

SYSTEM TEST REPORT FOR THE ASOS VERSION (V)2.90 SOFTWARE LOAD

(Dated 02/14/06)

INTRODUCTION – The Office of Operational Systems, Field Systems Operations Center, Test and Evaluation Branch (OPS24) successfully completed a System Test (ST) for the Automated Surface Observing System (ASOS) Acquisition Control Unit (ACU) software V2.90 (02/14/06). This new load was based on the V2.82 (10/27/05) and is the first build towards ASOS V3.00 and includes the following new capabilities and bug fixes:

- S01124 – Add Additional Local Sensor Ports
- AA292 - Change Thunderstorm Reporting Threshold for SPECIs
- S00898 – Increase half-Hourly Cloud Statistics
- OTR 1040 – Incorrect Visibility Computation with Edited Present Weather.

The first capability listed is the major feature in this load and allows additional sensors to be connected to the local ACU. The software will be used to support 5 operational ASOSs configured with an ACU without a Data Collection Platform. This configuration is typically referred to as “ACU-only.” All previous loads only allowed a maximum of three sensors to be connected to the local ACU. Because of the limited number of available communication ports on these ASOSs, the new dew point sensor (DST1) cannot interface to these 5 ASOSs. This software will allow the NWS to complete the installation of the new single-board processor with the new DTS1 sensor at these ASOS sites.

The other capabilities in the above list form the basis of the future ASOS Build 3.0 load but will not affect the operational use or performance of these 5 ASOSs. Therefore, they will not be validated as part of this ST.

Also, none of the 5 affected ASOS interface the Federal Aviation Administration operational systems nor are they owned by the U.S. Air Force. Therefore, there is no requirement to test this software load at the FAA Technical Center, Atlantic City, NJ nor at the Fort Rucker, AL.

The ST was conducted in accordance to the System Test Plan for ASOS Software V2.90 (02/14/06), issued by email on March 1, 2006. The ST began on March 1 and ended March 3, 2006.

TEST METHODOLOGY – The new software was installed on the ASOS Test Systems SP1 at the National Weather Service Headquarters (WSH), Silver Spring, MD, on February 28, 2006. SP1 was reconfigured to simulate an ACU-only ASOS station. A “real” DTS1 dew point was connected directly to the ACU through a “local” port. Mr. John Monte (OPS11) was helping us configure the ASOS hardware and connection. Other sensors were emulated by ASENSE, using the remaining local ports. After the software was installed on the SP1 test system, checkout tests were performed. Subsequently, all planned regression tests (see Attachment 1) were performed to ensure the new fixes have no adverse effect on the existing ASOS system in both functionality and accuracy.

TEST RESULTS – This software load successfully supported the ACU-only configuration.

The number of configurable communication ports for local sensors on the ACU was increased from 3 to 6. The DTS1 sensor signal was successfully assigned to each of the newly available local sensor ports (#4, 5, and 6) and the physical serial port connection was also changed. The dew point sensor operated correctly under all conditions tested. All regression tests were successful. The existing ASOS functionalities were maintained and the system was stable. No problems were noted with the performance of the software during the ST. There were no cold or warm starts after the software was installed.

RECOMMENDATION - OPS24 therefore recommends to the ASOS Test Review Group to proceed to OAT for this V2.9 (2/14/06) software load. The first site is designated as the ASOS at Garrison, ND. A total of 5 ACU-only ASOSs requires this software to interface the new DTS-1 dew point sensor.

ATTACHMENT 1

ASOS V2.90 (02/14/06) SYSTEM TEST CHECKLIST (REGRESSION TESTS)

#	TEST #	Test Description	Duration	Pass/Fail	Date	Site
1	01.01	Pre-Installation Routines	4 hrs	P	03/01/06	SP1
2	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.	7 hours	P	03/02/06	SP1
3	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	P	03/01/06	SP1
4	03.01	SPECI Generation —during hourly edit time and during edit time of another SPECI.	45 min	P	03/01/06	SP1
5	14.02	15-Min PX Counter Verification	1 hour	P	03/01/06	SP1
6	14.05	Obstruction to Vision Procedure —Tests the generation of HZ, BR, FG, and FZBG.	30 min	P	03/01/06	SP1
7	14.06	PWINO, FZRANO, TSNO, AND PNO Special Notice Remarks	15 min	P	03/01/06	SP1
8	20.04	Ground to Air (GTA) Radio Verification - Verifies the GTA radio is operational by checking that all values on the maintenance page are "P".	15 min	P	03/02/06	SP1