

## **SYSTEM TEST REPORT FOR THE ASOS VERSION (V) 2.79W SOFTWARE LOAD**

(Dated 10/29/07)

**INTRODUCTION** - The Office of Operational Systems, Field Systems Operations Center, Test and Evaluation Branch (OPS24), with support from the test personnel at Sterling Research and Development Center (SR&DC), Sterling, VA, has completed a System Test (ST) for the Automated Surface Observing System (ASOS) Acquisition Control Unit (ACU) software load 2.79W, dated 10/29/07. This new load is based on the current operational V2.79D (01/11/07).

The software incorporates fixes for known problems. The V2.79W software will:

Reduce the number of "Serial Input/Output (SIO) Transmission Error" messages in the SYSLOG. Although the SIO errors are not an operational problem, the SYSLOG messages are a nuisance and raise unjustified concerns.

Reduce the number of unreasonable wind speed occurrences by eliminating a visibility sensor checksum error which was found to cause Ice-Free Wind (IFW) data to be over-written in the Acquisition Control Unit (ACU) memory.

Perform 5-second/3-second wind speed quality control (verifying the presence of wind data, performing a range check, checking for corrupted values) and reject the entire suite of 5/3-second wind data if it is suspicious.

The software also incorporates diagnostic capabilities:

The ACU will archive the 5-second wind data, "WT" commands, and wind speed quality control data (14 hours of data, not viewable on the OID, but available via Direct Command Mode) for analysis.

The ST was conducted in accordance to the System Test Plan for ASOS Software V2.79W (10/29/07), issued by email on October 31, 2007. The ST began on November 5 and ended Nov. 15, 2007.

**OBJECTIVES** - To verify the efficacy of the new corrections in V2.79W (10/29/07) on test ASOS systems using the latest weather sensors configured as in the field. Also, to ensure the ASOS system stability is maintained and the existing ASOS functions are not negatively affected by the new changes.

**TEST METHODOLOGY** - The new software was installed on the ASOS Test Systems SP1 at the National Weather Service Headquarters (WSH), Silver Spring, MD, and ST0 at SR&DC, Sterling, VA, on November 5. The SP1 ASOS has a single Data Collection Platform (DCP) configuration and the ST0 ASOS has a three-DCP configuration.

After the software was installed on the SP1 and ST0 test systems, 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** - Both the ASOS test system SP1 and ST0 were stable. All conducted regression tests were successful. During the ST, two Test Trouble Reports (TTRs) were generated as follows:

**TTR 170:** During Regression Test number 14.01 (see Attachment 1), no SPECI was generated for the end of Ice Pellets (PL). This is a known problem (ECP S0789) and will be addressed in software version 2.85.

**TTR 172:** While conducting the IFW field test (data logger and camera analysis), it was discovered that the code currently in ASOS to calculate invalid peak wind errors is not coded as the Structured English description.

**RECOMMENDATIONS** - It is recommended the software version 2.79W be installed at the selected operational test sites with a history of problems associated with the usage of the IFW sensor. Once the software is installed, WSH will monitor those sites and collect the diagnostic data for analysis. The software will remain at these sites only until the diagnostic tool provided in the software has served its purpose.

**POINT OF CONTACT** - Khien Nguyen is the OPS24 lead for the ST. Khien can be contacted by e-mail, [khien.nguyen@noaa.gov](mailto:khien.nguyen@noaa.gov), or by telephone at 301-713-0326 x177.

## ATTACHMENT 1

## ASOS V2.79W (10/29/07) SYSTEM TEST CHECKLIST (REGRESSION TESTS)

#	TEST #	Test Description	Scenarios: Either ASENSE or LIVE Sensor	Durati on	Pass /Fail	Date	Site
1	01_01	<b>Pre-Installation Routines</b>		4 hrs	P	11/6/07	SP1
2	04_40p	<b>Wind Edit Data Validation</b>		30 min	P	11/9/07	ST0
3	04_39p	<b>Wind Remark/REPRO</b>		1 hr	P	11/15/07	ST0
4	15_01	<b>Wind Algorithm Regression Test -</b> Tests basic functions of the wind algorithm by performing a combination of manual data entry and running on-line data sets [ <b>Stop after Step 61</b> ].	ASENSE	2 hrs	P	11/7/07	ST0
5	02_08	<b>Command-Time -</b> 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	11/7/07	ST0
6	03_01	<b>SPECI Generation</b> during hourly edit time and during edit time of another SPECI.	Either	45 min	P	11/7/07	ST0
7	03_07	<b>Editing Present Weather during hourly</b>	Either	½ hr	P	11/7/07	ST0
8	04_27p	<b>Ceiling Special (Falling Below Threshold)</b>	Either	1 ½ hr	P	11/7/07	ST0
9	04_31p	<b>Visibility Special (Falling Below Threshold)</b>	Either	1 hr	P	11/7/07	ST0
10	04_33p	<b>Present Weather Edit/Augment Test Procedure</b>	Either	1 ½ hrs	P	11/7/07	ST0
11	14_02p	<b>15-Min PX Counter Verification</b>	ASENSE	1 hr	P	11/7/07	ST0

12	14_05p	<b>Obstruction to Vision Procedure -</b> Tests the generation of HZ, BR, FG, and FZDZ.	ASENSE	30 min	P	11/7/07	ST0
13	14_06p	<b>PWINO, FZRANO, TSNO, AND PNO</b> Special Notice Remarks		15 min	P	11/9/07	ST0
14	20_2	<b>NGRVR Testing</b> - Verifies edited and automated RVR data, encoding in METAR/SPECIs, SPECI generation.	ASENSE	3 hrs	P	11/14/07	ST0
15	20_4	<b>Ground to Air (GTA) Radio Verification</b> - Verifies the GTA radio is operational by checking that all values on the maintenance page are "P".	Live	15 min	P	11/8/07	ST0
16	20_5	<b>ASOS to AWIPS Interface Verification</b> - Verifies AWIPS ingests and stores ASOS products and these products can be displayed on AWIPS and that AWIPS distributes ASOS products appropriately.		20 min	P	11/19/07	SP1
17	20_6	<b>Navy ATC Interface Test</b> - Checks ASOS/Navy ATC interface for proper output to the ATC monitor.	Live	1 hr	P	11/5/07	ST0
18	11_06	<b>Tornado Hot Key</b> - Tests generation of tornado through different methods and combinations.	Live		P	11/7/07	ST0
19	20_3	<b>ACE Interface Test</b> - Checks ASOS ACE interface for proper output to the ACE simulator			P	11/15/07	ST0
20	20_1	<b>ADAS/ALDARS Interface to ASOS Test</b> - Checks ASOS response to ALDARS data.			P	11/8/07	ST0
21	20_10	<b>Verification of ADAS 1-Minute Data for IFW, DTS1, and AWPAG</b>			P	11/14/07	ST0
22	02_15	<b>Review SYSLOG – This procedure tests the ASOS System logging capability</b>		15 min	P	11/7/07	ST0
23	04_30p	<b>VIS Data Validation</b>		25 min	P	11/7/07	ST0
24	13_06	<b>SKY SPECIALS Checkout</b>		30 min	P	11/8/07	ST0

25	14_01	<b>Present Weather Identifiers/Remarks Verification</b>		2 ½ hrs	P	11/13/07	ST0
26	14_08	<b>SQUALL SPECIAL Verification</b>		15 min	P	11/9/07	ST0
27	20_09	<b>WSP Interface Test</b>		1hr	P	11/14/07	SP1