



SYSTEM TEST REPORT

For

**The National Weather Service ASOS
Operations and Monitoring Center (AOMC)
Background System Upgrade**

September 6, 2011

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service/Office of Systems Operations
Field Systems Operations Center/Test and Evaluation Branch

1.0 Introduction

In mid-1992, the AOMC (ASOS Operations and Monitoring Center) was commissioned and placed in service to support and maintain ASOS (Automated Surface Observing System) deployed across the nation. The AOMC provides maintenance monitoring support for all fielded ASOS sites and access for each ASOS to the following; 1) ASOS site-specific parameter and configuration files, and 2) access to a precision time-source via a toll-free number.

The AOMC equipment providing access to the site-specific files and the precision time source (AOMC background) were originally installed on 286 personal computers using the DELL System-V UNIX package. Red Hat Enterprise Linux 3 was introduced in 2006 and was supported until October 31, 2010 and with the passage of time, the equipment and operating systems have become outdated, requiring the AOMC to go through three upgrades since the original installation.

Currently, the AOMC operating system uses the Red Hat Enterprise LINUX 3 (RHEL 3). While still a strong and reliable operating system, the version has reached End of Life and support for this operating system has systematically deteriorated. This precluded the Software Branch from making any significant changes / enhancements deemed necessary for the AOMC background system. To overcome this problem, a decision was reached to migrate the AOMC operating system to the newest version of Red Hat Enterprise Linux 6 (RHEL 6) operating system. Red Hat Enterprise Linux 6 (RHEL 6) system combines all of the functionalities available with the Red Hat Enterprise Linux 3 (RHEL 3) and more. Research shows the Red Hat Enterprise Linux 6 will not reach end of life until 30 November 2017 and software support from the Software Branch (OPS23) will also be readily available.

The new AOMC background systems will be based upon standard DELL desktop PCs running the latest version of Red Hat Enterprise operating system is RHEL6. The purchase and delivery of the new DELL systems was completed in late December 2010. The Software Branch (OPS23) has completed building the new systems since that time and successfully completed preliminary testing of all AOMC functional processes in their test lab. A brief system test (ST) was conducted by OPS24 from August 24-31, 2011 to ensure the systems are ready for Operational Test and Evaluation (OTE).

2.0 ST Objective

The primary objective of this ST is to ensure the stability of the AOMC system under test is maintained and the existing AOMC functions are available and not negatively affected by the new changes.

3.0 ST Methodology and Results

The AOMC system under test was placed in the ASOS lab on the 6th floor of SSMC2 and connected to a modem. Two ASOS test systems (ST0 and ST1) at Sterling Field Support Center (SFSC) were used for the ST. The test steps were as follows:

1. On 08/24/2011 the ST1 system was already running ASOS ACU Version 2.79Y and was kept unchanged. The ST0 system was loaded with ASOS ACU Version 3.05 (dated 08/20/2011).
2. All site files were uploaded to the current operational AOMC system for backup and the contents of these files were printed on hard copies for reference.
3. These site files were first uploaded to the development AOMC system (a replicate of the AOMC system under test, for developmental use by OPS23). Subsequently a cold-start was successfully performed on both ST0 and ST1 systems using the developmental AOMC system.
4. On 08/25/2011 both ST0 and ST1 systems were connected to the AOMC system under test (RHEL6) and all site files were uploaded to this AOMC. Initially there was a problem with the file permission and the site files were not properly archived. OPS23 corrected this problem immediately. After the correction, a second upload of the site files from ST0 and ST1 was successfully performed. Subsequently, a cold-start was performed on both ST0 and ST1 systems using this AOMC system under test. These actions were witnessed by OPS23 (Hak Kim) and OPS32 (Chris Stark, Kevin Conaty, and Barbara Burgos). The ST0 and ST1 remained connected to the AOMC system under test for the next 5 days for observation.
5. On 08/30/2011 a meeting was conducted with the test members to review the test results. One concern was that the new AOMC system generated log entries that have not been seen with the operational AOMC system. OPS23 said these are diagnostic messages and should be suppressed in an operational AOMC system. OPS23 was directed by the test members to make the change and the test was to be repeated the next day.
6. On 08/31/2011 OPS24 repeated the tests in Step 4 above. The site files were successfully down loaded and uploaded to the AOMC system under test. The AOMC system under test no longer produces diagnostic messages. The site files were printed out for comparison with corresponding ones obtained in Step 2 above.
7. On 08/31/2011 OPS24 reviewed the site files collected in Step 2 and Step 6 above and found no discrepancy. Also the ASOS Maintenance logs (SYSLOG) indicated the ST0 and ST1 ASOS systems successfully interacted with the AOMC system under test since 08/25/2011.

3.0 Recommendation

Based on the test results as described above and the experience with the two ASOS test system ST0 and ST1 at SFSC, the AOMC system under test is retaining all operational functionality of the current operational AOMC. It is recommended that this system undergo an Operational Test & Evaluation (OT&E) with the field sites prior to being used in routine operation.

OPS32 will perform the requisite operational tests to fully verify the AOMC system is operationally functional without degradation of current field operations, including tracking and recording of problems and issues found. OPS24 will be notified for any problems found during the scheduled OT&E.