Min PX Counter Verification	ASENSE	1 hr		SFSC	ST0/1	SFSC	
30	14_05p	Obstruction to Vision Procedure - Tests the generation of HZ, BR, FG, and FZDZ.		10 min		SFSC	ST0/1	SFSC	
31	14_06p	PWINO, FZRANO, TSNO, AND PNO Special Notice Remarks		15 min		SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
32	11_06	Tornado Hot Key - Tests generation of tornado through different methods and combinations.	Either	20 min		SFSC	ST0/1	SFSC	
33	02_10	Review-Daily (REVUE-DAILY) and Review-Month (REVUE-MONTH) - The REVUE-DAILY and REVUE-MONTH functions allow the observer to review, edit, and augment the daily and monthly summary products. These products will then be encoded into messages.	Either	1 hr		SFSC	ST0/1	SFSC	
34	02_14	Review-Sensor - This procedure tests the REVUE-SENSR function is available all users except the Air Traffic Controller (ATC). The REVUE-SENSR function enables the user to view the 12 hour archive of raw sensor data, the last 10 minutes of algorithm processed sensor data, and sensor status information such as turning report processing on or off and whether the sensor is in automated or manual mode.	Either	15 min		SFSC	ST0/1	SFSC	
35	02_15	Review SYSLOG - This procedure tests the ASOS System Logging capability.	Either	15 min		SFSC	ST0/1	SFSC	
36	02_16	COMLG Function Verification	Either	15 min		SFSC	ST0/1	SFSC	
37	02_17	TWR Function Verification	Either	15 min		SFSC	ST0/1	SFSC	
38	02_18	SIGN ON/OFF Function Verification	Either	15 min		SFSC	ST0/1	SFSC	
39	02_19	EDIT Function Verification	Either	30 min		SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
40	03_16	Accumulated Precipitation Remark - This procedure verifies the Hourly Precipitation Amount (Prrrr) is displayed correctly on the one-minute page (REMARKS field) and that it gets reset properly after the observation has been transmitted.	ASENSE	30 min		SFSC	ST0/1	SFSC	
41	04_28	CEILING SPECI (Rising to Equal/Above Threshold)	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
42	04_29p	LAYER SPECI (Entered/Removed Below Threshold)	Either	45 min		SFSC	ST0/1	SFSC	
43	04_30p	VIS Data Validation	Either	25 min		SFSC	ST0/1	SFSC	
44	04_32p	VIS SPECIAL (Rising to Equal/Above Threshold)	Either	1 hr		SFSC	ST0/1	SFSC	
45	04_41p	Altimeter Edit Data Validation	Either	30 min		SFSC	ST0/1	SFSC	
46	04_42p	SKY Augment Edit Log Entries	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
47	06_01	REVUE SITE PHYS Screen Verification	Either	20 min		SFSC	ST0/1	SFSC	
48	06_03	REVUE SITE CRIT SPECIAL Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	
49	06_05	REVUE SITE CRIT LOCAL Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	
50	06_06	REVUE SITE CRIT SHEF Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	
51	06_07	REVUE SITE CONFG EXTRN Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	
52	06_13	REVUE RPT 5MIN Screen Verification	Either	20 min		SFSC	ST0/1	SFSC	
53	06_14	REVUE RPT Screen Verification	Either	15 min		SFSC	ST0/1	SFSC	
54	06_15	REVUE RPT OBS Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
55	06_17	REVUE RPT 5-MIN REV2H Screen Verification	Either	15 min		SFSC	ST0/1	SFSC	
56	06_19	EDIT Screen Verification	Either	15 min		SFSC	ST0/1	SFSC	
57	06_21	EDIT REM Screen Verification	Either	30 min		SFSC	ST0/1	SFSC	
58	07_01	DCM				SFSC	ST0/1	SFSC	
59	08_01	Vocabulary_Verification				SFSC	ST0/1	SFSC	
60	08_02	Met_Disc_Voicing				SFSC	ST0/1	SFSC	
61	08_03	Visibility_Voicing				SFSC	ST0/1	SFSC	
62	08_04	Voicing_of_Ceiling				SFSC	ST0/1	SFSC	
63	08_05	ATIS				SFSC	ST0/1	SFSC	
64	09_01	GENOB Function Verification	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
65	09_02	GENOB Present Weather BEGIN/END Times	Either	30 min		SFSC	ST0/1	SFSC	
66	10_01	HOT KEY User Verification	Either	15 min		SFSC	ST0/1	SFSC	
67	10_02	HOT KEY Access Restriction Verification	Either	15 min		SFSC	ST0/1	SFSC	
68	10_03	TORNADO HOT KEY Verification	Either	45 min		SFSC	ST0/1	SFSC	
69	10_04	THUNDERSTORM HOT KEY Verification	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
70	10_05	HAIL HOT KEY Verification	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
71	10_06	VIRGA HOT KEY Verification	Either	30 min		SFSC	ST0/1	SFSC	
72	10_07	VOLCANIC ASH HOT KEY Verification (different combinations)	ASENSE	1 hr		SFSC	ST0/1	SFSC	
73	11_01	FC Augmented Into Present Weather	Either	10 min		SFSC	ST0/1	SFSC	
74	11_02	+FC Augmented into Present Weather	Either	30 min		SFSC	ST0/1	SFSC	
75	11_03	GENOB Funnel Cloud	Either	15 min		SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
76	11_04	GENOB Tornado	Either	20 min		SFSC	ST0/1	SFSC	
77	11_05	GENOB Spout	Either	20 min		SFSC	ST0/1	SFSC	
78	11_07	VOLCANIC ASH HOT KEY Verification	Either	10 min		SFSC	ST0/1	SFSC	
79	11_09	VIRGA HOT KEY	Either	15 min		SFSC	ST0/1	SFSC	
80	11_10	THUNDERSTORM HOT KEY	Either	15 min		SFSC	ST0/1	SFSC	
81	13_06	SKY SPECIALS Checkout	Either	30 min		SFSC	ST0/1	SFSC	
82	14_01p	PRESENT WEATHER Identifiers/Remarks Verifications	Either	2 ½ hrs		SFSC	ST0/1	SFSC	
83	14_03p	FROZEN PRECIPITATION Combination Verification	Either	2 hrs		SFSC	ST0/1	SFSC	
84	14_07p	SNOW INTENSITY Verification	Either	1 ½ hrs		SFSC	ST0/1	SFSC	
85	14_08	SQUALL SPECIAL Verification	Either	15 min		SFSC	ST0/1	SFSC	
86	14_09p	FZRA_Intensity_Change_Specials				SFSC	ST0/1	SFSC	
87	14_10p	Update_of_Daily_Summary				SFSC	ST0/1	SFSC	
88	14_11p	Gen_of_SHEFs_and_Precipitation_Remarks				SFSC	ST0/1	SFSC	
89	14_12p	Present_Weather_Freezing_rain				SFSC	ST0/1	SFSC	
90	14_13p	PWX_and_Obstruction_to_Vision				SFSC	ST0/1	SFSC	
91	14_14p	PWX_Encoding				SFSC	ST0/1	SFSC	
92	14_15p	Blowing_Snow_Algorithm				SFSC	ST0/1	SFSC	
93	20_09	WSP Interface Test	ASENSE	1 hr		SFSC	ST0	Khien	
94	20_10	Verification of ADAS 1-minute Data Message for IFW, DTS1, AWPAG	ASENSE	1 hr		SFSC	ST0	Khien	
95	20_6	Navy ATC Interface Test - Checks ASOS/Navy ATC interface for proper output to the ATC monitor.	Either	1 hr		SFSC	ST0/1	SFSC	

#	TEST #	Test Description	Scenario Either ASENSE or LIVE Sensor	Duration	Date	Site	System	Tester	Pass ?
96	20_3	ACE Interface Test - Checks ASOS ACE interface for proper output to the ACE simulator	Either			SFSC	ST0/1	SFSC	
97	20_1	ADAS/ALDARS Interface to ASOS Test - Checks ASOS response to ALDARS data.	Either			SFSC	ST0	Khien	
98	20_2	NGRVR Testing -Verifies edited and automated RVR data, encoding in METAR/SPECIs, SPECI generation.	ASENSE	3 hrs		SFSC	ST0/1	SFSC	
99	20_4	Ground to Air (GTA) Radio Verification - Verifies the GTA radio is operational by checking that all values on the maintenance page are "P".	Either	15 min		SFSC	ST0/1	SFSC	
100	20_5	ASOS to AWIPS Interface Verification - Verifies AWIPS ingests and stores ASOS products and these products can be displayed on AWIPS and that AWIPS distributes ASOS products appropriately.	Either	20 min		HQ	SP1	Khien	

Attachment 2 - ASOS V3.05 SPECIFIC TESTS CHECKLIST

Verification of Old and Recent fixes

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
PART I -Verification of Software Security Features (FAT V1.3, Dated 02/25/10, for ASOS V3.03)								
1	5.5.1	Login using Default Password to verify Enc/Dec logic is working				SCA & ST0	SFSC	
2	5.5.2	Technician Logged out after AOMC download				SCA & ST0	SFSC	
3	5.5.3	Encryption of Password and Auto Upload after First Deployment				SCA & ST0	SFSC	
4	5.5.4	Download of Encrypted Password and SYSMGR Logged at the time of VOICE/PASSW download				SCA & ST0	SFSC	
5	5.5.5	Operation after downloading Encrypted Group, Critical Region Password, and Remote Access Code				SCA & ST0	SFSC	
6	5.5.9	Technician Password Change				SCA & ST0	SFSC	
7	5.5.12	Remote Access Code Change				SCA & ST0	SFSC	
8	5.5.13	Critical Region Password Change				SCA & ST0	SFSC	
9	7.3.3	Remote Login as SYSMGR changes Elevation with Correct Password				SCA & ST0	SFSC	
10	8.3.1	Remote or Local Intrusion attempt				SCA & ST0	SFSC	
11	8.3.2	Password Expiration				SCA & ST0	SFSC	
12	8.3.4	Denial of Service				SCA & ST0	SFSC	
13	8.3.5	"DATE" key Audit Log Screen				SCA & ST0	SFSC	
14	8.3.7	Audit log DCM Download with Correct SYSMGR Password				SCA & ST0	SFSC	
15	8.3.9	Audit log AOMC Upload with Response "Y"				SCA & ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
PART II - Verification of Recent fixes								
16	TTR232	Incorrect EDITLOG entries	Regression Test 4.42			ST0	SFSC	
17	TTR233	PNO remark lingers on	Regression Test 14.06			ST0	SFSC	
18	TTR234	Incorrect coding of present weather	Regression Test 14.13			ST0	SFSC	
19	TTR236	Monthly Summary (MSM) missing	Regression Test 2.10			ST0	SFSC	
20	TTR237	Incorrect AMR report and I-group values	Specific Test S01164 #5			ST0	SFSC	
21	TTR238	Incorrect Freezing rain sensor status	Specific Test ECP703			ST0	SFSC	
22	TTR240	No freezing rain sensor calibration message	Specific Test S01055 #9			ST0	SFSC	
23	TTR241	Freezing rain sensor calibration numbers not maintained for 31 days	Specific Test S01055 #9			ST0	SFSC	
PART III - Verification of Old Fixes								
24	OTR1001	Verification of fix for Invalid Display FZRA				ST0	SFSC	
25	OTR1002	Verification of fix for Invalid Edit log entries				ST0	SFSC	
26	OTR1004	Verification of fix for PEAK WIND REMARK not encoded	Rework			ST0	Khien	
27	OTR1012	Verification of fix for EDIT LOG not record aborted entries correctly				ST0	SFSC	
28	OTR1014	Verification of fix for Incorrect rounding of Monthly Precip.				ST0	SFSC	
29	OTR1016	Verification of fix for Present Weather field not updated correctly				ST0	SFSC	
30	OTR1022	Verification of fix for Incorrect deletion of PL from PWX				ST0	SFSC	
31	OTR1047	Verification of fix for Incorrect Function Present Weather				ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
32	OTR1057	Verification of fix for OTR1057 Incorrect ending date and Time for Monthly Summary Product				ST0	SFSC	
33	S00703	Software Supports for Additional ASOSs - Proper Encoding of AO1 and AO2 in the METAR remarks				ST0	SFSC	
34	S00704	Improve Present Weather Quality Control Logic				ST0	SFSC	
35	S00705	Transmit Special any Time				ST0	SFSC	
36	S00706	Add Precipitation Accumulation Remark in all 5-Minute Observations when Precipitation is Occurring				ST0	SFSC	
37	S00707	Modify Daily Summary Product Weather Codes				ST0	SFSC	
38	S00719	Precipitation BEGIN/END Remarks				ST0	SFSC	
39	S00786	Eliminate Possible CLR AUTO ENTRY Before Augmented Entry in SKY Field				ST0	SFSC	
40	S00788	Remove Additive Data From Specials Transmitted during HOURLY EDIT Time				ST0	SFSC	
41	S00789	Generate Special for BEGIN/END/CHANGE of Intensity of Ice Pellets				ST0	SFSC	
42	S00790	Change Order of Encoded Remarks for Beginning and Ending Times of Thunderstorms				ST0	SFSC	
43	S00791	Displaying and Voicing all Values of Density Altitude				ST0	SFSC	
44	S00815	Separate Report Processing Control for Each Sensor				ST0	SFSC	
45	S00830	Report Multiple "FEW" Layers in SKY Field				ST0	SFSC	
46	S00836	QC Error Messages for Dew Point with Missing Ambient Temperature				ST0	SFSC	
47	S00837	Revise VDU Display Format for TEMP/DEWPOINT				ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
48	S00847	Compute Minutes of Sun at Latitudes Greater than 60 Degrees				ST0	SFSC	
49	S00874	Display Last Transmitted METAR/SPECI Report				ST0	SFSC	
50	S00914	Allow Manual Entry of "000" in the SKY CONDITION Field				ST0	SFSC	
51	S00972	Remove SAO Logic From ACU Software						
52	S00983	Cursor Control during CORRECTION EDIT				ST0	SFSC	
53	S01005	Negative Pressure Reduction Constants				ST0	SFSC	
54	S01016	Modification to Wind Data Quality Algorithm				ST0	SFSC	
55	S01018	Connect WSP and Report 10-second Wind	Done in 20.09			ST0	Khien	
56	S01055	Adaptive Baseline Frequency for Freeing Rain Sensor	Rework			ST0	Khien	
57	S01078	Include TEMP/DEWPOINT Remark in all Observations				ST0	SFSC	
58	S01105	Change Daily Summary Product Sky Cover Labels				ST0	SFSC	
59	S01106	Improve Change of Time SYSLOG Entry				ST0	SFSC	
60	S01110	Validation of PRECIP ACCUMULATION				ST0	SFSC	
61	S01113	Add "LST" Label to Date Field on the PHYSICAL and OID SCREENS				ST0	SFSC	
62	S01125	Eliminate Unnecessary OID Function Calls				HQ SP1	Khien/ Hak	
63	S01126	Add Ice ACCRETION REMARK to METAR/SPECI Reports				ST0	SFSC	
64	S01133	Provide TECHNICIAN AUTHORIZATION to set DSM/MSM TRANSMIT TIMES				ST0	SFSC	
65	S01152	Correct Transmission Logic for DSM/MSM "COR"				ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
66	S01164	Add ICE ACCRETION to AMR for DIRECT COMMAND MODE (DCM) Access				ST0	SFSC	
67	AA618	Generate GTA Tone at TECH LEVEL				ST0	SFSC	
68	AB419	Air Force Modifications				ST0	SFSC	
69	AC302	Auto ENABLE/DISABLE of Freezing rain Sensor	Rework			ST0	SFSC	
70	AC919	Removing IFW Path Errors from SYSLOG				ST0	SFSC	
71	S00898	Increase the size of the cloud statistic archive				ST0	SFSC	
72	S00994	Modify precip accum algorithm to ensure trace reporting				ST0	SFSC	
73	S01107	Prevent use of sensor data when report processing is off	Rework			ST0	SFSC	
74	S01109	Store data that causes a data quality in brackets				ST0	SFSC	
75	S01124	Increase local sensor ports from 3 to 6 to support testing	Rework			ST0	SFSC	
76	AA292	Change thunderstorm reporting threshold for SPECI reports				ST0	SFSC	
77	AA713	Modify sky condition algorithm	Rework			ST0	Khien	
78	AA824	Store software versions for AOMC uploads				ST0	SFSC	
79	10395	Redesign of tasking and inter-task communications				ST0	SFSC	
80	10055	Change to RVR reporting to comply with FAAO 7900.5				ST0	SFSC	
81	10325	Expand operational periods for freezing rain sensor				ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
82	10601	Maintenance page IFW path error count				ST0	SFSC	
83	11443	IFW data quality control (QC) algorithm				ST0	SFSC	
84	1011	Temperature rounding inconsistencies				ST0	SFSC	
85	1021	Missing EDIT log entries				ST0	SFSC	
86	1033	ARCH2 function not archiving requested 5-minute observations				ST0	SFSC	
87	1040	Correction to visibility computations				ST0	SFSC	
88	1041	Pressure parameters reported using only one pressure sensor				ST0	SFSC	
89	1044	Correction to funnel cloud logic				ST0	SFSC	
90	1054	Rounding negative temperatures				ST0	SFSC	
91	1056	Inaccurate data basing of GTA frequencies				ST0	SFSC	
92	1056B	Precip Accum data quality				ST0	SFSC	
93	1061	Visibility missing from METAR/SPECI reports				ST0	SFSC	
94	1070	Invalid wind information in daily summary product				ST0	SFSC	
95	1074	ASOS ACU processor status nomenclature				ST0	SFSC	
96	1075	Warm boot errors on Navy ASOS systems				ST0	SFSC	
97	1079	IFW wind speed data not rounding correctly				ST0	SFSC	
98	1087	False UPS DCP Status Indicator				ST0	SFSC	

#	TEST #	Test Description	Notes	Duration	Date	Site/System	Tester	Pass ?
99	1013	Missing Edit Log entry for manual SPECI reports (OTR1013)				ST0	SFSC	

Attachment 3 - ASOS On-Line Datasets Checklist

Cases	Test Description	Notes	Duration	Pass /Fail	Date
1	IFW datasets				
2	Ice Accretion datasets				
3	Sky Condition datasets				
4	Present Weather datasets				
5	Precipitation Verification datasets				
6	Visibility datasets				
7	Temperature/Dewpoint datasets				
8	Pressure Verification datasets				

*** Datasets to be provided by Chet Schmitt (OPS22)**

Attachment 4 - ASOS Test Trouble Report

TYPE OF DEFECT: <input type="checkbox"/> System Deficiency <input type="checkbox"/> Enhancement <input type="checkbox"/> Modify Current Feature <input type="checkbox"/> Documentation/Procedure <input type="checkbox"/> Hardware <input type="checkbox"/> Watch Item	PRIORITY: 1. Needs immediate emergency fix 2. Includes in next maintenance release 3. Includes in future maintenance release 4. Includes in next major build 5. Includes in future major release 6. Undetermined	IMPACT: 1. Prevents successful observation; no workaround 2. Prevents successful observation; reasonable workaround 3. Less critical degradation of data 4. Degradation of system capabilities; no data affect 5. Minimal to no impact; nice to have 6. Undetermined
SUBSYSTEM/COMPONENT: <input type="checkbox"/> Algorithm <input type="checkbox"/> Comms <input type="checkbox"/> Sensor <input type="checkbox"/> Simulator <input type="checkbox"/> User interface <input type="checkbox"/> Voice <input type="checkbox"/> Other	REPEATABILITY: <input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> One-time <input type="checkbox"/> See Description <input type="checkbox"/> Unknown <input type="checkbox"/> Not applicable	
TEST ACTIVITY: <input type="checkbox"/> FAT <input type="checkbox"/> ST <input type="checkbox"/> OT&E <input type="checkbox"/> Demo <input type="checkbox"/> Other	CONFIGURATION/TEST DATA: <input type="checkbox"/> Live data feed <input type="checkbox"/> Simulator	ATTACHMENT: __pages

TTR NO: *(Assigned by Test Track program)*

LOCATION (SID): _____

SOFTWARE VERSION:

TITLE/SUMMARY:

DATE/TIME DISCOVERED: _____

ORIGINATOR:

DESCRIPTION, CAUSE OF PROBLEM:

(References: ECPs/RCs/OTRs: _____ Test procedure/steps: _____)

