

System Test Phase 0 Report for the Radiosonde Replacement System (RRS)

INTRODUCTION

The National Weather Service (NWS) will transition from the current radiosonde system to the RRS to collect and process upper air data using modern technology. The RRS will be nationally deployed after the government successfully completes a series of tests, the last two of which will be the ST and the Operational Acceptance Test (OAT).

The ST will be conducted in phases. The ST Phase 0 was to serve as a dry run of the formal ST and to document system problems (if any) in System Issue Reports (SIRs) as soon as possible to support a successful formal ST.

The Office of Operational Systems, Field Systems Operations Center, Test and Evaluation Branch (OPS24) conducted a ST Phase 0, for the RRS. The ST Phase 0 began on August 4, 2003 and ended on September 12, 2003, as planned. The ST Phase 0 was conducted as a “dry-run” phase, in preparation for the later formal ST testing to be conducted in accordance with the System Test Plan for the Radiosonde Replacement System, dated July 2003.

OBJECTIVES

The objectives of the RRS ST Phase 0 were to:

- a. Verify the RRS installation instructions were complete and accurate.
- b. Validate OPS24 RRS Test Procedures which address all RWS SRS requirements.
- c. Verify solo “live” flight and dual flight (with the local weather forecast office) processes.
- d. Verify RRS upper air products could be transmitted between the RRS Workstation Subsystem (RWS) and the National Centers for Environmental Prediction (NCEP).
- e. Examine the feasibility of using the NWS Engineering Management Reporting System (EMRS) to gather RRS availability information. Also, examine a system problem reporting process using Clearquest.
- f. Determine the maturity state of the RRS.

ASSUMPTIONS/CONSTRAINTS

The RRS ST Phase 0 was conducted with the following assumptions/constraints:

- a. The RRS ST Phase 0 began with outstanding Priority 2 SIRs not implemented in the RWS software. All Priority 1 SIRs had been implemented in RWS software Build 1.0.3.0.
- b. There was to be no analysis of RWS coded message content. The Coded Message Resource Team was tasked to perform the analysis of RWS coded message content.
- c. There was to be no analysis of any World Meteorological Organization (WMO) levels generation and data processing algorithms. This analysis will be performed during RRS ST Phase 1A by OPS22 and OS7.
- d. The RRS product to NCEP end-to-end validation was conducted using the NWS Test National Control Facility (TNCF) rather than the real AWIPS NCF.

TEST CONDUCT

The RRS ST Phase 0 commenced on Monday, August 4, 2003, with a ST Phase 0 Readiness Review. At the Readiness Review, OST31 delivered the RRS System Integration Test (SIT) suite of hardware (System 6 at the SR&DC) to OPS24; and OPS23 provided OPS24 with RWS software build 1.0.3.0. However, the delivered RRS hardware suite and software were not the same hardware and software versions used during the SIT. The RWS software build tested during the SIT was 1.0.2.4; the SIT and ST hardware firmware differences are illustrated in Table 1 (in Bold).

The RWS software was loaded uneventfully on the OPS24 RRS test system at NWSH following the Readiness Review. The RWS software was loaded uneventfully on the SR&DC Systems 6 and 7 on Tuesday, August 5, 2003. The SR&DC RRS System 7 was not used as a test system, but was used to provide additional test data when available.

After the new software load was installed, hardware checkout tests were performed on the TRS and SPS. Thirty-two test procedures were subsequently completed on the OPS24 test system and at the SR&DC using System 6.

Different sets of test procedures were performed at each location; however, certain administrative procedures (such as adding new users) were performed at both sites. The OPS24 test system located at the NWSH (which consisted of a RWS and an External Data Pump (XDP) - a RRS hardware simulator) was used to verify administrative requirements and to perform tests requiring previously flown flight data to

simulate environmental conditions. The SR&DC System 6 was used primarily for those tests requiring “live” flights. All live flights were conducted with Sippican Global Positioning System (GPS) radiosondes and General Purpose (GP30) weather balloons.

During live flights two different balloon release methods were employed depending on release point and weather conditions. When launching from near (i.e. within 50 feet) the TRS, the operator would aim the TRS antenna in the direction of the prevailing winds and would use the Control Display Unit (CDU) to lock onto the radiosonde as it flew through the antenna boresight. For launches greater than 200 feet from the TRS, the operator would place the TRS in Auto Track mode using the RWS and allow the TRS to track the radiosonde off the surface.

TEST RESULTS

All respective tests were completed on the OPS24 test system and the SR&DC RRS system. (Attachments 1 and 2 list the tests performed at each location.) Where appropriate, tests were conducted with various user accounts (Site Administrator, Observer, or Trainee) to verify only specific functions were allowed for specific user types.

In measuring the state of the RWS software maturity, forty-two SIRs were written for ST Phase 0 as follows:

1. 4 Priority 1 SIRs (3 RWS, 1 SPS)
2. 25 Priority 2 SIRs (21 RWS, 4 TRS)
3. 6 Priority 3 SIRs (4 RWS, 1 TRS, 1 De-reeler)
4. 7 Priority 4 SIRs (all RWS)

These SIRs are itemized in Attachment 3.

During the ST Phase 0, testing was suspended for maintenance troubleshooting at the SR&DC twice due to either severe hardware or software problems which caused flights to be lost. During these periods, testing continued at NWSH using the OPS24 test system:

- First Suspension - The RWS on System 6 detected an early release prior to the actual release. This was interpreted as “Excessive Missing Data” which terminated the flight. (SIR 1692)
- Second Suspension - The second suspension at the SR&DC occurred between August 18 - 26, 2003. This time the symptoms were a combination of SPS re-initialization (which caused the first suspension - SIR 1692) and a failure of the TRS to track the radiosonde from the surface (SIR 1735). Subsequent analysis indicated possibly two issues were involved with the TRS—a floating-point problem in the TRS firmware version 1.37, and the failure of the RWS software to

completely turn-off the TRS flight clock after flight termination.

During the two suspensions at SR&DC, it was observed there were no adequate troubleshooting procedures or tools available to the OPS22 personnel. All troubleshooting was performed using past experience on similar systems. OPS11 assisted in the troubleshooting of the TRS problem using a proprietary software application called "Flight Logger." Flight Logger will not be available to field personnel. The Offline Maintenance Suite (OMS) developed by OPS23 contains a scaled-down replica of Flight Logger capabilities called Offline Built-In-Test (OBIT) but it lacks the capability to download TRS firmware updates. This represents a serious deficiency for field personnel expected to maintain the RRS.

The main hardware concern for beginning ST Phase IA, is a questionable Signal Processing Subsystem (SPS) currently installed in SR&DC System 6 and used during the ST Phase 0. This SPS caused the first suspension.

The TRS Motion Control Unit (MCU) firmware version 1.37 induced a failure of the TRS to track the radiosonde from the surface (SIR 1735). This problem caused changes in the launch procedure. The test team was told this problem was fixed in a later version, 1.38.

CONCLUSIONS

ST Phase 0 conclusions are supported by the following examination of the original test objectives:

a. Verify the RRS installation instructions were complete and accurate.

The RRS software was installed without any problems at both SR&DC and NWSH test sites.

b. Validate OPS24 RRS Test Procedures.

- 271 of the 280 SRS requirements were tested. Nine SRS requirements were inadvertently omitted from a test procedure. Attachment 5 identifies the nine SRS requirements that will be added to the specified test procedures for ST Phase IA.
- Nineteen of the 271 SRS requirements tested in ST Phase 0 failed. The failed requirements are cited in Attachment 6. SIRs have been written for each of these failed SRS requirements.

c. Verify solo "live" flight and dual flight (with the local weather forecast office) procedures.

There were thirty-three valid flights flown during the RRS ST Phase 0. A valid flight is defined as one that was not terminated by the Observer. The following results were observed:

- Of the 33 flights, 26 (78.8%) reached 400 hPa and of those, 7 (26.9%) reached 10.00 hPa or less
- The 33 valid flights terminated for the following reasons (with the number of related flights in parentheses):
 - Balloon Burst (21)
 - Excessive Missing Data (9)
 - Leaking or Floating Balloon (2)
 - Unknown (1)
- Two flights (one on August 7 and one on September 3) were flown as “dual” flights with the Baltimore, MD/Washington, DC Weather Forecast Office (LWX). The dual flights consisted of a Sippican GPS radiosonde and a Micro Art radiosonde sharing the same balloon (GP30) by means of a six-foot Styrofoam beam. Both sets of flight data were transmitted to the NCEP for comparison.

When launching flights near the TRS and trying to use the CDU to lock on, problems were experienced in acquiring the radiosonde, causing some flights to be lost (SIR 1735). OPS22 decided (based on an OPS11 recommendation) to only employ a different launch procedure where the balloon was launched further away from the TRS and use the RWS Auto Track mode. This procedure will be refined by OPS22 during the first week of October for use during the ST Phase IA.

Several of the valid flights might have been lost due to tracking problems had the Observer not used information from the unofficial RRS System 7 to reacquire the radiosonde; this option will not be available at a field site. A summary of valid flights is contained in Attachment 4.

The following Sippican items experienced failures during the RRS ST Phase 0:

- Three Sippican radiosondes failed “out of the box” (i.e., failed to operate properly during baseline).
- Several Sippican de-reelers either came apart, failed to unreel, or happened to cut the cord connecting the radiosonde to the balloon causing the flight to be lost. OPS22 decided not to use the de-reelers on any further flights until Sippican corrects the manufacturing process.

- d. Verify RRS upper air products could be transmitted between the RRS Workstation Subsystem (RWS) and the National Centers for Environmental Prediction (NCEP).

The end-to-end path from the RWS to the NCEP was validated. All transmitted products were received at NCEP successfully.

- e. Examine the feasibility of using the NWS Engineering Management Reporting System (EMRS) to gather RRS availability information. In Addition, examine system problem documentation process using Clearquest.

Procedures for using EMRS need to be refined to present a more useful “snapshot” of RRS System Availability. This was one of the ST Phase 0 objectives. During ST Phase IA, EMRS data will be collected as it is currently done in the field.

The Clear Quest application query used for generating the SIR reports needs to be modified to produce a more meaningful report automatically for the weekly TRG meetings. Currently the weekly SIR report takes too much time to generate. OPS23 suggests using the Clear Quest Client Server rather than the web version OPS24 used during ST Phase 0. Eddie Roberts (OPS23) will be the point of contact for Client Server “training.”

- f. Determine the maturity state of the RRS.

Forty-two new problems were identified during the ST Phase 0; four of which were identified as Priority 1 and 25 were Priority 2. OPS24 requests all Priority 1 and Priority 2 RWS software problems be fixed prior to start of the ST Phase IA.

OPS11 recommends using a different SPS for the ST Phase IA while the questionable SPS is analyzed by Sippican. Also, OPS11 recommends not using the TRS MCU version 1.37. OPS11 recommends using the latest MCU version with the fix identified during the ST Phase 0.

FINDINGS

During the course of the ST Phase 0, OPS24 and OPS22 recognized deficiencies in the way certain items occurred or were conducted. The following are the main findings. These issues will be refined to ensure smoother operations prior to beginning ST Phase I:

- Inadequate definition of SIR priorities to cover operational concerns. The phrases [Priority 1] “... preventing the accomplishment of mission essential capabilities” and [Priority 2] “... adversely affecting the accomplishment of a mission essential or technical capability” need to be clarified.

OPS24 will work with OPS23 and OS7 to develop more meaningful SIR definitions.

- Several Sippican de-reelers either came apart, failed to unreel, or happened to cut the cord connecting the radiosonde to the balloon causing the flight to be lost. OPS22 decided not to use the de-reelers on any further flights until Sippican corrects the manufacturing process.
- Lack of any RRS troubleshooting procedures (including troubleshooting flow charts). These need to be developed by OPS11/OPS12 prior to ST Phase IA.
- Inadequate procedures for radiosonde preparation, balloon launch, preflight, and baseline for both RRS Systems 6 and 7. OPS22 will travel to Caribou, ME to refine these procedures during the first week in October.
- Local Station Data for both Systems 6 and 7 do not cover all the balloon launching locations. OPS11 and OPS22 will coordinate conducting multiple launch area surveys.
- RWS System Time synchronization was not performed regularly; however, OPS23 believes this is only critical for live flights at the SR&DC when using two systems. It is mainly to assist in data analysis if a problem is encountered during a flight. This will not be a problem in the field as sites will only have one RWS. OPS24 will include time synchronization for both Systems 6 and 7 as part of the “live flight checklist” being developed.
- The daily flight log summary is missing a column for preliminary flight analysis to confirm RWS is correctly identifying termination reasons. OPS24 will work with OPS22 to have this column added.

RECOMMENDATIONS

Based on the review of the RRS ST test results, the conclusions, and findings, OPS24 is recommending the following items be addressed prior to a start of the ST Phase IA:

- a. OPS24 recommends including 5 days of live flights for the NWS Regression/Validation Tests during the RWS SIR Validation to perform “free play” with the RRS system as a whole to gain some confidence other problems do not appear after correcting all known Priority 1 and 2 SIRS. This test should be supported by OPS11, OPS22, OPS23, OPS24 and OS7.

- b. OPS24 recommends OPS11 (system hardware) and OPS23 (RWS software) validate both SR&DC's Test Systems 6 and 7 operate properly prior to beginning the formal ST Phase IA. OPS24 further recommends the cognizant individual for each RRS subsystem sign a certification testifying their respective system has been fully checkout prior to beginning ST Phase IA.
- c. To conduct a formal (and meaningful) ST Phase IA, OPS24 recommends adding the specific prerequisites listed in Attachment 7 to those already listed in the ST Plan, Section 1.6.1.1.
- d. OPS24 recommends all future TRS and SPS firmware updates be verified and certified using the proposed checklists being developed by OPS11.
- e. OPS24 recommends Ashby Hawse (OPS22) act as the Engineering System Administrator (ESA) during the RRS ST Phase I and be the first point of contact if a hardware problem is suspect. To better simulate a field site, OPS24 recommends any fault isolation performed during the ST only using the OPS11/OPS12 developed RRS fault isolation tools deployed to the sites. OPS24 further recommends Jim Fitzgibbon (OPS22) serve as a backup ESA.
- f. OPS24 recommends using both RRS Systems 6 and 7 as official test systems. When both systems are used to track the same test flight, System 6 will be the primary test system. System 7 flight data may be used for post-flight troubleshooting and analysis. However, during the test flight, if System 6 encounters radiosonde lock-on or tracking problems, System 7 real-time flight data will not be used to help resolve these problems.
- g. OPS24 recommends OPS23 continue to provide an on-site QSS person at the SR&DC to witness live flights and to answer software questions.
- h. OPS24 recommends OPS11 and OPS12 develop RRS troubleshooting flow charts to assist in isolating system problems. OPS24 further recommends these flowcharts be placed under configuration control and delivered to the field sites.

Table 1 - RRS System 6 Configuration for ST Phase 0

RRS Subsystem	Subsystem Line Replaceable Unit (LRU)	Version at End of SIT	Version at Start of ST
RRS Workstation Subsystem Software		1.0.2.4*	1.0.3.0*
Telemetry Receiving Subsystem (TRS) - Serial Number: 006			
	System Communications Assembly	V1.25*	V1.26*
	Motion Control Unit	V1.35K*	V1.37*
	Scanner	V2.0.Q	V2.0.Q
	Receiver	V2.08	V2.08
	Console Display Unit	V3.25*	V3.26*
Signal Processing Subsystem (SPS) - Serial Number: 531			
	Firmware	V2.4	V2.4
RRS Surface Observation Information Subsystem (RSOIS) - Serial Number: 1973			
	Remote Processing Unit	V1.952-2178-1.1	V1.952-2178-1.1
	Temperature/Humidity Unit	Vaisala/Handar HMP45DU	Vaisala/Handar HMP45DU
	Aspirator	R. M. Young 43408F-12	R. M. Young 43408F-12
	Wind Sensor	Vaisala/Handar 425AHW	Vaisala/Handar 425AHW
	Base Station	Not use because of fiber optic cable	
	Directional Antenna	Not use because of fiber optic cable	
Precision Digital Barometer (PDB) - Model PDB1 - Serial Number: 177			
RRS Workstation Subsystem (RWS) - Gateway E-6000 - Serial Number: 0029662473			
	Equinox Card	Model 950357-001 Serial number UT06880	Model 950357-001 Serial number UT06880

* Bolding denotes differences between SIT and ST software/firmware versions.

ATTACHMENT 1

NWSH SYSTEM TEST CHECKLIST

(Note: User Accounts:

- A - Site Administrator
- O - Observer
- T - Trainee)

#	Test No	Title	User Account	Comment
000 Series - Installation				
1	001	RRS Installation	A	08/04/03
200 Series - System Administration				
2	201	Tools File and Directory	A	08/05/03
3	211	Flight Management - NCDC Archive Utility	A	08/05/03
4	212	Flight Management - Flight Import and Export Utility	A	08/05/03
5	214	Flight Management - Flight Deletion Utility	A/O	08/06/03
6	215	Flight Management - Flight Summary Utility	O	08/06/03
7	220	Application Utility	A/O	08/07/03
8	221	Application - Plots Utility	A	08/07/03
9	231	Administration - User Administrative Utility	A	08/07/03
10	233	Administration - Master Station and Station Data Info	A	09/06/03
11	234	Administration - Database Backup and Restore Utility	A	08/08/03 08/11/03

#	Test No	Title	User Account	Comment
12	235	Administration - File Location Utility	A	08/11/03
13	236	Administration - Pre-flight Information Utility	A	08/12/03
400 Series -Evaluation of RWS Functional Capabilities				
14	400	GUI Checkout	O/T	08/18/03
15	401	Nominal Inline Simulator Flight	O/T	08/12/03
16	402	Nominal Flight - XDP	O	08/12/03
17	402A	Nominal Flight - Plots Overlay	O	08/15/03
18	404	Flight Rework Capability	A/O	08/13/03 08/18/03
19	410	Data Quality Control Checks	O	8/22/03 Multiple Scenarios
20	411	RWS In-flight Operations (Stress Test)	O	08/15/03
21	430	Anomalous Flight Situations	O	08/26/03 Multiple Scenarios
22	440	Extreme Site Locations	A/O	08/19/03 Multiple Scenarios
23	405	Special Flight Release Functions	A/O	09/09/03 Involves Time Changes
700 Series - RRS Reliability, Maintainability, and Availability				
24	701	Flight Data Collection - RMA	O	08/04/03 - 09/12/03

#	Test No	Title	User Account	Comment
800 Series - RWS Miscellaneous Requirements				
25	800	RWS software requirements	A	NA

ATTACHMENT 2

SR&DC System Test Checklist

A (Note: User Accounts:

- A - Site Administrator
- O - Observer
- T - Trainee)

#	Test No	Title	User Account	Comments
000 Series - Installation/hardware checkout				
1	001	RRS Installation	A	08/05/03
2	002	TRS/CDU Remote Operations	A	08/06/03
3	003	SPS Communication Status	A	08/08/03
4	004	Offline Utility Suite Validation	A	08/05/03
200 Series - System Administration				
5	201	Tools File and Directory	A	
6	211	Flight Management - NCDC Archive Utility	A	09/05/03
7	212	Flight Management - Flight Import and Export Utility	A	09/05/03
8	214	Flight Management - Flight Deletion Utility	A/O	
9	215	Flight Management - Flight Summary Utility	A/O	08/08/03
10	220	Application Utility	A/O	
11	221	Application - Plots Utility	A	08/08/03
12	231	Administration - User Administrative Utility	A	
13	233	Administration - Master Station and Station Data Info	A	
14	234	Administration - Database Backup and Restore Utility	A	
15	235	Administration - File Location Utility	A	08/08/03

#	Test No	Title	User Account	Comments
16	236	Administration - Preflight Information Utility	A	08/08/03
400 Series -Evaluation of RWS Functional Capabilities				
17	400	GUI Checkout	O/T	08/12/03 08/18/03
18	401	Nominal Inline Simulator Flight	O/T	08/11/03 08/13/03
19	403	Nominal Flight - Live	O	08/06/03 - 09/12/03 multiple scenarios flown.
20	403A	Nominal Flight - Search Mode	O	08/15/03
21	404	Flight Rework Capability	O	08/11/03
22	411	RWS In-flight Operations (Stress Test)	O	08/15/03
23	413	Product Throughput	O	09/04/03
500 Series - System Back-ups and Recovery				
24	501	System Failure/Recovery	O	09/02/03
600 Series - Documentation and Training				
25	601	Documentation Review	ALL	08/04/03 - 09/12/03
26	602	Training	O	NA
700 Series - RRS Reliability, Maintainability, and Availability				
27	701	Flight Data Collection - RMA	O	08/04/03 - 09/12/03
800 Series - RWS Miscellaneous Requirements				
28	800	RWS software requirements	A	08/04/03 - 09/12/03

ATTACHMENT 3

**System Issue Reports Written for ST Phase 0
(Sorted by Priority)**

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
1	SW 1665	RWS Shut Down Due to Exception Error	On 8/14/03, Just completed running (as Administrator) ST Procedure 430, Step 2, XDP data set 1122, and RWS correctly terminated the flight after 5 minutes due to excessive missing data. Completely closed RWS (after making the failed flight 118/1, the active release), prepared XDP for the next data set, started the XDP, and then started the RWS. When RWS started, the following popup dialog appeared: "There are flights out of time sequence (one or more flights with timestamps with a time in the future). Continuing may produce unreliable results. Please delete all the flights with the future timestamps." Clicked on OK and tried again to start a live flight with the same result, but this time an additional message about the Debug Log appeared and gave me the option of canceling. Clicking Cancel puts you in an endless loop with the future timestamp message. Finally, when I canceled, I clicked on the UTIL icon and selected the	Samuel Cochran	1	2003-08-14 00:00:00	ST Procedure 430, Step 2.	NWS_Validation

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			Flight Deletion Utility--received "Main application is shutting down due to exception. See Debug Log for details. Capture: 6900131118.					
2	HW 1692	SPS Failure at SR&DC	All troubleshooting by Darryl Modraeck and Jim Fitzgibbon indicate a SPS problem. For some reason, RWS is reinitializing the SPS every few minutes. Capture files 6999031444, 6999031445, and 699901446. KK - see analysis	Samuel Cochran	1	2003-08-19 00:00:00	Test 403, Live Flights	Submit_Review
3	SW 1731	Observer unable to recover a flight after power loss	09/02/03 ST Live Flight. Requirement 5.1.3.9: "The RWS shall detect, when the workstation is booted, whether a live flight completed processing (e.g., Was there a power failure before the flight summary data was saved?). In such a case, the RWS shall take the OBSERVER directly to the 'after termination' step for termination processing." During ST Procedure 501, power was physically removed from the RWS 120 minutes into a live flight. Fifteen seconds later, the power cord was re-attached to the RWS and RWS was restarted by the Observer. There was no indication there was a flight awaiting recovery and the failed flight did not appear in the Rework Table. Signed out and restarted as a Site Administrator. This time the	Samuel Cochran	1	2003-09-02 00:00:00	501/51	Implement

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			database inconsistency window appeared. After restoring from the Master database to the Backup database, a dialog appeared indicating there was a flight for recovery and that the Administrator would be taken directly to Rework. The RWS worked as designed, however, this is the equivalent of an Operational Crash—a flight is terminated for unknown reasons and the Observer cannot recover the flight. Scenario: An Observer does a 0Z flight and just before the balloon bursts, loses power to the RWS. Power is out for some time and is restored. There is still time for the Observer to go into rework and send out his messages. Short of calling someone with Site Administrator privileges to come in, the six-hour window to send products could expire before someone could access the flight and send the products—hence, a lost flight.					
4	SW 1746	RWS crashed during Database Backup and Restore.	(Capture file: 6999030908 - used today's date instead of SIR number; offline mode only; Screen displays available) (1) Signed on the RWS as a Site Manger. (2) Selected Offline mode. (3) Selected Database Backup and Restore	Jae Lee	1	2003-09-08 00:00:00	Not Test Related	Closed

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			Utility. (4) Selected all the files in C:\RWS\RWS\Datafiles directory. (5) Specified C:\RWSBackup_030908 as a backup directory. (6) Clicked on Backup icon. (7) A Program Error message, "RWS.exe has generated errors and will be closed by Windows. You will need to restart the program. An error log is being created". (8) The RWS exited automatically.					
5	HW 1642	RWS Enters Search Mode When Changing Antenna Elevation	We had previously lost a flight and were doing another ascension. After release with Auto Detect, we attempted to go to the Manual Mode in order to "tweak" the position. As soon as Manual was selected, the RWS went into Search Mode for approximately one second and then went back into Auto Mode. Tried several times and could not get to the manual Mode to move the antenna. Flight aborted due to excessive missing data. Capture: 6999031432.	Samuel Cochran	2	2003-08-08 00:00:00	Test Procedure 002.	Watch
6	HW 1643	Unable to Change TRS Antenna Elevation	During Ascension 2, Release 1, we switched from the Auto mode to the Manual Mode to adjust the antenna position for a maximum signal strength. Entered a value for elevation (nothing entered for azimuth as it was correct) and	Samuel Cochran	2	2003-08-08 00:00:00	Test Procedure 403, Live Flight	Watch

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			clicked Move Antenna -- nothing happened. Tried again with the same results. Flight aborted for excessive missing data. This problem (6999031443) is not the same as the previous SIR 1642. KK - Only the initial Move Az and El are sent (in the attached log); no other attempts are visible, as if the GUI or DA never tried/permitted the subsequent Moves. Apparently the CDU was used to do other moves & slews.					
7	SW 1644	Termination Level is not the Lowest Pressure Reached	On 8/7 a dual flight with LWX reached 13.0 hPa; however, the flight termination was listed as a higher pressure (18.56) about a minute later --- after the balloon descended. Capture: 6999031436.	Samuel Cochran	2	2003-08-08 00:00:00	Running a dual flight using Test Procedure 403	Validate
8	SW 1645	Cannot update File Location values	On the Tools->Utilities screen, the File Location field values for the database and log files directories are NOT allowed for update. The SRS Requirement 5.2.6.1 states that "...RWS shall allow observer to change the location of the local database and log files disk drive to which RWS will copy archive files during archive transmission..."	Bert Vilorio	2	2003-08-08 00:00:00	Test 235, Step 9	Closed
9	SW 1653	The RESTORE utility does not restore files to the automatic	The Restore utility from the Utilities menu copies files from the designated restore directory to the	Bert Vilorio	2	2003-08-12 00:00:00	Not Test Related	Closed - working as designed

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
		backup directory	primary directory. However, it does NOT copy the files to the backup directory. KK - per TRG, QSS to document					
10	SW 1654	RWS crash -- date entry needs range check	On 8/12 while running ST Procedure 400, Step 100, as soon as the operator changed the year, RWS crashed with the following message: "RWS.exe has generated errors and will be closed by Windows. You will need to restart the program. An error log is being created." Subsequent analysis indicated error checking was not being applied when entering years 1960 and before. He indicated a SIR should be written and he had sufficient information to resolve. KK - see also SIR 1658	Samuel Cochran	2	2003-08-12 00:00:00	ST Procedure 400, Step 100	Closed
11	SW 1657	Database Error While Updating Preflight Data	On 8/12/2003, during ST Procedure 400, Step 187, the Operator had just finished baselining an inline simulator flight and Accepted the baseline. Rather than receive the confirmation dialog, the following message was received: "Database error while updating preflight data--(16777222) A provider-specific error occurred." No one present had seen this message before.	Samuel Cochran	2	2003-08-12 00:00:00	ST Procedure 400, Step 187.	NWS_Validation
12	HW	TRS Tracking	Flight #1440 ASC #9 081303 20	Kenneth	2	2003-08-13	ST Test	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
	1662	Problem During Live Flight	minutes into the flight, the TRS antenna was pointing at 262 degrees when the Radiosonde was located to the east. The antenna was not tracking the Radiosonde properly after the first few minutes of flight. The observer had to manually move the antenna to the Radiosonde location in order to keep the signal strength strong. Flight #1440, file #6999031440.	Bashford		00:00:00	Procedure 403	
13	SW 1663	A flight file was not saved in the Backup location.	Flight #1440 ASC #9 Rel #1 08/13/03, Capture file #6999031440 Signed on as an Administrator after a live flight was completed (Asc 9, rel 1). Select Rework mode. A data consistency message was displayed. We noticed the live flight file, 6999031009.mdb was on the Primary datafile location (C:\RWS\RWS\Data files), but this file was missing from the Backup location (C:\RWSBackup).	Jae Lee	2	2003-08-13 00:00:00	N/A - test cleanup phase	NWS_Validation
14	SW 1666	RWS is not adding RRx and CCx for multiple transmissions	RWS is not adding RRx and CCx for multiple transmissions (@ first line of a header). Per Fred Branski, 1) first transmission - normal header (eg., USUS97 KSTA 141200) 2) second and all other transmissions with NO content changes should have RRx where x = A thru Z to inform multiple transmissions (eg., USUS97 KSTA	Jae Lee	2	2003-08-14 00:00:00	TP #413	Deferred

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			141200 RRA) 3) second and all other transmissions with content changes should have CCx where x= A thru Z to inform multiple transmissions with changes (eg., USUS97 KSTA 141200 CCA) KK - expanded form of SIR 473, which was deferred.					
15	SW 1703	WMO Levels Not Coded At Termination	<p>8/20/03: System 6, Non-ST Maintenance Test Flight, Logged as Observer, Capture File 699901448 (note - no "3"). RWS detected balloon burst and terminated flight at 92.3 minutes. At termination, the highest WMO level automatically coded by RWS was exactly 100.00hPA at 53.18 minutes. The Processed Tabular Display showed processed data to termination. Status Messages Display did not list a termination pressure. Flight Summary Report listed 'N/A' for Termination Pressure. Manually selecting 'Code' from the Main Menu did not change anything.</p> <p>===== ===== KB - Additional info on SIR 1703 (from 8/21 email): 1 -- For the 8/20 flight referenced in the SIR, observer closed the flight and then brought it up in Rework Mode. In Rework, when Last Coded was selected, more levels were</p>	Kenneth Bashford	2	2003-08-20 00:00:00	Non-ST Mainetenanc e Test Flight	Validate

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			<p>coded above 100hPa, but not all possible levels indicated by the PDS. When the observer selected Code, all levels were coded. As indicated in the SIR, selecting Code in the Post Termination phase of the flight itself did not change the levels coding. 2 -- A live flight today (8/21) on Systems 6 & 7 exhibited the same problem. In today's flight we also noted a loss of position data at about 59 minutes into the flight (between 100 and 70 hPa), even though the GPS status looked okay with 9 or 10 matches. On both workstations, we noticed the WMO levels had stopped at 100hPa in the WMO Levels display, so we selected Update Levels from the right-click menu. When we did this, an exception error popped up with something about checking De-Bug. We cleared the error message and the flight continued to termination. In post-termination, we tried Update Levels again, and nothing changed. Today's Capture Files: 6999031450, 6999131450.</p> <p>===== ===== KB - 8/26/03 email - additional info: We ran an ST test flight today at Sterling with the specific objective of looking at this problem. We limited observer</p>					

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			<p>actions after release to opening the WMO Levels display, selecting Update Levels, and then closing the display at several different points in the flight and in post-termination. Each time the WMO Messages display opened automatically, we closed it without transmitting messages. Below 70hPa, the WMO Levels display appeared to respond correctly to the observer's actions, displaying appropriate levels. At 70hPa the following message popped up automatically: "Unknown exception occurred while generating levels. Refer to DEBUG.log." At 50hPa, when observer opened the Levels display and selected Update Levels, the Levels display updated and showed 100hPa as the highest level. Same thing in Post-Termination. In Post-Termination, observer selected Last Coded and Code. Messages were not coded for data above 100hPa. RWS did not provide a termination level; observer estimated termination at about 9.5hPa. Capture File: 6999031460</p>					
16	SW 1705	Track Mode Automatically	8/20/03: System 6, Non-ST Live Maintenance Flight, Logged as	Kenneth Bashford	2	2003-08-20 00:00:00	Non-ST Live Maintenance	Validate

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
		Switched From Auto to Manual	Observer, Capture File 699901448 (note - no "3"), also 699903451 (note - no "1"). When observer clicked Continue in the release window immediately after release, the Track Mode automatically switched from Auto to Manual. This was observed simultaneously on both the RWS TRS Display and at the CDU by a second person. At the CDU, the Track Mode was manually switched back to Auto. The observer then clicked OK in the Surface Observation display, and the Track Mode automatically switched to Manual again (also observed at both positions).				Flight	
17	SW 1707	RWS Early Termination for Excessive Missing Data	8/20/03: System 6, Non-ST Maintenance Test Flight, Logged as Observer, Capture File 6999031449. RWS terminated the flight for excessive missing data at 6.87 minutes into the flight. WMO Levels table does not show a pressure change from baseline until 6.23 minutes into the flight. Between release and termination, WMO Levels table lists 19 significant levels. System 7 exhibited the same problem on this flight.	Kenneth Bashford	2	2003-08-20 00:00:00	Non-ST Maintenance Test Flight	Validate
18	SW 1710	RWS Post-Termination	8/21/03: Non-ST maintenance test flight; logged as observer; capture	Kenneth Bashford	2	2003-08-22 00:00:00	Non-ST Maintenance	Validate

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
		Sequence Prevented Access to Flight Data & Offline Mode	file 6999031451. Flight tracked by both Systems 6 and 7. System 7 flight data indicated RWS terminated flight at 11.1 minutes (693.86hPa). System 7 RWS handled post-termination sequence normally. System 6 RWS post-termination sequence as follows: 1--RWS asked observer if he wanted to turn off UPS; observer clicked No. 2--RWS asked observer if he wanted another release on this ascension; observer clicked Yes. 3--Prompt appeared indicating "... flights out of sequence ... continuing may produce unreliable results ... Please delete all flights with future timestamps ... "; observer clicked Cancel. 4--Prompt appeared stating, "Could not start flight. See Debug log for more details"; observer clicked OK (the only option). At this point the main window cleared and RWS was still in the Post-Termination phase of Live Flight mode. The observer could not access any flight data via the Main Menu. All menu options were grayed out except Flight/Exit. Option to Close flight and go into Offline Mode prior to exiting RWS not available.				Test Flight	
19	SW	Plot Problems After	8/28/03: System 6 ST Flight,	Kenneth	2	2003-08-28	Not Related	NWS_Validation

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
	1729	Plot Window is Docked	Logged as Observer, Capture File 6999031467. During flight, the observer opened temperature plot and set the plot window to "Floating." He then set the window to be "Docked" to the right. With the plot window docked, the scaling options in the plot menu no longer functioned correctly. The 'switch y-axis' option only caused the y-axis label to change and the plot lines to disappear. For remainder of flight, temperature plot was not available and could not be refreshed.	Bashford		00:00:00	to ST Test Procedure	
20	SW 1733	Check Messages NOT displayed	The following check messages were NOT displayed during testing per specific MAL files used by XDP: Missing mandatory pressure level at _____ millibars <used XDP-1667frz3.mal> There was a temperature change of ___ degrees from previous flight at time _____. <used XDP-1197.mal> There was a height change of _____ meters from previous flight at time _____. <used XDP-1197.mal> There is no level within 20mb of the surface. <used XDP-5007.mal> [KK - 9/3/03 - see SIR 1367's analysis tab for "within 20"]	Bert Vioria	2	2003-09-03 00:00:00	Test 410: Data Quality/Check Messages	NWS_Review
21	HW 1735	System 6 TRS Tracking Problem(s)	The following problem was common to each of the first 3 ST flights listed	Kenneth Bashford	2	2003-09-04 00:00:00	Not related to Test	Closed

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			<p>below: System 6 TRS (version 1.37 firmware) failed to track from surface. Observer used manual track mode with tracking information from System 7 and/or the System 6 Trajectory Plot to acquire lock-on. Release characteristics and capture file for each of the 4 flights as follows: 1 -- 8/27/03, 1559UTC release: Auto Track Mode set from RWS before release; release point probably at a negative elevation relative to TRS. (NOTE: D. Modracek later explained that future releases should be made from a positive elevation relative to TRS.) CAPTURE FILE: 6999031462. 2 -- 8/28/03, 1535UTC release: Auto Track Mode set from RWS before release; release point near the System 7 dome. CAPTURE FILE: 6999031466 3 -- 8/28/03, 1808UTC release: Auto Track Mode set from System 6 CDU after release; release point near the System 7 dome. CAPTURE FILE: 6999031467 For the following flight, System 6 TRS appeared to track well off the surface, but then lost the track about 2 minutes into flight. Observer re-acquired lock-on by going into Manual Track Mode and moving the antenna based on</p>				Procedure	

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			tracking information from System 7. 4 -- 9/4/03, 1550UTC release: Auto Track Mode set from RWS before release; release point near the System 6 dome at positive elevation. CAPTURE FILE: 6999031478.					
22	SW 1742	System 6 Ascension #8 Not Listed in Utilities	9/5/03: System 6 (69990) testing in Offline Mode, logged as Administrator. Ascension #8 for 69990 missing from both the NCDC Archive Utility and Flight Export Utility windows. The database file for this flight (69990_20031008) was found at C:\RWS\RWS\Data Files. Both windows listed Ascension #8 from 69991 (System 7).	Kenneth Bashford	2	2003-09-08 00:00:00	ST Test Procedures 211 (Step 10) and 212 (Step 5)	Implement - will be closed with SRS update
23	SW 1745	Received an error message when "Copy to backup device ..." option is selected from the Database consistency window	(Capture file: 6999030908 - used today's date instead of SIR number; offline mode only; Screen displays available) (1) Signed on the RWS as a Site Manager (2) The Database consistency window was displayed. (3) When "Copy to backup device ..." option was selected from the Database consistency window, a pop-up error message was displayed with "Unable to copy database files. System message: The operation completed successfully". (4) Clicked OK to continue.	Jae Lee	2	2003-09-08 00:00:00	Not Test Related	Implement

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			ADDITIONAL PROBLEM... (5) Exit RWS. (6) Double Clicked on the RWS. (7) A Pop-up error message with Program Error was displayed - "Backup of Master database was missing and copied from original." (8) Clicked on OK. (9) Go to the Step (2) and repeat rest of steps over again.					
24	SW 1748	RWS Rqmt Specs Not Validated in ST Phase 0	The following RWS requirement specifications could not be validated in Phase 0 of the System Test (this list may not be complete): 6.1.5: The tested build does not have a "help capability." (Well known, but documented for the record.) 6.7.2.1.2: The tested build does not "display the ... TRS lock-on time and ask the observer to verify or modify" it. 6.7.2.2.1: The tested build does not "display baseline surface observation data, release surface observation data, and flight surface observation data (based on baseline and release values) within 12 seconds of release." The Surface Observation Display that opens immediately upon user confirmation of release displays only 2 categories of surface observation data (not 3): "Preflight" and "Release." (Does "flight surface observation data"	Kenneth Bashford	2	2003-09-09 00:00:00	Various ST Test Procedures	Analysis

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			refer to the first row of the Processed Tabular Display? If so, this data is not displayed within 12 seconds of release.) 6.7.2.7.2: The tested build does not "enable the observer to select types of levels to be displayed (i.e., levels that are archived and/or WMO/general levels)." (Is this related to the utility that was removed from the tested build? Has OPS23 identified *all* of the specs that can't be validated as a result of removing this utility?) 6.7.3.4.2: The tested build does not "identify the reason(s) for an unsuccessful release."					
25	SW 1753	RWS Termination Level Discrepancy	9/12/03: System 6 ST flight, logged as Observer. CAPTURE: 6999031484 RWS terminated flight for balloon burst and set termination at approx 13hPa even though flight actually reached approx 8hPa. RWS appears to be coding descending balloon data. It is also very difficult to change termination time appropriately because the user must convert time from decimal format used in PDS/levels displays to minute/seconds. Additional info: System 7 (69991) also tracked this flight and exhibited the same problem. However, observer did not	Kenneth Bashford	2	2003-09-12 00:00:00	Not Related to ST Test Procedure	Closed

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			change the termination time on the System 7 flight. For comparison, the System 7 CAPTURE FILE is 6999131484. KK - may be same problem as SIR 1644 from August					
26	SW 1759	Ascension number reset problem	An XDP live flight was performed for Test 405 with the date and time set at around December 31 at 22:20 UTC. During baselining, the stated ascension number was 33. The balloon was released around 22:25. After the release, the ascension number was suddenly changed to 1. After the flight, this flight was listed as Ascension number 1, 22 UTC flight. The ascension number should have been 33 and NOT reset to 1. This special flight was NOT started and released in the next calendar year or in the next synoptic time window (e.g., 00UTC).	Bert Vilorio	2	2003-09-16 00:00:00	Test 405	NWS_Review
27	SW 1782	Summary of Software Specs Not Met by RWS Build 1.0.3.0 in ST Phase 0	Results from Phase 0 of the RRS ST indicate that 19 RWS S/W Req't Specs were not met in RWS Build 1.0.3.0. These 19 specs are documented in the RWS SRS paragraphs cited below. The numbers in parentheses after the SRS paragraph numbers refer to previous SIRs submitted by the ST test team in which the deficiencies were reported. In a few cases	Kenneth Bashford	2	2003-09-29 00:00:00		Submit

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			related to the requirement for an 'upgrade installation' capability, no previous SIRs were submitted by the ST test team. 5.1.1.3.5.10 (1568); 5.1.3.9 (1731); 5.2.2.2 (1641); 5.2.3.1 (1581); 5.2.3.3 (1581); 5.2.5.3 (1785) 5.2.6.1 (1645,1530); 5.2.12.1 (1647); 5.2.12.6 (1647) 6.1.5 (1748); 6.4.2.1 (no previous SIR); 6.4.2.2 (no previous SIR); 6.4.2.3 (no previous SIR); 6.4.2.4 (1534); 6.5.2 (no previous SIR); 6.6.4.3 (1668); 6.7.2.1.2 (1748); 6.7.2.2.1 (1748); 6.7.2.7.2 (1748); 6.7.3.4.2 (1748).					
28	SW 1786	Flight Summary anomalies noted during ST Phase 0	As part of ST Phase 0, Bill Blackmore examined the printouts of the flights conducted and noticed several anomalies in which it appears the Flight Summary data after a flight terminates is not being reported correctly: 1. Flights going to burst at 27K+ meters and not reporting a tropopause level. 2. Termination pressure listed as "NA" for the above flights. According to the Federal Meteorological Handbook No. 3, the Showalter Stability Index only goes between -40 and +40, yet the code 91 (failed calculation) is displayed on the summary... Suggest saying "Not computable" or similar for code 91.	Samuel Cochran	2	2003-09-29 00:00:00	Test 403	Implement

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
29	SW 1640	Rework Window Opens When It Should Not	This problem was observed at the end of July, but was not considered a problem until August 6. While dry running Test Procedure 501, System Failure and Recovery, a flight terminated after 7 minutes because of excessive missing data. We then turned off the RWS to simulate lose of power. When power was restored and RWS restarted, we were not automatically taken to Rework which was correct. The failed flight was listed in the Archive Utility and the Flight Summary Offline Utility, but not the Rework Table. While looking at the Flight Summary display, the Rework Table opened. At the time we thought that was normal as we had not waited long enough after starting RWS. The Rework Table should never have opened in this case. Since we had earlier thought this action was normal and we were doing a dry run, we did not do a capture.	Samuel Cochran	3	2003-08-08 00:00:00	Test Procedure 501; Steps 49 to end	Submit_Review
30	SW 1655	Inappropriate Error Message	On 8/12/2003, following the crash reported by SIR 1654 (setting time far in past), when we restarted RWS, the following message was displayed: "There are flights out of time sequence (one or more flights with timestamps with a time in the	Samuel Cochran	3	2003-08-12 00:00:00	ST Procedure 400, Step 100	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			future). Continuing may produce unreliable results. Please delete all the flights with the future timestamps." This message implies the RWS remembered the erroneous year in the past that caused the crash, and in effect directs the operator to delete the good flights (which are all "future"). Suggest further wording in the advisory message, to "Check the date setting" before deleting the possibly-valid-date flights.					
31	HW 1659	Sippican Mark Ila Dereeler Failed	On 8/12/2003, During ST Procedure 403, Daily LIVE FLIGHT, the Sippican Mark Ila Dereeler failed when the string used to attach the radiosonde to the flight train snapped --- leaving the radiosonde in the Observer's hand as the balloon ascended. This was not operator error as the unit was prepared correctly.	Samuel Cochran	3	2003-08-12 00:00:00	ST Procedure 403	Submit_Review
32	SW 1664	Failure Switching Y-Axis	On 8/14/03, I was running ST Procedure 430, Step 1, XDP data set 1004, and was looking for a maximum wind of about 108 kts. I had the Wind Plot open and zoomed in on the point of maximum wind speed. Next I changed the y-axis from Elapsed Time to Geopotential Height. I then returned the y-axis to Elapsed Time. The	Samuel Cochran	3	2003-08-14 00:00:00	RRS ST Procedure 430, Step 1	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			y-axis label changed, but the values were still Geopotential Height. Capture 6900131117. Printouts are available.					
33	SW 1744	UPS Status Problems in Offline Mode	9/8/03: System 6 (69990) testing in Offline Mode. In Offline Mode opened Hardware display. In HW display, UPS had a green check with the word 'Unknown.' A prompt appeared indicating UPS off and allowing observer the option to turn it on (Yes) or leave it off (No). Clicked No: leave it off. In HW display, green check changed to red X with words "Power Off." New prompt appeared indicating "UPS status has changed. See Status Message Display for details." Status Message Display not available in Offline Mode. Clicked OK in prompt. A few seconds later the same prompt appeared again (doesn't happen every time). Clicked OK again and prompt did not reappear. HW display still showing red X and UPS power off. Closed the HW display. Immediately re-opened HW display. In HW display, UPS had green check with words "Power: On line Power" A prompt appeared indicating UPS off and allowing observer the option to turn it on	Kenneth Bashford	3	2003-09-08 00:00:00	Not Related to Test Procedure	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			(Yes) or leave it off (No). Etc ... etc ... etc. Problem repeatable as Observer or Administrator. KK - see also SIR 1450, for similar green-check symptom					
34	HW 1752	Observer Could Not Control Antenna Movement in Preflight	9/12/03: System 6 ST flight, logged as Observer. CAPTURE: 6999031484 In pre-flight, after HW Status indicated a green check for TRS and warm-up/initialization completed, observer was able to change frequency in the TRS Display. However, after putting Track Mode into Manual, observer could not control antenna movement. Entered new values for Az and El and clicked Move Antenna. Antenna did not move. Tried to move antenna by clicking slew arrows. Antenna did not move. Tried to move antenna by putting Track Mode into Auto. Antenna did not move. After clicking TRS Reset in HW Status display, observer regained normal control of antenna movement. MG: See SIR 1754.	Kenneth Bashford	3	2003-09-12 00:00:00	Not Related to ST Test Procedure	Submit_Review
35	SW 1785	RWS does not provide a method for sending local station data changes	5.2.5.3. The RWS shall enable the observer to send changes to the local station data to NWSH. Currently, the RWS does not provide an utility to send local station data updates to NWSH. In addition, a process to send local	Jae Lee	3	2003-09-29 00:00:00		Deferred

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			station data changes and master station data changes to NWSH need to be defined.					
36	SW 1641	An observer can not delete any flight	SRS rqt: 5.2.2.2 The RWS shall enable the observer to select one or more flights for deletion from the local database if they have been archived The Flight Deletion Utility is not available for an observer. Therefore, an observer cannot delete any flight from the database. KK - per TRG, update the SRS ?	Jae Lee	4	2003-08-08 00:00:00	ST 214, step 9	Submit_Review
37	SW 1646	Bad min/max range on Observer Initial error message	The Observer Initials min/max values were updated from default values using the Preflight Information Utility in offline mode and the update button was clicked. During preflight processing, when an incorrect value for Observer Initials is entered, an error message is correctly displayed. However, the error message text incorrectly displays the previous min/max values instead of the updated min/max values.	Bert Vilorio	4	2003-08-08 00:00:00	Test 236, Step 11	Submit_Review
38	SW 1647	Default RWS backup device is on the primary disk	SRS# 5.2.12.1. After each flight, the RWS shall automatically write the Master and Flight Databases to a RWS backup device other than the primary disk, overwriting the old Master Database on the disk, if any. SRS# 5.2.12.6 The RWS	Harry Tran	4	2003-08-08 00:00:00	#234, 14 and 40	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			shall provide an offline utility to restore the master database and flight databases from the backup device or other external medium such as a CD. This utility will replace the master database on the primary disk. The default RWS backup device is on the primary disk. An operator cannot backup flight databases to the external RWS backup device. In addition, flight databases cannot be restored from the external RWS backup device.					
39	SW 1656	Screen Shortcuts Don't Work	On 8/12/2003, while running ST Procedure 400, Inline Simulator GUI, and logged in as an Operator, discovered the Windows "shortcuts" (i.e., Alt + _____) don't work. This is in violation of the intent of SRS Section 6.3. This capability will be checked against a live flight at a later time.	Samuel Cochran	4	2003-08-12 00:00:00	ST Procedure 400	Submit_Review
40	SW 1667	Plot overlays with previous flights sometimes displays non-standard marks	While displaying different plots for pressure, temperature and relative humidity, when previous flights are overlaid with marks only and subsequently switched to connected mode, the marks are not consistently displayed as "x". Sometimes they are displayed as red circles or red squares. There are no repeatable procedures that	Bert Vilorio	4	2003-08-15 00:00:00	Test 402A Steps 2 & 3	Submit_Review

#	SIR	Title	Description	Originator	Pri	Submit Date	Procedure/ Step	State
			will guarantee these anomalous displays. Screen printouts and data capture have been generated to illustrate these so-called "non-standard marks".					
41	SW 1668	No Audible Alarm When RWS Goes Into Limited Search	8/15/03: Live flight; System 7 (SR&DC); logged in as Observer; ST Test Procedure 403A. REFERENCE -- RWS SRS paragraph 6.6.4.3: "The RWS shall notify the observer visually and audibly by an alarm (that can be turned off by the observer) when the RWS initiates a TRS limited search" During first 40 minutes of a live flight, observer switched to manual track mode and slewed the antenna away from the radiosonde by 180 degrees in azimuth and 5 degrees in elevation. RWS visually notified the observer that it had initiated a limited search. However, there was no audible alarm. Observer verified RWS audio alarm mechanism and repeated the test sequence with the same result. Based on this test, the RWS specification cited above can not be validated. [6999131442]	Kenneth Bashford	4	2003-08-15 00:00:00	ST Test Procedure 403A	Submit_Review
42	SW 1701	Print Test fails	The Printer Test button does not work in Hardware Status window. Failed to print clicked and a red X displayed.	Harry Tran	4	2003-08-20 00:00:00	Test #400, Step #24, 08/18/03	Closed

SW - Software SIR

HW - Hardware SIR

ATTACHMENT 4

**RRS ST Phase 0 Valid Flight Summary
August 6 - September 4, 2003**

RWS Flight Number	Reached 400 hPa	Reached 10 hPa	Terminating Pressure (hPa)	Altitude (m)	Range (m)	RWS Termination Reason
1			976.7	317	306	Excessive Missing Data
2			874.2	1270	1193	Excessive Missing Data
3	X	X	9.34	32295	43843	Balloon Burst
4	X		18.56	27616	48847	Balloon Burst - Dual flight with LWX
6	X		10.54	31319	60027	Balloon Burst
9	X		24.15	25796	32147	Excessive Missing Data
10	X		102.77	16107	28539	Excessive Missing Data
11	X		10.12	31565	50036	Balloon Burst
13			643.78	3868.3	4110	Excessive Missing Data
14	X		184.16	20922	53485	Excessive Missing Data
15			659.96	3427.3	3689.9	Excessive Missing Data
16	X		17.03	28047	20538	Balloon Burst
17	X	X	8.82	32442	43740.5	Balloon Burst
18			990.76	265	306.44	Excessive Missing Data

RWS Flight Number	Reached 400 hPa	Reached 10 hPa	Terminating Pressure (hPa)	Altitude (m)	Range (m)	RWS Termination Reason
19	X		10.85	30943	16803	Balloon Burst
20			693.86	3289	3593	Fatal software error; data was not saved to the database. The balloon burst naturally after 11.1 minutes. The radiosonde was recovered and reused on the next flight.
22	X		43.77	21790	37268.77	Balloon Burst
23	X		10.48	31283.95	39165.72	Balloon Burst
25	X	X	9.5	29396	41159.02	Balloon Burst
26	X		10.22	31405	56208	Balloon Burst
27	X		13.43	29590	63897	Leaking or Floating Balloon
28/1			912.96	923	1170	Fatal Software Error
28/2	X		10.03	31546	63565	Balloon Burst
29	X	X	9.92	31595	47579	Balloon Burst
30	X	X	9.43	31919	41989	Balloon Burst
31	X		15.95	28390	41748	Balloon Burst
33	X		31.07	24024	30434	Balloon Burst

RWS Flight Number	Reached 400 hPa	Reached 10 hPa	Terminating Pressure (hPa)	Altitude (m)	Range (m)	RWS Termination Reason
35	X		38.75	22529	60245	Unknown Failure
36	X		10.11	31352	56337	Leaking or Floating Balloon
40	X		10.26	31359	66768	Balloon Burst
41	X		19.55	27035	68767	Balloon Burst
42	X	X	7.58	33477	71206	Leaking or Floating Balloon
43	X	X	8.62	32473	53690	Balloon Burst
Averages						
33 flights	26	7	208.4877778	20197.293	33297.5	

ATTACHMENT 5

Untested RWS SRS Requirements (Inadvertently Omitted from Test Procedures)

SRS Paragraph	Test Procedure
5.1.1.3.3.5. When the event marker switch or event marker display element are clicked prior to auto-release detection, the auto-release detection algorithm shall be disabled for the duration of the flight.	403
5.1.3.1.2. The RWS shall compare the current flight's levels with the previous flight's levels during levels generation.	410
5.2.1.3. The User Administration utility shall only be run by an observer with Site Manager or Site Administrator privileges.	231
5.2.5.3. The RWS shall enable the observer to send changes to the local station data to NWSH.	233
6.2.1. The RWS shall require that observers are authenticated by observer name and password and have permission to run the RWS software.	401
6.3.6. The RWS shall print the workstation screen to the local printer.	400
6.6.6. The RWS shall warn the observer when the disk space remaining at the start of a flight is less than what is typically required for two live flights (bytes per flight is configurable).	400
6.7.2.7.2. The RWS shall enable the observer to select types of levels to be displayed (i.e., levels that are archived and/or WMO/general levels).	402
6.7.2.9.4. When flight data is reprocessed or when prompted by the observer, the RWS shall eliminate related check messages and regenerate applicable new ones.	410

ATTACHMENT 6

Failed SRS Requirements

Requirement	Test Procedure
Deleted Utility	
5.2.3.1. The RWS shall enable observers to change RWS system configuration parameters.	NA
5.2.3.3. The RWS shall include as part of the system configuration utility, the capability to change the valid ranges for pre-flight and flight data.	NA
6.7.2.7.2. The RWS shall enable the observer to select types of levels to be displayed (i.e., levels that are archived and/or WMO/general levels).	402
“Help”	
6.1.5. The RWS shall provide a help capability.	400
Upgrade Installation Capability	
6.4.2.1. The RWS shall provide a means to modify the workstation directory structure with the files needed to run the RWS applications, without installer intervention.	001
6.4.2.2. The RWS shall install the NWS headquarters-provided Station Data for this station.	001
6.4.2.3. The RWS upgrade shall provide an option to "modify the database" during installation, in which case, no data will be lost.	001
6.4.2.4. The RWS upgrade shall enable the installer to set the ascension number (not just to one).	001
6.5.2. The RWS shall not require the observer to reenter the data for operation of the workstation at the site for an upgrade.	001

Requirement	Test Procedure
Other	
5.1.1.3.5.10. The RWS shall, when the observer selects to “close” a flight, prompt the observer to remind them to send any WMO messages that have not yet been sent, associated with the ascension, including FZL, MAN, SIG, ABV, and “No Data” types as may be appropriate, and, shall enable the observer to send the messages before closing, or, send the messages later using an offline utility.	402
5.1.3.9. The RWS shall detect, when the workstation is booted, whether a live flight completed processing (e.g., Was there a power failure before the flight summary data was saved?). In such a case, the RWS shall take the observer directly to the “after termination” step for termination processing.	501
5.2.2.2. The RWS shall enable the observer to select one or more flights for deletion from the local database if they have been archived.	214
5.2.6.1. The RWS shall allow the observer to change the location for the local database and log files disk drive to which the RWS will copy archive files during archive transmission.	211 235
5.2.12.1. After each flight, the RWS shall automatically write the Master and Flight Databases to a RWS backup device other than the primary disk, overwriting the old Master Database on the disk, if any.	201 234
5.2.12.6. The RWS shall provide an offline utility to restore the master database and flight databases from the backup device or other external medium such as a CD. This utility will replace the master database on the primary disk.	201
6.6.4.3. The RWS shall notify the observer visually and audibly by an alarm (that can be turned off by the observer) when the RWS initiates a TRS limited search and if the TRS initiates a full search.	403A
6.7.2.1.2. The RWS shall display the release time and TRS lock-on time and ask the observer to verify or modify each.	400 402 403

Requirement	Test Procedure
6.7.2.2.1. The RWS shall display baseline surface observation data, release surface observation data, and flight surface observation data (based on baseline and release values) within 12 seconds of release.	402
6.7.3.4.2. The RWS shall identify the reason(s) for an unsuccessful release or flight.	402

The “Deleted Utility” refers to a Site Administrator’s utility removed from RWS Build 1.0.3.0 by OPS23. The SRS has not been updated to reflect this action.

The “Help” file is not populated in RWS software Build 1.0.3.0 and is scheduled for a later software release.

The “Upgrade Installation Capability” was not implemented in RWS software Build 1.0.3.0 and is scheduled for a later software release.

The “Other” field identifies various other SRS requirements that did not perform their specified function.

ATTACHMENT 7
Additional ST Phase IA Prerequisites

- o RWS (OPS23, Eddie Roberts)
 - o RWS build with all Priority 1 and 2 SIRs resolved and implemented
 - o CD with RWS disk image
 - o RWS VDD and OMS VDD
 - o Updated SRS

- o TRS (OPS11, Darryl Modracek)
 - o TRS hardware checkout using the proposed checklist (i.e., everything tightened, aligned, and functioning according to manufacturer's specification) - OPS11 to develop (OPS22 to support).
 - o TRS firmware VDD be provided to OPS24

- o SPS (OPS11, Ivan Navarro)
 - o SPS hardware checkout using the proposed checklist (i.e., everything tightened, aligned, and functioning according to manufacturer's specification) - OPS11 to develop (OPS22 to support).
 - o SPS firmware VDD provided to OPS24

- o RSOIS/PDB (OPS11, Robert Martin)
 - o The RSOIS and PDB checkout using the proposed checklist (i.e., corrosion removed, aligned, calibrated, sensors replaced, if necessary, according to the manufacturer's maintenance schedule) - OPS11 to develop (OPS22 to support).

- o GPS antenna and repeater (OPS11, Greg Dalyai)
 - o The GPS antenna and repeater checkout using the proposed checklist (i.e., corrosion removed, aligned, calibrated, sensors replaced, if necessary, according to the manufacturer's maintenance schedule) - OPS11 to develop (OPS22 to support).

- o Documentation
 - o RRS Operator Training Guide (OS7, Bob Thomas)
 - o RRS Technical Manual (OPS12, Al Wissman)
 - o EHB-1 (Logistics) updates (OPS14, Howard Robinson)
 - o EHB-4 (EMRS) updates (OPS13, Mike Brown)
 - o EHB-9 (Technical Manual) updates (OPS12, Al Wissman)

- o FMH-3 (Rawinsonde and Pibal observations) updates (OS7, Bob Thomas)
- o WSOH-10 (Rawinsonde observations) updates (OS7, Bob Thomas)
- o Refined radiosonde preparation, balloon launch procedure, preflight and baseline procedures (OPS22, Jim Fitzgibbon)