



Performance Checklist for RWS Vaisala RS92-NGP®

Upper Air Data Continuity Study

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

TIME TO LAUNCH	RRS PRE-RELEASE CHECKLIST
T- 45 minutes	<ul style="list-style-type: none"> • Turn on the RWS computer. Log onto the RWS workstation using your individual Username and Password. • Turn on the GPS repeater. • Open the RWS program and click OK in the NOAA Security Warning Window after reading the message. • Select Run a Live Flight. • Click YES when prompted to power on the UPS. The UPS provides uninterrupted power to the TRS & SPS. A green checkmark in the Hardware Display will indicate the UPS has been successfully powered on. • The TRS will then perform Motor Warm-up Operations and/or Initialization, depending on the ambient temperature. These processes are reflected in the TRS Display, Status Messages and Hardware Status Manager. <p>*Important: Allow 30 minutes prior to Baseline for the TRS to warm-up. This time is necessary, especially in colder temperatures. The TRS Status Line on the Antenna Orientation Display and the Status Messages will indicate “TRS is Ready” when warm-up and initialization is complete.*</p>
T- 44 minutes	<ul style="list-style-type: none"> • Begin filling the upper-air balloon and prepare the flight train. <p>*Warning: Because some inflation bays are lower than others and additional weights increase its size, be mindful when filling the balloon and preparing it for release so that it does not touch the ceiling. This can puncture the balloon, creating a leak, or pop the balloon completely. *</p>
T-20 minutes	<ul style="list-style-type: none"> • Inspect and prepare the radiosonde in accordance with vendor specifications.
T-17 minutes	<ul style="list-style-type: none"> • Position the antenna within a few degrees of the baseline point using the Antenna Display window. • Complete Administrative Display and click Next. • Complete Equipment Display and click Next.
T-16 minutes	<ul style="list-style-type: none"> • Set the Radiosonde Frequency in the TRS Display after placing the TRS in Manual Track Mode. This can be done by clicking Edit, entering the frequency, clicking Set and turning AFC ON. • Point the TRS toward baseline Azimuth/Elevation in the TRS Display by entering the values in the desired cells and clicking Move Antenna.

TIME TO LAUNCH	RRS PRE-RELEASE CHECKLIST
T-14 minutes	<ul style="list-style-type: none"> • Complete radiosonde procedures, including battery preparation and activation. Place the radiosonde in the appropriate location for baseline. Suggested frequency for RS92-NGP is 1676 MHz. • Complete the Surface Observation Display. Click Next to begin the baseline process. <ul style="list-style-type: none"> • *Ensure battery is plugged in before beginning baseline* • The Waiting for SPS to Initialize window will appear. Once the SPS initializes, the Baseline Display window will begin populating first with PTU data, followed by Lat/Lon data. (If the SPS doesn't initialize by the end of the progress bar, click Wait Again.) <ul style="list-style-type: none"> • *** Wait at least 5 minutes before proceeding to next step *** <p>NOTE: Ensure pressure sensor has stabilized prior to accepting baseline. The battery and pressure sensor must warm-up. If the pressure sensor is not warmed up, pressure discrepancy may create height errors.</p> <ul style="list-style-type: none"> • If the pressure discrepancy is within ± 3 hPa and the temperature and relative humidity values look reasonable click Accept. • Do not complete baseline without GPS. • "Waiting for Release" will be displayed on the RWS screen.
T-09 minutes	<ul style="list-style-type: none"> • Put the TRS in Manual Track Mode and direct the Azimuth/Elevation to where the radiosonde is expected to travel. <p>NOTE: To point the TRS north, input an AZ of 0 degrees. The TRS is 180 degrees out from the wind direction.</p> <ul style="list-style-type: none"> • Proceed to the release site.
T-03 minutes	<ul style="list-style-type: none"> • Check the RCDU to ensure frequency has not shifted off the radiosonde and the signal is strong. (Listen to audio- noise heard is the radiosonde) • Double check to ensure the TRS Antenna is positioned to the appropriate azimuth and elevation.
T-02 minutes	<ul style="list-style-type: none"> • Tie the radiosonde to the assembled flight train. • Check the flight train's integrity and visually survey the release zone and the anticipated path of flight. • Minimize potential for obstacles. • If Applicable: Call the local airport control tower and request flight clearance for balloon release.
T-00 minutes	<ul style="list-style-type: none"> • Observer should release the radiosonde and use the RCDU to verify the frequency has not shifted off the radiosonde and the signal is strong. (Listen to audio) • Double check to ensure the Antenna is positioned to the appropriate azimuth and elevation and that AFC is on using the RCDU.

IN ORDER	IN-FLIGHT CHECKLIST FOR RRS
STEP 1	<ul style="list-style-type: none"> • Ensure the release has been detected (Release time is displayed in the flashing blue screen and in the Status Messages), and click “Continue”. Update Post-Release Surface Observation as necessary.
STEP 2	<ul style="list-style-type: none"> • Verify that the TRS signal strength is acceptable. If GPS is being received, place the Antenna into the Search mode using the Antenna Orientation/TRS Display Point the TRS toward the balloon by inputting Azimuth/Elevation values and clicking Move Antenna or Move to GPS. (Do not click Move to GPS if GPS data is unavailable) • The Search Track Mode can be used to search for the radiosonde. Auto Track mode will automatically be selected once the TRS has detected the strongest signal. • Open up the Processed Tabular Display and scroll to the bottom of the display. (Right-click on the scroll bar and select Bottom)
STEP 3	<ul style="list-style-type: none"> • Verify that Release has been detected correctly. Ensure the first pressure data point below the red line in the Received PTU Tabular Display has a pressure equal to or less than the Release Pressure shown in the Surface Observation at Release. Check the Geopotential Height and ensure it increases with time. Otherwise change the release time as appropriate.
STEP 4	<ul style="list-style-type: none"> • Monitor the flight using Displays and Plots. (Basic Screens: SPS/GPS Window, Antenna/TRS Display, Temp or Temp/RH Plot, Trajectory Plot, Processed Tabular Data Display or Processed Data Bar)
STEP 5	<ul style="list-style-type: none"> • Always look at Check and Status Messages, Temp or Temp/RH Plot and verify the Ascent Rates are realistic (averages approximately 5 m/sec). • Verify RADAT or Coded Messages appear to be correct.
STEP 6	<ul style="list-style-type: none"> • Review selected plots and data at least every 15 minutes during the flight. Always perform Step #5 prior to message transmission. • Prior to Message Transmission at termination, ensure all Check and Status Messages look reasonable. Do the same for the data plots.
STEP 7	<ul style="list-style-type: none"> • Turn UPS OFF at termination through the Offline Maintenance Menu.
STEP 8	<ul style="list-style-type: none"> • Close the flight. DO NOT CLOSE RWS.