



VAISALA RS92-NGP RADIOSONDE IMPLEMENTATION PLAN

**For The
Radiosonde Replacement System**

February 2013

Rev. A

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

1.0 INTRODUCTION

Since 2005, the Radiosonde Replacement System (RRS) has been used to collect, process, and disseminate upper air data using modern ground tracking equipment and Global Positioning System (GPS) radiosondes. Until recently, all RRS sites used the Mark IIA GPS radiosonde to take soundings.

In 2012, NWS successfully deployed and tested the new Vaisala RS92-NGP GPS radiosonde and supporting RRS software version 2.2 at six NWS offices. These sites continue to use the RS92 for operational soundings. The Vaisala RS92 is smaller and lighter than the Mark IIA and uses dry-cell batteries. It should also provide improved accuracy of the RH data.

NWS is now ready to implement the Vaisala RS92 radiosonde at up to 24 additional NWS offices. Five NWS upper air stations will implement the RS92 on or about 00:00 UTC March 1, 2013. This implementation plan provides a schedule of activities and procedures for installation and operational use of the RS92 radiosonde, Signal Processing System (SPS) and RRS software version 2.2. It also provides a list key NWS staff involved in the implementation of the software.

Five NWS upper air stations will implement the RS92 between 15:00 UTC February 28 and 18:00 UTC March 2, 2013. The preferred date is after the 12:00 UTC Observation, February 28.

2.0 VAISALA RS92 RADIOSONDE IMPLEMENTATION ACTIVITIES

Implementation of the RS92 at NWS offices will be accomplished in two phases:

Phase I: The office installs the RRS software load 2.2 prior to the start of the RS92 radiosonde. This software will allow the office to continue use of the Mark IIA GPS sonde. Site staff will also review training materials on the preparation and use if the RS92 radiosonde. **This task must be completed no later than February 21, 2013.**

Phase II: The office installs a new SPS and supporting software. Operational use of the RS92 radiosonde will begin with the next operational 00:00 or 12:00 UTC sounding. **This task must be completed after the 12:00 UTC February 28, 2013 observation and no later than 18:00 UTC March 2, 2013. The preferred date is after the 12:00 UTC Observation, February 28.**

3.0 PHASE I: INSTALLATION OF SOFTWARE AND TRAINING

3.1 Receipt of software and supporting documentation

At least 2 weeks prior to installation of the RRS software version 2.2, stations will receive or download the following materials:

- (1) RRS Vaisala RS92 Radiosonde Implementation Plan
- (2) RRS Users Guide for Software version 2.2 and 2.3
- (3) Vaisala RS92 Radiosonde Training Videos
- (4) Software version 2.2 CD and installation instructions (RRS Software Note 12)

Items 1 through 4 documentation will be posted on this website:

<http://www.ua.nws.noaa.gov/RRS.htm>

Sites are to contact Bill Blackmore and their Regional Office (see Section 6.0) to confirm receipt of the software and installation instructions

3.1.1 Review and familiarization of documentation

Station staff must complete the review and familiarization of all materials listed in Section 3.1 no later than February 21, 2013. If this activity can not be completed prior to installation of the software, staff will contact Bill Blackmore and their Regional Office as soon as possible (See Section 6.0).

The RRS Users Guide and training videos provide sufficient information to allow observers to train themselves prior to operational use of the RS92. Appendix F of the Users Guide provides instructions on how to prepare and baseline the RS92. Operation of the RRS software for the RS92 is very similar to that for the Mark IIA radiosonde.

3.2 Installation of software

Installation of RRS Software version 2.2 must be completed no later than February 21, 2013. TO ENSURE A SMOOTH TRANSITION TO THE NEW SOFTWARE, STATION STAFF MUST FOLLOW THE INSTRUCTIONS BELOW.

- (1) **Prior to installation of software version 2.2, station staff must verify that they have**

software version 2.1 CD and ghost version 1.09 available, in case 2.1 version needs to be reinstalled. Ghosting of the system should not be required.

(2) Following the software installation instructions, station staff will install the software during the week they are scheduled. The software must be installed no later than February 21, 2013. The actual installation date for a site will be issued via email from Bill Blackmore. If installation will be delayed, station staff will to contact Bill Blackmore and their Regional Office (See Section 6.0) to reschedule an installation date. **NOTE:** The software will be initially installed in “Stand-alone” mode. Each Regional Office can later decide to operate the software in an “Active Directory” configuration. See the software installation instructions for more information.

(3) Software installation will occur only on Monday, Tuesday, Wednesday, or Thursday of the week between 8:00 AM and 5:00 PM EDT. Installation of the software on Friday must not be done unless authorized by Bill Blackmore or SFSC Direct Field Support staff.

(4) After software installation is complete, the RRS station data display will be opened and reviewed for accuracy. Make sure the radiosonde type in the station data is for the Mark IIA GPS sonde. If errors are found, site staff will contact SFSC and Bill Blackmore immediately.

(5) After the software is installed, completion of the action will be logged into the Engineering Management Reporting System (EMRS). Station staff will email William.Blackmore@noaa.gov, SFSC at nws.sfsc@noaa.gov, and their Regional Office Upper Air Program Manager (see Section 6.0) to confirm installation of the software. Lastly, a brief PNS will be sent via AWIPS notifying data users of the software change.

3.2.1 Operational use of the software and test sounding

Once the software is installed, sites will use version 2.2 and all supporting documentation until further notice. Station staff will not reinstall software version 2.1 unless unauthorized by Bill Blackmore or SFSC Direct Field Support staff.

To help verify that the software is working correctly and provide observer training, station staff may take *no more than one* non-synoptic (i.e., 15Z or 18Z) sounding immediately after the software is installed. As an additional training measure, observers should run a simulated observation in the software. Instructions on running a simulated sounding are provided in the RRS Users Guide for Software version 2.2 and 2.3.

3.4 Software technical assistance at SFSC

If station staff encounter any problems or have questions related to installation and operational use of the software they are to call the Direct Field Support staff at SFSC (see Section 6.0)

3.5 Disposition of the 2.1 software and supporting documentation

After installation of the 2.2 software is complete and is functioning correctly, station staff will dispose the 2.1 software version and supporting documentation after being notified by WSH. **Under no circumstances will the 2.1 software be reinstalled, unless authorized by WSH.**

4.0 PHASE II: INSTALLATION OF SPS AND SYSTEM CHECK

4.1 Receipt of hardware

At least 2 weeks before the office begins use of the RS92 radiosonde, the following materials will be received at the office:

- (1) One Vaisala Signal Processing System (SPS), SPS software, and installation instruction
- (2) One Vaisala Frequency Setting Device (FSD)
- (3) At least two boxes of Vaisala RS92 radiosondes (60 instruments).

Items 1 and 2 will be shipped to each individual field site from WSH. The shipment of Vaisala radiosondes will be completed by the office staff or WSH.

Sites are to contact Bill Blackmore and their Regional Office (see Section 6.0) to confirm receipt of the hardware.

4.2 Installation of Vaisala SPS and supporting software

The field site Electronics Technician (ET) will install the Vaisala SPS hardware and supporting software following the provided instructions. **The SPS will be installed from after 15:00 UTC February 28 to 18:00 UTC March 3, 2013. However, to create a consistent data archive for NCDC and data users, the installation of the SPS should be done immediately after the 12:00 UTC, February 28, 2013, upper air observation. If the SPS install will be delayed after February 28, contact Bill Blackmore, WSH, and SFSC staff immediately (see Section 6.0).**

After the SPS has been installed, the Mark IIA radiosonde SPS will be packed and put aside in the office until further notice.

IMPORTANT: After the Vaisala SPS has been installed, site staff will change the radiosonde type in the RRS Station Data Display to the RS92 radiosonde. Failure to do this will result in data errors.

If any problems are encountered with the SPS installation contact SFSC staff immediately for assistance (see Section 6.0)

4.3 System check out and test sounding

To help verify that the Vaisala SPS is working correctly and provide observer training, station staff may take *no more than one* non-synoptic (i.e., 15Z or 18Z) sounding immediately after the SPS is installed. Instructions on taking a RS92 sounding are provided in the RRS Users Guide for Software version 2.2 and 2.3. Appendix F provides instructions on how to prepare and baseline the RS92 radiosonde. Let the sounding terminate automatically and transmit and archive all data products. If time is limited and a balloon release cannot be made, a RS92 should be prepared and baselined with the RRS 2.2 software. The observation can be aborted once the “Waiting for Balloon Release” display appears.

After the test is completed a brief Public Information Statement (PNS) will be sent via AWIPS notifying data users of the radiosonde change and the date and time of the first observation with the RS92.

If any problems occur during the system check or test sounding. Please contact SFSC staff and Bill Blackmore immediately.

5.0 OPERATIONAL USE OF THE VAISALA RS92

Once the site switches over to the RS92 radiosonde, use of other radiosonde types is prohibited unless authorized by WSH. The following is general instructions and information on the use of the RS92:

- (1) There are no spare batteries for the RS92. If the radiosonde is rejected. Send the entire unit back to NRC for warranty. **DO NOT SEPARATE THE RADIOSONDE AND KEEP SPARE RS92 BATTERY PACKS IN THE OFFICE.**
- (2) The date of manufacture printed on the radiosonde packaging is in a special code. The NWS upper air website, <http://www.ua.nws.noaa.gov/RRS.htm> has instructions on how to read the date.
- (3) Be sure to use the Frequency Setting Device (FSM) during radiosonde baseline. Failure to do so will result in data errors. Keep the FSM in good working order.

(4) It is common to see abrupt fluctuations in the raw RH prior to radiosonde release. Aloft, the RH sensor is very sensitive to real RH changes. Observers should read Chapter 13 of the RRS Users Guide for information on handling questionable RH data.

(5) Observers will check the quality of the RS92 temperature data just prior to release. If the temperatures are not realistic, reject the radiosonde. See the RRS Users Guide for more information.

5.1 Disposition of Mark IIA radiosondes, and supporting hardware/software

Disposition instructions for the leftover Mark IIA radiosondes, spare batteries, SPS, and supporting software (SPS and RRS version 2.1) will be sent to the office from WSH within 5 days of the RS92 implementation date. These items should be packed and put aside in the office.

6.0 PERSONNEL CONTACTS

6.1 National Weather Service Headquarters

Bill Blackmore, Observing System W/OPS22, National Weather Service Headquarters
William.Blackmore@noaa.gov

Responsible for managing and coordinating 2.2 software version and RS92 implementation activities and validation of implementation objectives. RS92

Sterling Field Support Center (SFSC) Direct Field Support.
Manager: Ashby.Hawse@noaa.gov

If station staff encounter any problems or have questions related to installation and operational use of the software, Vaisala SPS, or RS92 radiosonde they are to call SFSC Monday through Friday 10:00Z to 02:00Z (6:00 AM to 10:00 PM EDT)

Phone Numbers: 301-661-1268 or 703-661-1293
Email nws.sfsc@noaa.gov

6.2 Regional Office Upper Air Program Managers

Kevin Murray, Eastern Region: Kevin.Murray@noaa.gov

Dan Bloom, Central Region: Dan.Bloom@noaa.gov

John Duxbury, Southern Region: John.Duxbury@noaa.gov

Harold Knocke, Western Region: Harold.Knocke@noaa.gov