

Engineering Division  
W/OSO321:FJZ

M003 MODIFICATION NOTE 4  
(for Electronics Technicians)

SUBJECT : SPU 11 Vaisala Sounding Processor Board installation

PURPOSE : Modify the present M003 configuration to be compatible with the new Vaisala radiosondes

EQUIPMENT AFFECTED : Upper Air Microcomputer System (M003)

PARTS REQUIRED : Quantity                      Description

1	SPU 11 Vaisala Sounding Processor Board (M003-1A1A4).
1	SPU 11 Release Interface (M003-7).
1	MET data coax cable. Vaisala P/N 12882ZZ. (M003-1A1A4W6, attaches between the release interface connector and the SPU 11 Processor Board.)
1	5 1/4" Test Disk (verifies the presence of the SPU 11).

MOD PROCUREMENT : None

SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED : None

TIME REQUIRED : 30 minutes

EFFECT ON OTHER INSTRUCTIONS : This modification note supplements the installation instructions contained in Modification Note 2 of EHB-9, section 3.6.

VERIFICATION STATEMENT : This modification was successfully tested at the WSFO in Amarillo, Texas, and Denver, Colorado.

## GENERAL

This modification note provides a procedure for installing the new Vaisala SPU 11 sounding processor board, graphically depicts the proper switch settings for the SPU 11, describes the appropriate connections from the SPU 11 to the MCU, furnishes test procedures to verify proper operation of the Vaisala sounding processor, and offers an SPU 11 troubleshooting guide. **Table 1 lists the sites affected by this modification note.**

## PROCEDURE

Coordinate installation with station or regional operations personnel. **Continue with installation of the SPU 11 only when the following steps have been completed:**

1. Vaisala MicroART software version 2.74 has been received on station.
2. Operators have reworked all flights taken under software version 1.52.

### A. Installation Procedure

#### NOTE

**Due to the noise sensitivity of the SPU 11 sounding processor card, a complete receiver alignment must be performed after installing the SPU 11 card.**

1. If the Upper Air Microcomputer and the Data Control Assembly is turned **OFF**, skip to step 3.
2. From the main menu, choose the "Shut Down System" option and then turn **OFF** AC power to the microcomputer and the Data Control Assembly.

#### WARNING

**To prevent damage to the hard disk, Step 2 must be completed before the computer is moved.**

3. Remove the CPU cover as shown in Figure 1.
4. Identify all card slots by looking down at the system board from the front of the system chassis. Count the slots from left (slot 1) to right (slot 8). Table 1 shows the proper card locations by slot number.
5. Before installing the SPU 11, set the DIP switch settings as shown in Figure 2.
6. Remove the W37A cable from the back of the ARTIC card.
7. Locate slot 4.
8. Remove the multifunction card ribbon cable connector bracket from slot 4.
9. If another card is installed in slot 4, move it to the location designated in Table 2.
10. Install a card guide in slot 4 and install the SPU 11 in the same slot.
11. Install the multifunction card ribbon cable connector bracket into slot 8. Carefully route the ribbon cable over the other cards.
12. Plug the DB-25 connector of SPU 11 release interface to the back of the SPU 11 and plug the female side of the 37 pin, male to female (M/F) adapter, to the back of the ARTIC card.
13. Connect one end of the MET data coax cable to the coax connector on the 37 pin M/F adapter and plug the other end into the SPU 11.
14. Insert the W37A cable into the back of the 37 pin M/F adapter of the release interface connector.
15. Confirm proper cable connections inside the microcomputer.
16. Verify final board locations with Table 2a.
17. Replace the CPU cover removed in step 3.

This completes the installation procedure.

## B. System Checkout

1. Insert the disk entitled "SPU 11 Test Diskette," provided in the kit, into drive A of the M003. The test disk is a bootable diskette.
2. Turn the microcomputer AC power to the ON position.
3. After the POST (Power-On Self Test) and boot sequence, the following message will appear when the SPU 11 is functional.

"SPU11 card found at DOOO:E000."

"SPU11 operational - no errors detected."

4. When the SPU 11 is not functional the following message will appear:

"No SPU11 detected in system."

5. If the SPU 11 is not detected, refer to section C of this modification note for troubleshooting procedures.

### **NOTE**

Coordinate the next step with a Meteorological Technician.

6. Have the operator install the software.
7. Have the operator perform a base line check to verify that the release pulse is detected by the SPU 11.
8. A message, "0.0 Balloon Release Detected," will appear on the status line. If a release pulse is not detected, refer to section C in this modification note for troubleshooting procedures.

This completes the System Checkout.

## C. Troubleshooting

If the SPU 11 or associated equipment does not function properly, refer to this section for possible solutions.

PROBLEM 1: Result message of the test diskette verifies as: "No SPU 11 detected in system."

SOLUTION 1: Verify SPU 11 card is installed in Slot 4 and seated correctly.

SOLUTION 2: Verify proper switch settings of SW1 and SW2 on the SPU 11 card.

SOLUTION 3: Exchange the SPU 11 with a card from another slot and test its presence again. If the card is still not detected, replace the SPU 11.

PROBLEM 2: No release pulse is detected by the SPU 11 card.

SOLUTION 1: Check the connection of the SPU 11 release interface connector, the MET data coax cable (attached between the release interface connector and Processor Board), and W37A (the cable to the MCU).

SOLUTION 2: Disconnect the DB-25 plug of the release interface connector, connected to the sounding processor board. Check for +9V on pin 20 of the SPU 11 card. If the +9V is not present, replace the SPU 11 card.

SOLUTION 3: Disconnect W37A and connect a scope probe to pin 33 on J1 of W37A. Depress the MANUAL RELEASE push button, and observe a +5V to 0V release pulse on the oscilloscope. If no pulse is observed, troubleshoot the release pulse circuitry in the MCU. If a pulse was detected, continue to the next step.

SOLUTION 4: Disconnect the DB-25 male connector of the release interface from the back of the SPU 11 card. Depress the MANUAL RELEASE push button and with an ohmmeter, verify a short between pins 21 and 22 (Figure 3). If a short is not present, replace the release interface connector.

Reporting Modification

Target date for reporting this modification is 30 days after receipt of this modification note. Report completed modification on WS Form A-26, Maintenance Record, according to instructions in EHB-4, part 2, using reporting code M003 (Figure 4).



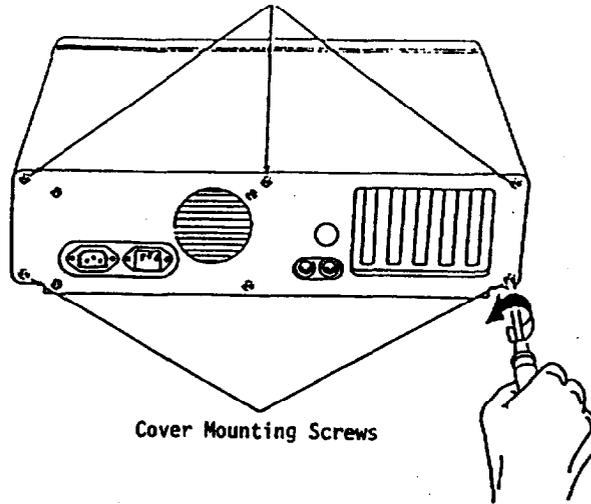
Acting Chief, Engineering Division

Attachments

**Table 1**  
**Sites Affected**

<b>Station</b>	<b>Region</b>
Gray, ME	EASTERN
Sterling, VA	EASTERN
Amarillo, TX	Southern
El Paso, TX	Southern
Midland, TX	Southern
Denver, CO	Central
Int'l Falls, MN	Central
Riverton, WY	Central
Boise, ID	Western
Tucson, AZ	Western
Bethel, AK	Alaska
Cold Bay, AK	Alaska
Fairbanks, AK	Alaska
King Salmon, AK	Alaska
Kodiak, AK	Alaska
Kotzebue, AK	Alaska
McGrath, AK	Alaska
Nome, AK	Alaska
Yakutat, AK	Alaska
Chuuk, E.C.I.	Pacific
Koror, W.C.I.	Pacific
Lihue, HI	Pacific
Pago Pago, Am. Samoa	Pacific
Ponape, E.C.I.	Pacific
Yap, W.C.I.	Pacific

IBM MODEL PC & PCXT  
Cover Mounting Screws



Cover Mounting Screws

Carefully slide the system unit's cover away from the rear and front as indicated in the figure below. When the cover will go no further, tilt it up, remove it from the base, and set it aside.

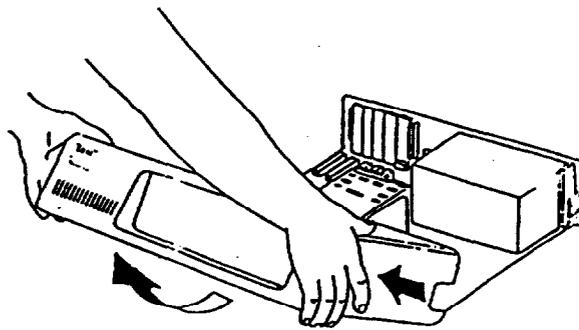
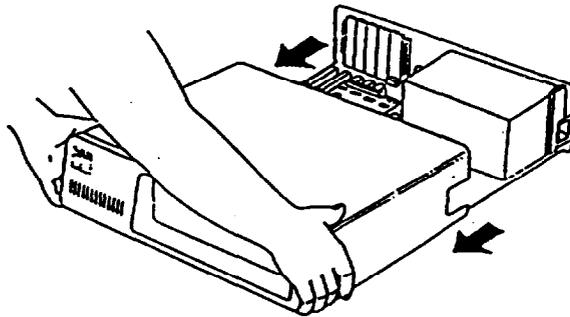


Figure 1

CPU Cover Removal

All card slots are identified by looking down at the motherboard from the front of the system chassis. Slots are counted from left (slot 1) to right (slot 8).

<b>Table 2</b> <b>Board Locations Before SPU 11 Installation</b>	
Slot 1	ARTIC (M003-1A1A1)
Slot 2	Color Graphics Board (M003-1A1A2)
Slot 3	Multifunction Board (M003-1A1A3A)
Slot 4	Multifunction board ribbon cable connector bracket
Slot 5	Fixed Disk Controller (M003-1A1A5)
Slot 6	Floppy Disk Controller (M003-1A1A6)
Slot 7	Blank
Slot 8	Blank (used with expansion chassis)

<b>Table 2a</b> <b>Board Locations After SPU 11 Installation</b>	
Slot 1	ARTIC (M003-1A1A1)
Slot 2	Color Graphics Boar (M003-1A1A2)
Slot 3	Multifunction Board (M003-1A1A3A)
Slot 4	SPU 11 Vaisala Sounding Processor Board (M003-1A1A4)
Slot 5	Fixed Disk Controller (M003-1A1A5)
Slot 6	Floppy Disk Controller (M003-1A1A6)
Slot 7	Blank
Slot 8	Multifunction board ribbon cable connector bracket

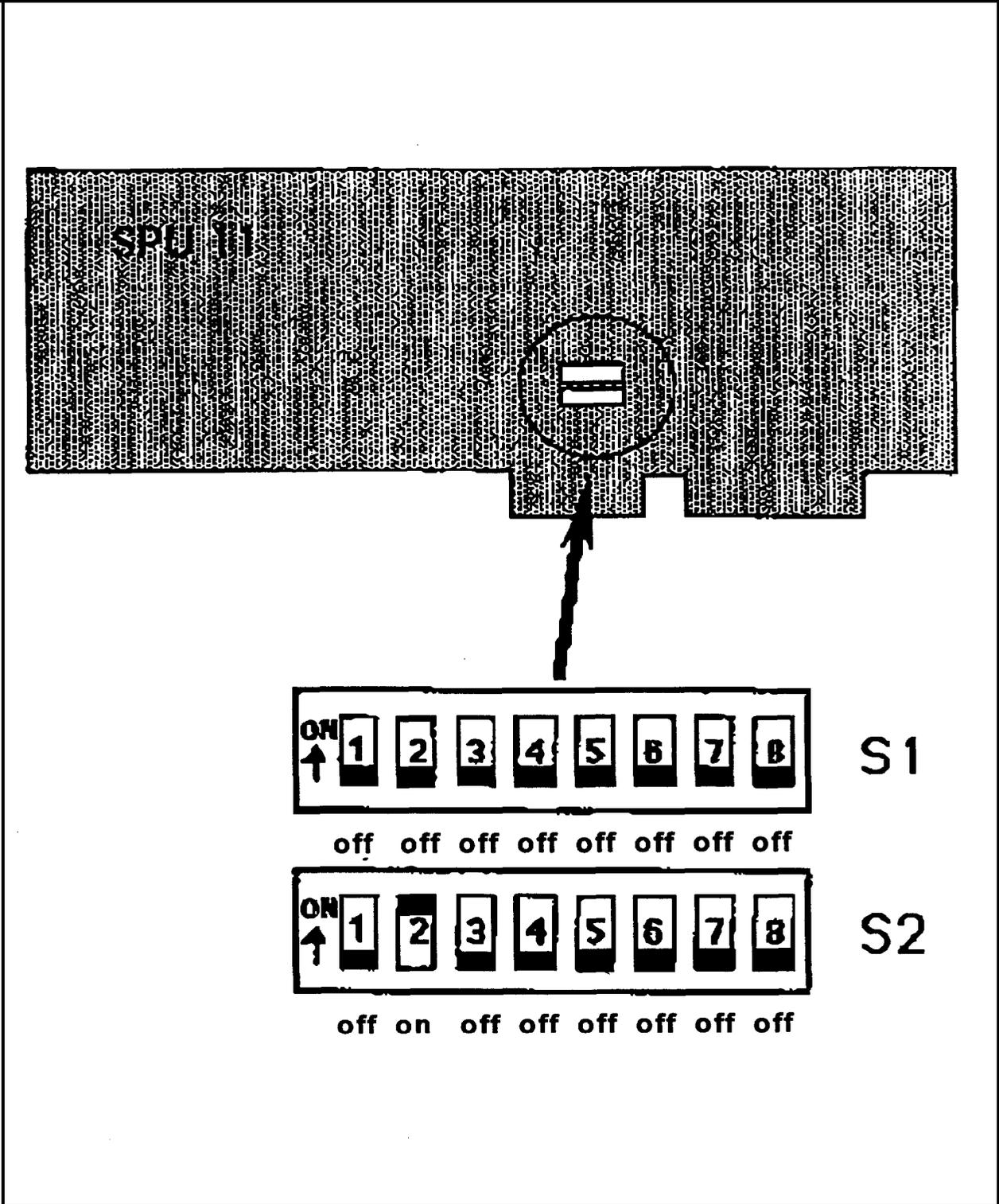
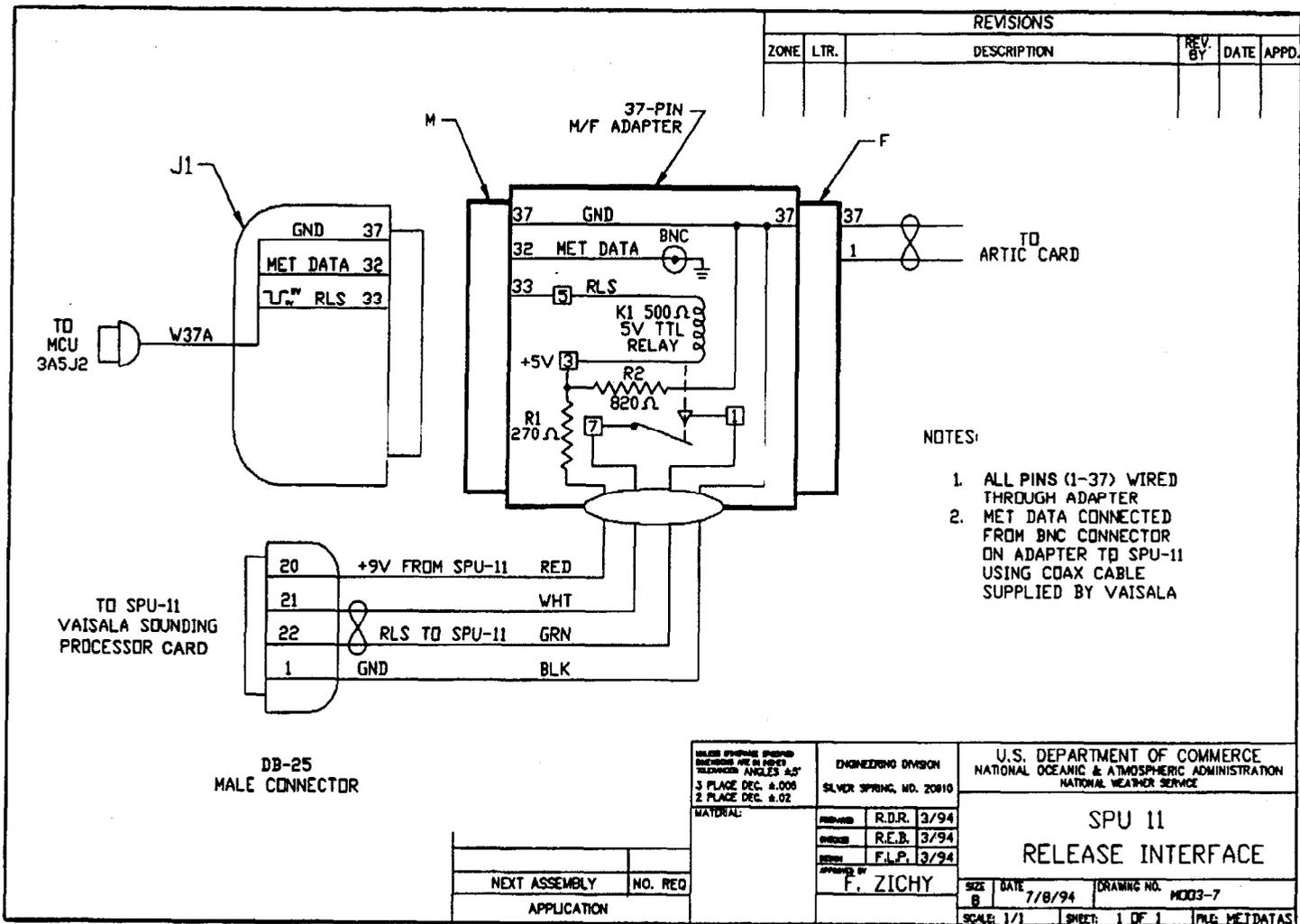


Figure 2

SPU 11 DIP Switch Settings



11

Figure 3

SPU 11 Release Interface

EHB-9  
 Issuance 95-14  
 12/14/95

EHB-9  
 Issuance 95-2  
 12/14/95

WS HQ USE ONLY		WS FORM A-26 (4/94) <small>Supersedes WS Form A-25 and WS Form A-26, which are obsolete</small>				U.S. DEPARTMENT OF COMMERCE <small>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION          NATIONAL WEATHER SERVICE</small>		Document Number		
<b>ENGINEERING MANAGEMENT REPORTING SYSTEM MAINTENANCE RECORD</b>										
<b>General Information</b>		1. Open Date	Time	2. Initials	3. Response Priority (check one)		4. Close Date	Time		
		10 / 20 / 95	0900	MRB	<input type="radio"/> Immediate <input type="radio"/> Low <input type="radio"/> Routine <input checked="" type="radio"/> Not Applicable		10 / 20 / 95	1000		
5. Description										
SPU 11 Vaisala Sounding Processor Board Installation										
<b>Equipment Information</b>		6. Station ID	7. Equipment Code	8. Serial Number		9. TM	10. AT	11. How Mal.		
						M	M	999		
12. EQUIPMENT OPERATIONAL STATUS TIMES		a. Fully Operational		b. Logistics Delay		Partly Operational		c. All Other		
								1:00		
<b>13. Parts Failure Information</b>								<b>14. Work Load Information</b>		
Block #	a. ASN	b. NSN		c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.	Type	
1									a. Routine	
2									b. Non-routine	
3									c. Travel	
4									d. Misc. 1:00	
5									e. Overtime	
<b>Miscellaneous Information</b>		15. Maintenance Comments							16. Initials	
		Modified M003 configuration for compatibility with new Vaisala Radiosondes.							MRB	
17. SPECIAL PURPOSE REPORTING		a. Mod. No.	b. Mod./Act./Desct. Date		c.		d.		e.	
		4	10/20/95							
18. CONFIGURATION MGMT. REPORTING (use as directed)		a. Block #		b. Manufacturer's Part No. of New Part				c. Revision No. of New Part		

Figure 4

Form A-26