

February 23, 2006

SYSTEM TEST REPORT FOR THE ASOS Version 2.79B (09/19/05) SOFTWARE

INTRODUCTION - On Tuesday, October 18, 2005, the Office of Operational Systems, Field Systems Operations Center, Test and Evaluation Branch (OPS24) successfully completed a regression and new functionality validation portions of the System Test (ST) for the Automated Surface Observing System (ASOS) Acquisition Control Unit (ACU) software version (V) 2.79B (09/19/05). Subsequently, V2.82 was installed in the operational ASOS at Atlantic City, NJ (ACY) and test personnel at the Federal Aviation Administration Technical Center (FAATC), Atlantic City, NJ, successfully validated their FAA interfaces to ASOS using the operational ACY with V2.79B. The results of the FAA tests were reported to the ASOS Test Review Group at the December 1, 2005, meeting.

This is a latest version of test software in the V2.79 series and is identical to V2.79A (03/22/05) with the addition of two changes:

- 1) Incorporation of a fix for the spontaneous coldstarts noted at some sites with an AWOS/ASOS Data Acquisition System (ADAS)/Automated Lightning Detection and Reporting System (ALDARS) interface and V2.7B-6 or V2.79 ACU software.
- 2) Removal of Ice-Free Wind (IFW) sensor "path error" diagnostic messages from the ASOS SYSLOG.

These are minor changes and should not affect other ASOS operations. Therefore, since V2.79A was subject to both an ST and an Operational Acceptance Test at field sites, OPS24 performed a limited ST (regression tests and confirmation of the new changes only).

The ST *Plan for ASOS V2.79 (12/19/03) Software Load*, dated 01/30/04, has been used as the umbrella plan for all subsequent test software loads we received through this latest V2.79B.

TEST METHODOLOGY - The V2.79B software was installed on the ASOS Test Systems SP1 at the National Weather Service Headquarters (WSH), Silver Spring, MD, and ST0 at the Sterling Research and Development Center (SR&DC), Sterling, VA, on September 22, 2005 and on September 28, 2005, respectively. The SP1 ASOS has a single Data Collection Platform (DCP) configuration and the ST0 ASOS has a three-DCP configuration. The SP1 has an ACE-IDS simulator and a Codex modem for communication with the FAA Technical Center to evaluate the FAA Automated Data Acquisition System/Automated Lightning Detection and Reporting System interface only.

After V2.79B was installed on the SP1 and ST0 test systems, checkout tests were performed. Subsequently, 17 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. The regression tests covered all major aspects of the ASOS system such as sensor measurements,

system communication, data processing, and data reporting. Specific tests were performed to confirm the new changes in the software. Although no methodology exists to confirm the coldstart fix without an operational ADAS/ALDARS interface, the fix was confirmed at two field sites during the ST.

TEST RESULTS - All regression tests were successfully completed on either the SP1 or ST0 Test Systems, where applicable. The ST0 ASOS operated with V2.79B from September 28 through October 10 and the SP1 ASOS operated with V2.79B from September 22 through October 12 with no problems noted. V2.79B was removed from ST0 on October 10 to allow testing of another software version and re-installed on October 18 for confirmation of the “path error” fix on October 18. Using SP1 and the Codex modem interface to the FAA Technical Center, ADAS/ALDARS functionality was confirmed on October 12. In addition, V2.79B was approved for early installation (prior to completion of the ST) at two field sites (North Platte, NE, and Salina, KS) to expedite evaluation of monthly summary data for the month of October. SYSLOG messages at both sites have documented proper operation of the V2.79B fix designed to eliminate spontaneous cold starts at sites interfaced to ADAS/ALDARS. The regression and new functionality portions of the ST for V2.79B ended on Tuesday, October 19, 2005.

As result of the successful regression and functionality tests, OPS24 coordinated with the NWS Eastern Region Headquarters and the Weather Forecast Office, Mt. Holly, NJ, along with the appropriate FAA focal points for further testing of V2.79B to complete the ST. The V2.79B was installed at the ASOS for Atlantic City, NJ by the NWS support staff from the Weather Forecast Office Mt. Holly, NJ. This allowed the test personnel at the FAATC to validate V2.79B with their operational FAA interfaces (i.e., ACE-IDS/IDS4, ADAS, and WSP). The validation was successfully completed by the FAA and was reported during a teleconference call to the ASOS Test Review Group meeting in Dec 1, 2005.

It is recommended the software version V2.79B be installed at Service Level D sites listed in the V2.79B OAT Plan to commence the OAT.

ATTACHMENT 1

ASOS V2.79B SYSTEM TEST CHECKLIST

#	TEST #	Test Description	Scenarios: Either ASENSE or LIVE Sensor	Durat ion	Pass/Fail	Date	Site
1	04.40	Wind Edit Data Validation	ASENSE	30 min	P	09/22/05	SP1
2	04.39	Wind Remark/REPRO	ASENSE	1 hour	P	09/22/05	SP1
3	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.	ASENSE	7 hours	P	09/28/05	STO
4	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.	ASENSE	15 min	P	09/22/05	SP1
5	03.01	SPECI Generation –during hourly edit time and during edit time of another SPECI.	Either	45 min	P	09/22/05	SP1
6	03.07	Editing Present Weather during hourly	Either	½ hour	P	09/22/05	SP1
7	04.27	Ceiling Special (Falling Below Threshold)	Either	½ hour	P	09/29/05	SP1
8	04.31	Visibility Special (Falling Below Threshold)	Either	1 hour	P	09/29/05	STO

#	TEST #	Test Description	Scenarios: Either ASENSE or LIVE Sensor	Duration	Pass/Fail	Date	Site
9	04.33	Present Weather Edit/Augment Test Procedure	Either	1 ½ hrs	P	09/28/05	ST0
10	14.02	15-Min PX Counter Verification	ASENSE	1 hour	P	09/28/05	ST0
11	14.05	Obstruction to Vision Procedure – Tests the generation of HZ, BR, FG, and FZBG.	ASENSE	30 min	P	09/28/05	ST0
12	14.06	PWINO, FZRANO, TSNO, AND PNO Special Notice Remarks	Either	15 min	P	09/28/05	ST0
13	20.02	NGRVR Testing –Verifies edited and automated RVR data, encoding in METAR/SPECIs, SPECI generation.	ASENSE	3 hrs	P	09/29/05	SP1
14	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”.	Live	15 min	P	09/28/05	ST0
15	20.05	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.	Live	20 min	P	09/29/05	SP1
16	20.06	Navy ATC Interface Test –Checks ASOS/Navy ATC interface for proper output to the ATC monitor.	Live	1 hour	P	09/22/05	SP1
17	11.06	Tornado Hot Key –tests generation of tornado through different methods and combinations	Live	½ hour	P	09/28/05	ST0