Executive Summary – RRS ST IA Wrap-up Test report

The Radiosonde Replacement System (RRS) System Test Phase IA (STIA) Wrap-up Test commenced on February 14, 2005 and successfully concluded on Friday, March 4, 2005. This three week test was conducted using live upper air radiosonde flights to validate the fixes for problems found during the ST IA conducted last year.

There were three objectives of the Wrap-up Test (summarized):

a. Accuracy of Engineering Handbook (EHB) 9-904 installation instructions;
b. RRS Workstation Subsystem (RWS) software stability; and,
c. System Issue Report (SIR) validation from previous RRS test phases.

Briefly, the test objectives were met as follows:

a. Minor changes were recommended to OPS11 for EHB 9-904 in the area of establishing communication security keys to the AWIPS;
b. Thirty-six new SIRs were observed against the two RWS software builds tested—of which 8 SIRs were classified as Impact 1 – prevents successful observation; and,
c. All 21 Impact 1 or 2 SIRs from previous testing were either validated or resolved.

Another ST is planned to validate the critical software problems found in the ST IA Wrap-up Test. Included in the testing will be a new RWS computer using Windows XP as the operating system rather than Windows 2000.

1.0 Introduction

The National Weather Service (NWS) will transition from the current radiosonde system to the Radiosonde Replacement System (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 System Test (ST) and the Operational Acceptance Test (OAT).

Three previous developmental tests (designated as ST Phase 0, ST Phase 0.1, and ST Phase 0.2) were conducted as "dry runs" for the formal ST. These tests document system problems as System Issue Reports (SIRs) for resolution to optimize a successful, formal ST.

The Office of Operational Systems, Field Systems Operations Center, Test and Evaluation Branch (OPS24) conducted the first phase for ST, Phase IA, for the RRS with analytical support from OPS11, OPS22, OS7, the National Centers for Environmental Prediction (NCEP), and the National Climatic Data Center (NCDC). The ST Phase IA began on May 24, 2004 and ended on July 2, 2004, as planned.

Due to the number of deficiencies found in the RRS during Phase IA, management decided to have a ST IA Wrap-up test conduct a subset of benchmark and live flight wrap-up testing on an updated version of the RRS. The updated RRS consisted of redesigned Sippican radiosondes, a new version of the Signal Processing Subsystem (SPS) firmware, and an enhanced version of the RRS Workstation Subsystem (RWS) application software. The ST Phase IA Wrap-up began on February 14 and ended on March 4, 2005. (A Readiness Review was conducted on February 9.) This report documents the test results and recommendations of ST Phase IA Wrap-up.

2.0 Objectives

The objectives for the ST Phase IA Wrap-up were as follows:

1. Verify the RWS installation instructions contained in Engineering Handbook (EHB) 9-904 were accurate and complete.

2. Determine the stability of the RWS software for deployment to operational sites.

3. Validate the Software Issue Reports (SIRs) generated during previous testing had been resolved and could be closed.

All abnormalities (software, hardware, or documentation) observed during test conduct, were documented by SIRs and were provided to the RRS Configuration Control Board (CCB) for adjudication.

3.0 Assumptions/Constraints

The RRS Program Manager directed OPS24 to begin the ST Phase IA Wrap-up with the following constraints:

1. Known problems in the Signal Processing Subsystem (SPS) firmware version 2.10 affecting accuracy of wind information, GPS capability, and Quality Indicator (QI) values.

2. The corrected Sippican Solar Radiation Correction (SRC) algorithm not implemented in the delivered RWS test software (build 199).

3. The RWS software build for the ST IA Wrap-up live flights had not undergone the complete suite of benchmark tests.

It was assumed a sufficient number of the Sippican Mk II revision K radiosondes would be available during the test.

4.0 Test Conduct

This section of the report describes the ST IA Wrap-up test configuration, day –by-day test conduct, a summary of all upper air flights flown, and a listing of all SIRs observed.

The ST IA Wrap-up began with a Readiness Review meeting on February 9, 2005. During the meeting, OPS11 agreed to re-certify the two test systems (Systems 6 and 7) located at the Sterling Research and Development Center (SR&DC); and OPS23 agreed to provide RWS software build 199 to OPS24. Both actions were completed on February 11, 2005.

4.1 Test Configuration

OPS11 certified the SR&DC Systems 6 and 7 as being operationally ready to commence testing and provided the re-certification information contained in Attachment 1.

OPS24 commenced the ST IA Wrap-up Test on February 14, 2005, with RWS software build 199.

On February 22, the RWS software build was upgraded by OPS24 to build 200. This build was used during the final two weeks of testing.

4.2 Conduct

The ST IA Wrap –up Test began on February 9, 2005, with a Readiness at which the following was discussed:

a. RWS Software (OPS23, Eddie Roberts)

- Benchmark Test Status – All core and previously failed benchmark tests have been completed and have passed. OPS23 has completed about 70% of the non-core benchmarks test.

- Impact 1 and 2 SIR Status – All except two or three Impact 1 and 2 SIRs were implemented and tested as part of RWS build 197 and are ready to be placed in System Test. The remaining 2-3 SIRs were part of RWS build 198 and delivered to OPS24 on February 11for use during live flight testing that began on February 14. [Note: Actual build delivered was 199.]

- RWS build – RWS build 197 almost completed benchmark testing. Build 198 was to be provided to OPS24 on either Thursday (2/10) afternoon or Friday (2/11) morning. However, build 198 did not undergo any benchmark testing. OPS23 intended to conduct the benchmark tests in parallel with the live flight testing. As an action item, QSS was to provide an estimate on how long it would take to implement the Solar Radiation Correction module Kevin Kay (OPS23) had working on PITS into the RWS as a new build. It was anticipated this build would be available for the third week of live flight testing. [Note: Only one of four Solar Radiation Correction modules was incorporated into a build and was delivered to OPS24 on February 11, 2005 as build 199.]

b. J-700 System (OPS11, John Monte; OPS22, Jim Fitzgibbon)

- Status of Systems at Sterling – John Monte reported he would recertify RRS Systems 6 and 7 by COB Friday February 11, 2005. He sent an e-mail to OPS24 when the recertification was completed.

- Status of Support at Sterling – Due to losing two people from his staff, Jim Fitzgibbon indicated he could provide one person for test support. For the first half of the week of February 14, either he or Paul Rockwood would be available. After Wednesday, February 16, Nick Schmid will be available as well. [Note: Due to a change in OPS22 commitments, Nick Schmid was the primary OPS22 support provider with assistance from Paul Rockwood.]

c. SPS (OPS11, Ivan Navarro)

- Status – Ivan is changing the SPS kit. The SPS firmware and manual would not be part of the kit, but would be available separately. The kit structure should be completed by February 28. The corrected SPS kit is not needed for ST IA Wrap-up, but it is needed for ST IB.

- SPS firmware version – The current version is 2.10. Sippican is working on changes to the firmware to incorporate presenting missing wind data as all 9's rather than as 0's; resolved GPS issues; and meaningful Quality Indicator (QI) values for WVO data. Ivan indicted there should be minimal impact on OPS24's live flight testing. The subject matter experts present agreed products sent to the NCEP would not be affected as the NCEP was more interested in the thermodynamic data (especially, RH) rather than wind data. Ivan could not provide a date when the firmware update would be available.

On February 14, 2005, OPS24 performing a "ghosting" operation on System 7 and an Upgrade on System 6. The installation procedures contained in EHB 9-904 were followed and "redlined." The recommended changed to EHB 9-901 mostly dealt with the area of establishing communication path security keys with the Local Data Acquisition Devise (LDAD). The comments were provided to OPS12 for inclusion.

During the first week of testing (February 15-18), OS7 conducted typical field site flights with editing to remove such in-flight irregularities as identified in the RWS User's Guide. The second week of testing (February 22-25) validated 21 pre-IA and ST IA Impact 1 and 2 SIRS. The last week of testing (February 28 – March 4) consisted of OS7 conducting special case live flights as well as repeating some of the typical editing exercises since a new RWS software build (200) had been installed on February 22, 2005.

Four dual flights were flown with the Baltimore, MD/Washington, DC Weather Forecast Office (WFO-LWX) located at the SR&DC for the purpose of obtaining comparison data with the legacy upper air system. These four flight were the morning flights flown on February 16, February 22, March 3, and March 4, 2005.

A day-by-day account of the ST IA Wrap-up test follows:

February 9: OPS24 held a Readiness Review to determine the readiness of the RRS to begin the ST Phase IA Wrap-up. At the Review, OPS11 was tasked with recertifying RRS Systems 6 and 7 located at the SR&DC; and OPS23 was to deliver the RWS software build 199 to OPS24. Both actions were completed on February 11, 2005.

February 14: The ST Phase IA Wrap-up test began with OPS24 performing a "ghosting" operation on System 7 and an Upgrade on System 6. The installation procedures contained in EHB 9-904 were followed and "redlined." The corrections to EHB 9-904 were provided to OPS12 for inclusion. Offline Maintenance Suite (OMS) version 1.3 was removed from both systems and OMS version 1.5 was installed.

February 15: This was the first day of live flight testing for the RRS ST1A Wrap-up. The purpose of the flights at the Sterling Test Facility was to verify RWS software build 199 functions properly with the current suite of RRS hardware.

In general, the RRS hardware and software exhibited no significant problems for either of day's flights. Marking and editing the Processed Data Set (PDS) was performed during each flight; without detailed post-flight analysis, the software appeared to have handled these actions correctly.

In addition to conducting the test flights, informal RRS operator familiarization training was provided by OS7 to two of the upper air staff from WFO LWX (Calvin Meadows and John Darnley).

February 16: OS7 and OPS22 personnel performed numerous data marking, unmarking and editing actions during each flight. With one exception, the RWS software responded satisfactorily to these interactions. Exception: when the PDS data was marked across several standard pressure levels, RWS did not generate new Check Messages to indicate missing standard pressure levels. It is believed this issue has been documented in one or more past SIRs.

On both workstations, OMS version 1.3 was removed and OMS version 1.5 installed. Version 1.5 was tested successfully on System 7.

February 17: At WSH a communication problem between AWIPS (NMTW) and the Test national Control Facility (TNCF) prevented successful transmission of coded messages to NCEP. This problem was resolved by updating the RRS script file in NMTW to make it compatible with the new AWIPS build (OB5). System 7 coded messages were successfully transmitted for the afternoon flight.

February 18: The Building 16 Local Area Network (LAN) went down during the pre-flight phase of the first flight due to a failure of the associated UPS. The System 7 RWS successfully transmitted coded messages for the first flight by automatically switching to a back-up dial line as designed. The LAN was restored during the early minutes of the second flight and all System 7 coded messages for the flight were successfully transmitted via the LAN. After the LAN was restored, it was noted the System 7 Hardware Status display continued to show a Red X for the LAN status throughout the second flight (SIR 2611 was written).

February 22: The RWS software for RRS Systems 6 and 7 was upgraded with RWS build 200. At this time it was discovered upgrading the RWS software erased communication path IP addresses rather than retaining the addresses like it does with other Station Data. This was manually corrected and a SIR written. The purpose of this week's testing was to validate Impact 1 and 2 SIRs from pre-IA and ST IA testing. Twelve of 21 candidate SIRs were verified during live flights.

February 23: An additional seven SIRs (making 19 out of 21) were validated as working in RWS build 200.

February 24: Two uneventful flights were flown.

February 25: First flight – SIR 2623 (WMO message Display opened with all messages checked for transmit at 400hpa) was observed again on System 6. Updated the System 6 LDAD information to configure the LAN connection for the second flight.

Second flight –

a) A multiple release was tested successfully.

b) SIR 2620 (TRS display issues and no data from SPS problem) occurred on System 6 today (occurred on System 7 yesterday).

c)Reproduced SIR 2623 (WMO message Display opened with all messages checked for transmit at 400hpa). This time, the LAN connection to the Local Data Acquisition Devise (LDAD) was configured for the flight.

February 28: Two uneventful flights were flown.

March 1: Only one flight was flown today. The release time and surface observation (pressure and temperature) of the flight were changed on both systems. Identical changes were made on both systems and occurred after the flight went above 70 hecto-Pascal (hPa). The release time was then restored to its original value. The flight terminated before the surface observation could be restored to its original values. RWS message coding responded satisfactorily to all of these changes.

March 2: Some Processed Data Set (PDS) data were marked and unmarked on both systems during each flight. Minor differences appeared in the coded levels between the two systems after marking the data. After unmarking the data, these differences vanished. Pending further detailed analysis of the flight data, there appear to be no significant anomalies in the RWS software's response to these user actions.

March 3: On the first flight of the day, both systems incorrectly coded missing wind data in the PPBB product after the PDS was marked--SIR 2635 contains additional information. On the second flight, in the post-termination phase, the PDS was marked from 55.0 to 80.0 minutes elapsed time (ET) and then unmarked. The message coding process appeared to respond satisfactorily to these actions.

March 4: This day ended the ST IA Wrap-up test. During the first flight, there were no user interactions with the flight and no anomalies noted. On the second flight, after marking the PDS from 58 to 73 minutes ET on both systems, the TTCC product for System 7 showed missing temperature groups and no wind groups at 70 hPa and 50 hPa. System 6 showed both missing temperature and missing wind groups at both levels (SIR 2639). No other anomalies were noted on the second flight.

4.3 Summary

This section provides a summary of the test results.

4.3.1 Hardware

With the exception of two failed radiosondes out of the box, the RRS hardware successfully performed during a total of 25 live flights conducted during the ST IA Wrap-up Test.

4.3.2 Live Flights

Attachment 2 contains the flight summaries for Systems 6 and 7. Products to NCEP and NCDC were only transmitted from System 7. The RWS reported all flights as terminating with balloon burst—this was in agreement with the WMO data and the Observer's opinion and experience.

As mentioned previously, morning flights conducted on February 16, February 22, March 3, and March 4, 2005, were dual flights with the WFO-LWX.

All RWS products were analyzed for accuracy and usability by OPS22, OS7, NCEP, and NCDC personnel.

4.3.3 New SIR List

During the ST IA Wrap-up, a total of 36 SIRs were identified in the following Impact categories:

Impact 1:	8	Prevents a successful observation
Impact 2:	10	Prevents a successful observation; reasonable work around
Impact 3:	7	Less critical degradation of data
Impact 4:	8	Degradation of system capabilities; no data affected
Impact 5:	3	Minimal to no impact; nice to have

Attachment 3 contains a list of all SIRs observed during the ST IA Wrap-up Test complete with the adjudicated RRS Configuration Control Board status as of March 4, 2005.

4.3.4 ST IA Wrap-up Conclusion Meeting

On March 8, 2005, OPS24 hosted a meeting to discuss the RRS ST-IA Wrap-up Test which ended on March 4, 2005. The following are some of the more pertinent comments:

a. The meeting began with Samuel Cochran (OPS24) thanking personnel from OPS22, OS7, the National Centers for Environmental Prediction (NCEP), the National Climatic Data Center (NCDC), the NWS Telecommunications Gateway (NWSTG), Northrop Grumman Information Technology (NGIT), and the Baltimore, MD/Washington, DC Weather Forecast Office (WFO-LWX) for their

participation and assistance in the RRS ST-IA Wrap-up Test.

b. William Blackmore (OPS22) reported the RWS software was better than previous versions; however, NCDC analysis shows more super adiabatic lapse rates near the surface than previous. A SIR was written on this issue. It is suspected the RWS temperature smoothing algorithm may be in error. Bill further added the radiosondes are still exhibiting a dry-bias on relative humidity (RH).

c. Carl Bower (OS7) added the NCEP has a good feel for temperature; however, RH is still a problem. The winds reported by the Global Positioning System (GPS) radiosondes are superior to those reported by the Radio Direction Finding (RDF) radiosondes. The NCDC, Carl mentioned, is doing good work, but they are having problems in working with high resolution data and data management.

d. Bradley Ballish (NCEP) indicated the test radiosondes looked better than in the last series of tests, however in this latest series, there were not many dual launches at the same time. For some of the tests, there were significant differences in relative humidity (RH) from about 300 hPa and up. At these levels, the guess humidity is not very reliable, so we can not easily conclude which was better. For radiosondes at different times, the RH may be different due to changes in time.

e. Larry Griffin (NCDC) indicated NCDC has successfully processed the ASCII and BUFR levels data through the AIRS QC and summary reports and an error indices for each source have been tabulated. Error indices scores for temperature data were around 4.0 which places the ranking near the bottom relative to MicroART stations. The number of low super adiabatic lapse rates and the number of low and high ascension rates appear to impact the score more than other factors. The error indices for wind data were in the range of .4 to .6 which is at or below the median score for MicroART stations.

Based on the test results, assessments made by OPS22 and OS7, the RRS Program Manager, Dom Bosco (OPS11), declared the RRS ST Phase IA completed.

5.0 Conclusions

The objectives for the ST Phase IA Wrap-up were evaluated as follows:

1. <u>Verify the RWS installation instructions contained in Engineering Handbook (EHB) 9-904 were accurate and complete. (Performed by OPS24)</u>

EHB 9-904 instructions were used by OPS24 to install the software Build 199 on RWS System 7; and to upgrade RWS System 6 with Build 199. On February 22, 2005, both Systems 6 and 7 were upgraded with Build 200. Minor corrections were noted and provided to OPS12 for inclusion.

2. Determine the stability of the RWS software for deployment to operational sites. (Performed by OS7 and OPS22)

During the ST IA Wrap-up, a total of 36 SIRs were identified. Eighteen of the 36 (50%) were Impact 1 or 2 SIRs which "prevented a successful observation." The majority of the SIRs were identified in post-flight data analysis. One Impact 1 SIR (2640) was a result of National Climatic Data Center (NCDC) analysis of RRS flight archive data.

3. Validate the Software Issue Reports (SIRs) generated during previous testing had been resolved and could be closed. (Performed by OPS24)

Nineteen out of a proposed 21 SIRs from pre-ST and ST IA testing were validated as being resolved in RWS Build 200 and were closed.

The SIRs closed were:

1875 WMO levels term did not match flight term
1942 Observer unable to control TRS antenna while on battery power
1943 GPS data not displayed, but winds are being processed
1944 Processed Pressure lags when TRS operating battery power
1975 Rounding of Data for Coded Messages
1979 No Tropopause or RADAT selected
1980 Not all Sig winds selected?
1981 Incorrect Max wind selected
2004 Wind level in coded message with no height.
2007 No max wind or wind shear groups coded
2008 Incorrect coding of showalter index
2012 Maximum Wind Adjustment
2024 Change in sig temp levels above 100 mb while in Rework
2047 Incorrect coding of missing data
2057 Incorrect coding of Max winds
2058 No sig temps selected above 100 mb in rework
2111 Incorrect selection of max winds
2121 Spike in Temperature
2172 Editing of wind data causes erroneous data interpolation

The two SIRs that were not closed were determined as being best evaluated by using a mal file as part of the Benchmark tests. These two SIRs were:

2066 Max Wind Problem (already contained in the Benchmark suite)
2101 Temperature edited results in bogus heights/coding (a non-reproducible, specific weather problem observed at WFO-Caribou, ME)

6.0 Recommendations

Before proceeding to the next phase of testing, the following recommendations are made:

1. OPS23 correct and validate all Impact 1 and 2 SIRs.

2. OPS23 successfully implements the transition to the Windows XP operating system.

3. OPS23 perform the complete suite of Benchmark Tests on the RWS build before providing OPS24 with the build.

4. OPS12 and OS7 update all user and technical documentation.

Attachment 1 - RRS RE-CERTIFICATION RECORDED INFORMATION

System 6

Telemetry Receiver System		
	TRS Pedestal Model	*IMS-2000*
	TRS Pedestal Serial NO.	*006*
	TRS Pedestal DOC Barcode	*CD 0001456176*
	SCA Serial Number	*44330632*
	DCE Serial Number	*17603999 (assumed)*
	SPS Serial Number	*005206*
	DC Power Supply S/N	*513*
	UPS Serial Number	*AS0126110375*
	Local CDU Serial Number	*44330548*
	Remote CDU Serial Number	*44330645*
RRS Work Station (RWS)		
	Computer Serial Number	*0029662482*
	Printer Serial Number	*MY29P1P3GK*
	External Hard Drive S/N	*13024447*
	DCE Serial Number	*Unknown*
Precision Digital Barometer (PDB)		
	PDB Serial Number	*None*
TRS Firmware Versions		
	SCA	*1.29*
	MCU	*1.40*
	Receiver	*2.09*
	Scanner	*2.00q*
	Local CDU	*3.27*
	Remote CDU	*3.27*
	SPS	*2.10*

System 7

Telemetry Receiver System		
	TRS Pedestal Model	*IMS-2000*
	TRS Pedestal Serial NO.	*007*
	TRS Pedestal DOC Barcode	*CD 0001456177*
	SCA Serial Number	*44330544*
	DCE Serial Number	*17603993*
	SPS Serial Number	*531 RP1004*

	DC Power Supply S/N	*514*
	UPS Serial Number	*AS012611087*
	Local CDU Serial Number	*44330566*
	Remote CDU Serial Number	*44330549*
RRS Work Station (RWS)		
	Computer Serial Number	*0029662473*
	Printer Serial Number	*MY29P1P3H4*
	External Hard Drive S/N	*13024493*
	DCE Serial Number	*AoZ030310076*
Precision Digital Barometer (PDB)		
	PDB Serial Number	*154*
TRS Firmware Versions		
	SCA	*1.29*
	MCU	*1.40*
	Receiver	*2.09*
	Scanner	*2.00q*
	Local CDU	*3.27*
	Remote CDU	*3.27*
	SPS	*2.10*

Attachment 2

System Test Flight Summary Form
System #6: 69991
ST IA Wrap-UP Test

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Term hPa	Term Reason
2/15/05	312		199	9.24	Burst
2/15/05	313		199	11.06	Burst
2/16/05	314	14Z	199	12.0	Burst
2/16/05	315	18Z	199	24.1	Burst
2/17/05	316	14Z	199	9.76	Burst
2/17/05	317	18Z	199	9.05	Burst
2/18/05	318	12Z	199	10.3	Burst
2/18/05	319	14Z	199	10.4	Burst
2/22/05	320	15Z	200	12.61	Burst
2/22/05	321	18Z	200	10.47	Burst
2/23/05	322	14Z	200	10.32	Burst
2/23/05	323	18Z	200	10.89	Burst

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Term hPa	Term Reason
2/24/05	324	15Z	200	9.57	Burst
2/24/05	325	18Z	200	11.69	Burst
2/25/05	326	14Z	200	12.55	Burst
2/25/05	328	18Z	200	9.06	Burst
2/28/05	329	14Z	200	8.4	Burst
2/28/05	330	17Z	200	10.8	Burst
3/01/05	331	14Z	200	9.01	Burst
3/02/05	332	13Z	200	38.4	Burst
3/02/05	333	15Z	200	12.6	Burst
3/03/05	334	15Z	200	10.4	Burst
3/03/05	335	17Z	200	8.3	Burst
3/04/05	336	15Z	200	12.9	Burst
3/04/05	337	18Z	200	8	Burst

System Test Flight Summary Form
System #7: 69990
ST IA Wrap-UP Test

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Products Transmitted	Term hPa	Term Reason	SIRs Written Bldg 16	Post Analysis SIRs	Comments
2/15/05	100		199	None	9.24	Burst			
2/15/05	101		199	None	11.06	Burst			
2/16/05	102	14Z	199	WMO & NCDC Archive	12.0	Burst	2606, 2608		Dual with LWX
2/16/05	103	18Z	199	WMO & NCDC Archive	24.1	Burst	2609, 2610		
2/17/05	104	14Z	199	WMO & NCDC Archive	9.76	Burst			
2/17/05	105	18Z	199	WMO & NCDC Archive	9.05	Burst			
2/18/05	106	12Z	199	WMO & NCDC Archive	10.3	Burst	2611		

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Products Transmitted	Term hPa	Term Reason	SIRs Written Bldg 16	Post Analysis SIRs	Comments
2/18/05	107	14Z	199	WMO & NCDC Archive	10.4	Burst			
2/22/05	108	15Z	200	WMO & NCDC Archive	12.6	Burst	2615		
2/22/05	109	18Z	200	WMO & NCDC Archive	10.47	Burst			
2/23/05	110	14Z	200	WMO & NCDC Archive	10.32	Burst		2612, 2613, 2616, 2618, 2619	
2/23/05	111	18Z	200	WMO & NCDC Archive	10.89	Burst	2617		
2/24/05	112	15Z	200	WMO & NCDC Archive	9.57	Burst			Dual with LWX

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Products Transmitted	Term hPa	Term Reason	SIRs Written Bldg 16	Post Analysis SIRs	Comments
2/24/05	113	18Z	200	WMO & NCDC Archive	11.67	Burst	2620, 2621, 2622, 2623		
2/25/05	114	14Z	200	WMO & NCDC Archive	12.55	Burst			
2/25/05	115	18Z	200	WMO & NCDC Archive	9.06	Burst			3rd Release
2/28/05	116	14Z	200	WMO & NCDC Archive	8.4	Burst			
2/28/05	117	17Z	200	WMO & NCDC Archive	10.8	Burst	2627, 2630	2626, 2628, 2629	
3/01/05	118	14Z	200	WMO & NCDC Archive	9.01	Burst			Only 1 flight today
3/02/05	119	13Z	200	WMO & NCDC Archive	38.4	Burst			

Date	RWS Flt #	Release Hour (UTC)	RWS Software Build	Products Transmitted	Term hPa	Term Reason	SIRs Written Bldg 16	Post Analysis SIRs	Comments
3/02/05	120	15Z	200	WMO & NCDC Archive	12.6	Burst			
3/03/05	121	15Z	200	WMO & NCDC Archive	10.4	Burst			Dual with LWX
3/03/05	122	17Z	200	WMO & NCDC Archive	8.3	Burst	2635		
3/04/05	123	15Z	200	WMO & NCDC Archive	12.9	Burst			Dual with LWX
3/04/05	124	18	200	WMO & NCDC Archive	8	Burst	2639	2638	2638 Found during parallel conducted Benchmark Test

Attachment 3

SIRs Found During ST IA Wrap-up						
Number	**Summary**	**Impact**	**Priority**	**Date Found**	**Found By**	**Status**
2450	Hardware screen displays incorrect LAN status	4 - Degradation of system capabilities; no data affect	3 - Include in a future maintenance release	07/30/04	Roberts, Edward	Deferred, not assigned
2605	Simulated Flight Mode Should Not Attempt Access to the LAN	4 - Degradation of system capabilities; no data affect	2 - Include in next maintenance release	02/14/05	Cochran, Sam	NWS Validation, assigned to Roberts, Edward; Thomas, Richard
2606	Preflight Status Messages for TRS out of order	4 - Degradation of system capabilities; no data affect	2 - Include in next maintenance release	02/16/05	Bashford, Ken	Validation Test, assigned to Majjiga, Saritha
2607	Upgrade error RWS 0.0.0.199	5 - Minimal to no impact; nice to have	2 - Include in next maintenance release	02/16/05	Schmid, Nick	Approved, assigned to Roberts, Edward; Thomas, Robert
2608	In Rework, Status Message Display saved file truncated	4 - Degradation of system capabilities; no data affect	2 - Include in next maintenance release	02/16/05	Bashford, Ken	Validation Test, assigned to Majjiga, Saritha
2609	Two Failed Radiosondes	2 - Prevents	5 -	02/16/05	Cochran, Sam	Analysis,

Number	Summary	Impact	Priority	Date Found	Found By	Status
		successful observation; reasonable workaround	Undetermined			assigned to Navarro, Ivan
2610	Hardware Display shows early flight h/w anomalies	4 - Degradation of system capabilities; no data affect	2 - Include in next maintenance release	02/16/05	Bashford, Ken	Analysis, assigned to Modracek, Darryl; Monte, John
2612	End Missing Temperature not coded	3 - Less critical degradation of data	2 - Include in next maintenance release	02/18/05	Blackmore, William	Validation Test, assigned to Majjiga, Saritha
2613	After marking out wind across 100hPa, PPBB not coded correctly	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	02/22/05	Thomas, Robert	Implementation, assigned to Zemejda, Kevin
2615	RWS Upgrade Resets Server IP Addresses	3 - Less critical degradation of data	2 - Include in next maintenance release	02/22/05	Cochran, Sam	Validation Test, assigned to Majjiga, Saritha
2616	Change and restore of SFC obs causes change in TTBB and TTDD messages	2 - Prevents successful observation;	2 - Include in next maintenance	02/22/05	Blackmore, William	Closed

Number	Summary	Impact	Priority	Date Found	Found By	Status
		reasonable workaround	release			
2617	Flight Summary Utility Listing is Random	4 - Degradation of system capabilities; no data affect	2 - Include in next maintenance release	02/22/05	Cochran, Sam	Implementation, assigned to Chase, Greg
2618	Wavy, erratic pressure data problem continues	1 - Prevents successful observation; no workaround	5 - Undetermined	02/23/05	Blackmore, William	Analysis, assigned to Navarro, Ivan
2619	Outlier removal vs. rapid warming	2 - Prevents successful observation; reasonable workaround	5 - Undetermined	02/23/05	Blackmore, William	Watch, not assigned
2620	TRS display issues and no data from SPS problem (System 7 only)	4 - Degradation of system capabilities; no data affect	5 - Undetermined	02/24/05	Schmid, Nick	Approved, assigned to Modracek, Darryl; Navarro, Ivan
2621	Release point Elevation missing in STATION_DATA.TXT	5 - Minimal to no impact; nice to have	3 - Include in a future maintenance release	02/24/05	Schmid, Nick	Deferred, not assigned

Number	Summary	Impact	Priority	Date Found	Found By	Status
2622	TRS antenna display and Processed Table display show Azimuth difference for System 6	4 - Degradation of system capabilities; no data affect	5 - Undetermined	02/24/05	Schmid, Nick	Analysis, assigned to Kay, Kevin; Roberts, Edward
2623	WMO message Display opened with all messages checked for transmit @400hpa (system 6 only)	5 - Minimal to no impact; nice to have	2 - Include in next maintenance release	02/24/05	Lee, Jae	Approved, assigned to Moren, Chris; Reddy, Jakku
2624	RADAT changed to Missing when sfc temp changed and then restored	3 - Less critical degradation of data	2 - Include in next maintenance release	02/24/05	Blackmore, William	Validation Review, assigned to Reddy, Jakku
2625	Migrate RWS to Windows XP Operating System / Fix Captive Users	1 - Prevents successful observation; no workaround	1 - Need immediate emergency fix	02/28/05	Thomas, Richard	Implementation, assigned to Karumanchi, Goutham
2626	sfc supers over 900C/km - Temperature smoothing is suspect	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	02/28/05	Blackmore, William	Design, assigned to Chase, Greg
2627	System 7 coded one max wind; System 6 coded two	3 - Less critical degradation of data	2 - Include in next maintenance release	02/28/05	Bashford, Ken	Design, assigned to Karumanchi, Goutham

Number	Summary	Impact	Priority	Date Found	Found By	Status
2628	Second Tropopause coded when not needed	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	02/28/05	Blackmore, William	Design, assigned to Moren, Chris; Reddy, Jakku
2629	Change and then restoration in release time causes change in TTBB message	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	02/28/05	Blackmore, William	Design Review, assigned to Castro, Claudina; Roberts, Edward
2630	System 7 added levels after change of sfc data	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	02/28/05	Bashford, Ken	Scheduled, assigned to Reddy, Jakku
2631	SDD: Temperature Smoothing description is contrary to requirement	3 - Less critical degradation of data	3 - Include in a future maintenance release	03/02/05	Thomas, Richard	Design, assigned to Zemejda, Kevin
2632	Solar Radiation --- Cloud Cover & Low Altitude Intensity Ratio updates	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	03/02/05	Roberts, Edward	Design Review, assigned to Roberts, Edward; Castro, Claudina
2633	Solar Radiation --- Solar Angle Terminator	2 - Prevents successful	2 - Include in next	03/02/05	Roberts, Edward	Approved, assigned to

Number	Summary	Impact	Priority	Date Found	Found By	Status
		observation; reasonable workaround	maintenance release			Navarro, Ivan
2634	SDD: Tropopause Write-up is out of date	3 - Less critical degradation of data	3 - Include in a future maintenance release	03/03/05	Thomas, Richard	Submit, assigned to Roberts, Edward; Thomas, Richard
2635	Incorrect missing wind group in PPBB after marking PDS	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	03/03/05	Bashford, Ken	Design, assigned to Zemejda, Kevin
2636	Second freezing level not coded when 1+ minute of data deleted.	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	03/03/05	Blackmore, William	Submit, assigned to Roberts, Edward; Thomas, Richard
2637	Questionable heights when RH set to missing	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	03/03/05	Blackmore, William	Submit, assigned to Roberts, Edward; Thomas, Richard
2638	WMO Levels not updated at termination	2 - Prevents successful observation; reasonable workaround	2 - Include in next maintenance release	03/03/05	Lyjak, Larry	Design Review, assigned to Roberts, Edward; Castro, Claudina

Number	Summary	Impact	Priority	Date Found	Found By	Status
2639	TTCC discrepancy between Systems 6 & 7 after marking PDS	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	03/03/05	Bashford, Ken	Design, assigned to Zemejda, Kevin
2640	High number of supers and unrealistic ascension rates seen in RRS archive	1 - Prevents successful observation; no workaround	2 - Include in next maintenance release	03/07/05	Blackmore, William	Submit, assigned to Roberts, Edward; Thomas, Richard
2641	Tropopause Candidate Check	3 - Less critical degradation of data	3 - Include in a future maintenance release	03/08/05	Zemejda, Kevin	Submit, assigned to Roberts, Edward; Thomas, Richard