

ST XP Test Strategy

1. Introduction

In April 2005, the Radiosonde Replacement System (RRS) will introduce a new RRS Workstation Subsystem (RWS) computer running the Windows XP operating system to replace the current computer running the Windows 2000 operating system.

The purpose of the RRS System Test (ST) Windows XP test implementation (hereafter referred to as ST XP) is to verify changing the RWS computer and operating system does not have any impact on the RWS products sent to the National Centers for Environmental Prediction (NCEP) or the flight archive data sent to the National Climatic Data Center (NCDC).

The ST XP will be conducted in two parts. Part one will be conducted at NWS Headquarters between April 4 – 22, 2005, using two RWS systems and two External Data Pumps (XDPs). Part two will be conducted at the Sterling Research and Development Center (SR&DC) between April 11 -22, 2005, with one RWS and live flights.

2. Prerequisites

Common to both parts of the ST XP is the RWS build delivered to OPS24 must have successfully undergone the complete Benchmark suite of tests and OPS23 has conducted at least two live flights

2.1 Headquarters

- a. Two certified (see Attachment 1), new Gateway computers with Windows XP;
- b. Two XDPs; and
- c. One set of RWS application (including the Offline Maintenance Suite) software and ghosting software.

2.2 SR&DC

- a. One certified, new Gateway computer with Windows XP;
- b. One set of RWS application (including the Offline Maintenance Suite) software and ghosting software.
- c. At least one case of Sippican MkII Revision k (or later) radiosondes are available;
- d. Two certified upper air operator are available; and
- e. RRS Systems 6 and 7 have been certified (see Attachment 2).

3. Objectives

- a. Validate the accuracy of the EHB 9-904 RWS software installation instructions.
- b. Determine the stability of the RWS software for deployment to operational sites.

4. Test Methodology

ST XP will be conducted in two parts. Part one will consist of testing at NWS Headquarters and will begin with a Readiness Review to be held on April 4, 2005, at which time OPS23 will provide OPS24 with the latest RWS software build. If all Readiness Review items (see attachment 1) are completed satisfactorily, the software installation (performed by OPS24) can take place following the Readiness Review on the two RWS units provided by OPS23 to OPS24. The software installation will consist of system “ghosting” and RWS application software installation using the procedures contained in EHB 9-904.

Testing at Headquarters will run from April 4 to April 22 and will consist of using two XDPs to provide RWS input from mal files in accordance with OPS24 test procedures (see Attachment 3).

The second part of the ST XP will consist of a Live Flight Readiness Review held on April 7, 2005 for the purpose of accessing the readiness of the complete RRS to commence live flight testing at the SR&DC located in Sterling, VA. At this readiness review, OPS11 will provide OPS24 with RRS Systems 6 and 7 re-certification information indicating the RRS hardware (and especially, the new RWS computer) is ready to begin live flights. OPS23 will provide OPS24 with a RWS software build that has successfully completed Benchmark Testing and at least two live flights. If all Readiness Review items (see Attachment 2) are completed satisfactorily, the software installation (performed by OPS24) will take place on April 8, 2005 at the SR&DC. After System 7 is “ghosted,” (System 6 will retain the Windows 2000 operating system as a control) at least one test flight will be performed to ensure the RWS software and RRS hardware are ready to commence the two weeks of official live flights beginning on April 11, 2005, in accordance with OPS24 test procedures (see Attachment 4).

During the official portion of the test, the following format will be followed:

- a. Week One: RWS software installation by OPS24 followed by various live flight scenarios (identified in OPS24 test procedures) to validate RWS requirements with assistance from certified upper air operators.
- b. Week Two: Typical field site operations data editing and manipulation will be performed by OPS22, OPS24, and OS7 personnel.

All RRS products will be analyzed by OPS22, OS7, NCEP, and NCDC personnel for accuracy and usability. Only products from System 7 running the Windows XP operating system will be transmitted to NCEP and NCDC.

By NWS Management direction, there will not be any dual flights with the Baltimore, MD/Washington, DC Weather Forecast Office (WFO-LWX).

Any problems found during the ST XP will be documented as System Issue Reports (SIRs) and adjudicated by a RRS Test Review Group (TRG) on April 14 and April 21, 2005. The TRG will

determine the operational impact and implementation severity of the SIR and whether or not to recommend the SIR to the RRS Configuration Control Board (CCB). The TRG will be composed of voting representatives from OPS11, OPS12, OPS22, OPS23, OPS24, and OS7. An Emergency TRG may be convened by the Test Director at his discretion if a critical problem is experienced if time permits. Otherwise, if the Emergency TRG is not convened, the Test Director will notify the RRS Program Manager.

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Attachment 1 – NWS Headquarters Checklist

**RRS Certification For System Test XP
April 04, 2005**

The purpose of this certification list is to document that the RWS software is functioning, and all required documentation is available and ready to support the System Test XP. The ST XP is scheduled to begin on April 04, 2005. **The items below are required to be completed by April 4, 2005.**

Entries should be made below to identify hardware serial number(s), firmware versions, Version Description Documents (VDDs) version number, etc. required to identify the equipment configuration to be tested. In addition, provide certification steps including system configuration data used to certify the subsystems.

COTRs and their Branch Chiefs need to certify that the subsystems have been checked out and are ready for the ST XP. The RRS Program Manager will certify the System is ready to be turned over to the System Test Director.

1.0 Hardware

1.1 Workstation (System 1)

Hardware: _____

Checkout Procedure: _____

COTR: _____

Workstation (System 2)

Hardware: _____

Date: _____

Date: _____

1.2 External Data Pump (XDP) [System 1]

Hardware: _____

Checkout Procedure: _____

COTR: _____

XDP (System 2)

Hardware: _____

Date: _____

Date: _____

OPS11: Dom Bosco

Date: _____

2.0 Software

Application Software: _____

VDD: _____

Date: _____

OMS: _____

VDD: _____

Date: _____

RPX: _____

VDD: _____

Date: _____

SRS Version: _____

Ghosting Software: _____ Date: _____

Benchmark Test Status: _____

COTR: Edward Roberts

Date: _____

OPS23: Rick Thomas _____ Date: _____

3.0 Documentation

3.1 EHB-9, Technical Manual: Al Wissman

OPR: _____ Date: _____

OPS12: Al Wissman _____ Date: _____

4.0 RWS Systems 1 and 2 Installed, Checked Out, and Ready for ST XP.

OST11: Dom Bosco Date: _____

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Attachment 2 – SR&DC Checklist

**RRS Certification For System Test XP
April 11, 2005**

The purpose of this certification list is to document that the various RRS hardware subsystems and software are functioning, and all required documentation is available and ready to support the System Test XP. The ST XP is scheduled to begin on April 18, 2005. **The items below are required to be completed by April 7, 2005.**

Entries should be made below to identify hardware serial number(s), firmware versions, Version Description Documents (VDDs) version number, etc. required to identify the equipment configuration to be tested. In addition, provide certification steps including system configuration data used to certify the subsystems.

COTRs and their Branch Chiefs need to certify that the subsystems have been checked out and are ready for the ST XP. The RRS Program Manager will certify the System is ready to be turned over to the System Test Director.

1.0 Hardware

1.1 TRS (System 6)

Hardware: _____
Firmware: _____
VDD: _____
Checkout Procedure: _____

COTR: John Monte

TRS (System 7)

Hardware: _____
Firmware: _____
Date: _____
Date: _____

Date: _____

1.2 SPS (System 6)

Hardware: _____
Firmware: _____
VDD: _____
Checkout Procedure: _____

COTR: Ivan Navarro

SPS (System 7)

Hardware: _____
Firmware: _____
Date: _____
Date: _____

Date: _____

1.3 GPS Repeater (Building 16)

Hardware: _____
Checkout Procedure: _____ Date: _____

COTR: _____ Date: _____

1.4 SPS Base Antenna (System 6)

Hardware: _____
Firmware: _____
VDD: _____
Checkout Procedure: _____

SPS Base Antenna (System 7)

Hardware: _____
Firmware: _____
Date: _____
Date: _____

COTR: _____ Date: _____

1.5 RSOIS (System 7)

Hardware: _____

Checkout Procedure: _____ Date: _____

COTR: _____ Date: _____

1.6 Workstation (System 6)

Hardware: _____

Checkout Procedure: _____ Date: _____

COTR: _____ Date: _____

Workstation (System 7)

Hardware: _____

Checkout Procedure: _____ Date: _____

COTR: _____ Date: _____

1.7 Radiosonde (Quantities Available)

GPS Module: _____

Quantities Available: _____

COTR: Ivan Navarro Date: _____

1.8 PDB (System 7)

Hardware: _____

Checkout Procedure: _____ Date: _____

COTR: Tony Leonardo Date: _____

OPS11: Dom Bosco Date: _____

2.0 Software

Application Software: _____ VDD: _____ Date: _____

OMS: _____ VDD: _____ Date: _____

RPX: _____ VDD: _____ Date: _____

SRS Version: _____

Ghosting Software: _____ Date: _____

Benchmark Test Status: _____

COTR: Edward Roberts Date: _____

OPS23: Rick Thomas Date: _____

3.0 Documentation

3.1 EHB-9, Technical Manual: Al Wissman

OPR: _____ Date: _____

OPS12: Al Wissman Date: _____

4.0 Miscellaneous Test hardware/software: Ivan Navarro

4.1 PC/laptop connection to the SPS maintenance port

4.2 Sniffer connection for SPS

OPR: _____

Date: _____

OPS11: Dom Bosco _____

Date: _____

5.0 RRS Systems 6 and 7 Installed, Checked Out, and Ready for ST XP.

OST11: Dom Bosco Date: _____

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Attachment 3 - NWSHQ Checklist
RRS System Test XP
April 4 – April 22, 2005

#	Test No	Title	User	Data Set	Initials	Date
000 Series - Installation						
1	001	RRS Installation	A	N/A		
200 Series - System Administration						
2	201	Tools File and Directory	A	N/A		
3	212	Flight Management - Flight Import and Export Utility	O	N/A		
4	214	Flight Management - Flight Deletion Utility	A	N/A		
5	220	Application Utility	A	N/A		
6	221	Application - Plots Utility	A	N/A		
7	231	Administration - User Administrative Utility	A	N/A		
8	235	Administration - File Location Utility	A	N/A		
9	236	Administration - Preflight Information Utility	A	N/A		
400 Series -Evaluation of RWS Functional Capabilities						
10	400	GUI Checkout	O	N/A		
11	401	Nominal Inline Simulator Flight	T	N/A		
12	401a	Editing Check Messages	O	N/A		
13	402	Nominal Flight - XDP	O	N/A		
14	405a	Synoptic vs Special designation -	O	N/A		

#	Test No	Title	User	Data Set	Initials	Date
		Case #1				
15	405b	Synoptic vs Special designation - Case #2	O	N/A		
16	405c	Synoptic vs Special designation - Case #3	O	N/A		
410 Series - Data Quality and Check Messages						
17	410a	Check Messages for SRS 5.1.2.6.1, 6.7.2.9.1, and 6.7.2.9.2 (Test#410 CD)	A	1133.mal 69102-3-1083		
18	410b	Missing Mandatory Pressure Level and Temperature Lapse Rate	O	RRS-999.mal		
19	410c	Data Missing Near Possible Tropopause and Same Pressure At Times. (Test#410 CD).	A	69102-3-1071		
20	410d	No Tropopause Found At 500mb Or Above and No Level Within 20mb of the Surface	O	5007.mal		
21	410e	Wind Speed and Direction Changes, and Superdiabatic Lapse Rate detected. (Test#410 CD)	A	69102-3-1082		
22	410f	Wind Speed Exceeds 180kts	O	1039.mal		
23	410g	Balloon Descended and Reascended Detected	O	proclc.mal		
24	410h	Temperature Lapse Rates	O	SIR2249.mal		
430 Series - RRS Anomalous Flight Situations						
33	430a	Missing Winds data	O	1004.mal		

#	Test No	Title	User	Data Set	Initials	Date
34	430b	Excessive Missing data	O	1122.mal		
35	430c	Maximum Winds 132kts data	O	1006.mal		
36	430d	Maximum Winds 247kts data	O	1039.mal		
37	430e	Rapid RH changes	O	1118.mal		
38	430f	Temperature less than -80C Degree	O	1095.mal		
39	430g	Less Than 250 m/min Ascension Rate	O	1096.mal		
40	430h	Floating Balloon	O	1137.mal		
41	430i	Constant Pressure at 200 hPa	O	4001.mal		
42	430j	Constant Pressure at 600 hPa	O	4004.mal		
43	430k	Excessive Missing Pressure Data	O	1148.mal		
44	430l	Balloon Burst	O	1290.mal		
45	430m	Temperature Inversion Off Surface	O	1613.mal		
46	430n	Multiple Super Adiabatic Lapse Rates	O	2183.mal		
47	430o	Failed Temperature Sensor	O	5001.mal		
48	430p	Out of Range Temperature Spikes	O	5004.mal		
49	430q	Within Range Temperature and Pressure Spikes	O	AllSpikes.mal		
50	430r	Seven Freezing Levels	O	1655.mal		
51	430s	Negative Pressure Levels	O	4005.mal		
52	430t	Out of Range Pressure Spikes	O	4006.mal		
440 series - RRS Extreme Site Locations						

#	Test No	Title	User	Data Set	Initials	Date
54	440a	Key West (KHQR), FL	A	1240m.s03		
55	440b	Riverton (KHQV), WY	A	1239m.s03		
56	440c	Flagstaff (KHQP), AZ	A	1181m.s03		
57	440d	Kodiak (KHQS), AK	A	1178m.s03		
58	440e	Hilo (KHQQ), HI	A	1237m.s03		
59	440f	Pago Pago (KHQT)	A	1226m.s03		
60	440g	Yap, WCI (KHQV)	A	1241m.s03		
61	440h	Barrow (KHQN), AK	A	1182m.s03		
Test Requires MS Access Program						
62	450	Surface Data 10 Minutes	N/A	N/A		
Flight Processing and "after Termination" Processing						
63	502	Disk Storage Warning	A			
Tests Require Time Changed						
64	402b	Comparison Flight Test	O	N/A		
65	410h	Temperature and Height Changes	O	1089.mal 1197.mal		
Messages Checklist						
66	703	Status Messages Checklist	O	N/A		
67	706	Pop-Up Messages Checklist	O	N/A		

A: administrator O: observer T: trainee

Attachment 4 - **SR&DC Test Checklist**
RRS System Test XP
April 11 – April 22, 2005

Test #	TP#	Test Title/Scenario	User Acct	Init	Date
Installation and Hardware					
1	001	RRS Installation			
2	002	TRS/CDU Remote Operations			
3	003	SPS Communication Status			
4	004	Offline Utility Suite validation			
5	501	System Failure/Recovery			
Live Flight *** See Additional Live Flight Tests section for more Live Flight tests *** NOTE: Live flight tests will use NAVMAN radiosondes unless otherwise noted in Comments.					
6	403	RWS Termination Above 70hPa			
7	403	RWS Term Above 400/Below 70hPa			
8	403	RWS Term Below 400hPa			
9	403	User Term Above 70hPa			
10	403	User Term Above 400/Below 70hPa			
11	403	User Term Below 400hPa			
12	403	Manual Release Detection			
13	403	Multiple releases on same ascension			
14	403A	Antenna Search Mode Test			
Flight Rework					
15	413	AWIPS Transmit			
16	404	- Station Data <u>Option 1</u>			

Test #	TP#	Test Title/Scenario	User Acct	Init	Date
		- Within 6 hours of selected flight			
17	404	- Station Data <u>Option 1</u> - <u>Not</u> within 6 hours of selected flight			
18	404	- Station Data <u>Option 2</u> - Within 6 hours of selected flight			
19	404	- Station Data <u>Option 2</u> - <u>Not</u> within 6 hours of selected flight			
Flight Management and Administration					
20	211	Flight Archive			
21	215	Flight Summary			
22	233	Master Station Data			
23	234	Database Backup and Restore			
24	402A	Plots - Overlay			
Miscellaneous Tests (annotated as needed)					
Additional Live Flight Tests (annotated as needed)					