

<i>Issue Date</i>	<i>Org. Code</i>
2-5-92	W/OS032

# NATIONAL WEATHER SERVICE

## Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-11	02	2.0

PART 2

AUTOMATIC OBSERVING (EHB-11)

2. Equipment Maintenance Notes. Maintenance Notes serve to establish day-to-day procedures regarding maintenance activities carried out by electronics technicians, and to augment technical material presented in equipment manuals. They function as a communications device to assist technicians in following the correct procedures established in calibrating and maintaining electronic and electromechanical systems. Maintenance notes provide information generally not found in other sources and are basically the means by which technicians are kept informed of changes relating to specific equipment and systems for which they have maintenance responsibility. They are issued only by the NWS Office of Systems Operations Engineering Division, the sole authorized organization for establishing maintenance policy, and are distributed to all electronics technicians and on a selective basis to other predesignated organizational units having a requirement for the information.

Revisions to existing material are made to enhance maintenance effectiveness and to update obsolete technical information. Input for maintenance notes is derived from operational experience obtained through various reporting channels, suggestions from field technicians who are maintaining a particular class of instruments, and through the experience of highly technical specialists and engineers engaged in managing the maintenance program at the regional and NWS Headquarters level. In essence, maintenance notes are developed from numerous inputs throughout the organization and constitute an important supplement to other technical documents.

Notes are issued by equipment types for ease of reference, and are consecutively numbered by date of issue. The area electronics supervisor will periodically check that each electronics technician has available all current notes. Missing material should be requested National Logistics Supply Center (NLSC).

<i>Issue Date</i>	<i>Org. Code</i>
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**NATIONAL WEATHER SERVICE**  
**Engineering Handbook**

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB- 11	0 2	2. 1

MAINTENANCE NOTE INDEX - AUTOB

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	April 3, 1979	AUTOB (AMOS) Pressure Sensor Location
2	April 30, 1979	Corrections for both the Videograph Manuals



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

April 27, 1979

OA/W5141 - J. M.

TO: All NWS Regional Headquarters, Area Electronic Supervisors,  
and Electronics Technicians  
OA/W51 J. M. St. Clair

FROM:

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 79-4

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment,  
Section 2.1; AUTOB Maintenance Note No. 1, Pressure Sensor  
Placement.

2. Summary:

Maintenance Note No. 1 informs the Electronics Technician of  
correct placement of the Pressure Sensor.

3. Effects on Other Instructions:

Pen and ink changes are required on Drawing S007-AUTOB-DR005.

EHB-11  
Issuance 79-4



AUTOB MAINTENANCE NOTES  
(For Electronics Technicians)1. Autob (AMOS) Pressure Sensor Location.

As shown in AUTOB Drawing No. S007-AUTOB-DR005 the pressure sensor is located in the top portion of AUTOB equipment cabinet. The pressure sensor should be relocated in accordance with AMOS 3-70/73 Maintenance Note No. 5 i.e. relocate the sensor in the lower portion of the cabinet. This relocation places the sensor in a more stable and cooler environment.

Make the necessary pen and ink changes to the AUTOB Drawing (S007-AUTOB-DR005) to show the sensor relocation.

EHB-11  
Issuance 79-4



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

May 17, 1979

W5141 - GR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians

FROM: OA/W51 - J. M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 79- 5

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.1;  
AUTOB Maintenance Note No. 2, Corrections for both the Videograph  
Manuals. (The Impulsphysik German 117V ac Model and the Harris-American  
12V dc Model .)

2. Summary:

Maintenance Note No. 2 informs the Electronics Technicians of the existing  
errors in the Videograph Manuals and provides the pen and ink corrections.

3. Effects on Other Instructions:

Pen and ink changes as indicated to appropriate Videograph Manuals.

EHB-11  
Issuance 79- 5



AUTOB MAINTENANCE NOTES  
(For Electronics Technicians)

## 2. Corrections for Both the Videograph Manuals.

As indicated in the following pages and paragraph notations, there are numerous errors in the Videograph Manuals. The notations apply to both models of the Videographs.

Make the pen and ink corrections to the Manuals as appropriate to your AUTOB System.

## A. CORRECTIONS TO IMPULSPHYSIK VIDEOGRAPH MANUALS (GERMAN 117VAC MODEL).

Page 3-4, Par. 3.2.3 b. Should read: The self-check lamp should be lit indicating the fail-safe latch is reset and the fail-safe contacts are open. The meter reading should go low when the visibility reading is inside the window.

Page 3-5, Par. 3.3.2 Thermostat setting should be 30°C.

Page 4-6, Par. 4.4.4 Thermostat setting should be 30°C.

Page 5-5, Par. 5.2.6 Should read: The sensitivity setting is established by using a comparison method with other sensors at the Sterling Research & Development Center (SR&DC) by the Test and Evaluation Division. This setting should be recorded and not be changed in the field. If it is highly suspect that the visibility is not reading correctly after all maintenance checks have been performed, a replacement videograph will be shipped from SR&DC.

Page 6-7, Par. g Change 10°C. to 30°C.

Page 8-7, Par. 8.4.4 a. ADD: Unplug the Videograph from the 117VAC source before removing the receiver amplifier.

b. Should read: Remove cover from the top of the amplifier and reinstall in Videograph. Cover projector window.

- d. Should read: Restore 117VAC power. Perform fail-safe test and wait until the fail-safe cycle is completed.
- e. Should read: Adjust the zero ADJ control R22 (PCB 504) Figure 8-1 for a DMM reading of 0.00 VDC.
- h. Should read: Adjust the potentiometer R12 (PCB 504) Figure 8-1 for a DMM reading between 3.80 and 3.88 VDC centered at 3.84 VDC.
- j. Should read: Adjust the potentiometer R14 (PCB 504) Figure 8-1 for a DMM reading between 1.40 and 1.48 VDC centered at 1.44 VDC.
- k. Change: Visibility Meter to DMM.

Page 8-10, Par. 8.4.5.1 m. Delete entire paragraph.

Par. 8.4.6 C. Change .8 and 1.2 mile to read: .4 and 3 miles.

Figure 1 O-3 Drawing #148.141.03 Terminal strip KL1 at the bottom of the drawing. Label the two unmarked terminals +4 and -4 with the minus and plus in the lower block. This is the analog signal.

Drawing #148.225.28.01 On the BVA card, change pin 15 to pin 18. From the BVA card pins 18 and 20 draw lines to the right hand edge of the drawing. Label pin 20 (3a) and pin 18 (2b). This is the analog signal to the amplifier plug St1.

## B. CORRECTIONS TO VIDEOGRAPH MANUAL (HARRIS 12 VDC MODEL)

Page 3-5, Par. 3.3.1 Change title to "Load Compensation"

- a. First sentence should read: To provide load compensation of the Videograph perform the following steps-a. Throw light guide switch to the up position. Visibility meter should go to 1 mile.

Page 3-5, Par. 3.2.4 e. Should be 1 hour.

Page 3-6, Par. 3.3.2 Change +10°C. to 30°C.

Page 3-6, Par. 3.3.3 Delay should read: OFF.

Page 4-6, Par. 4.4.4 Change +10°C. to 30°C.

Page 5-5/5-6, Par. 5.2.6 Should read: The sensitivity setting is established by using a comparison method with other sensors at the Sterling Research & Development Center (SR&DC) by the Test and Evaluation Division. This setting should be recorded and not be changed in the field, If it is highly suspect that the visibility is not reading correctly after all maintenance checks have been performed, a replacement videograph will be shipped from SR&DC.

Pages 6-4, 6-5, Par. 6.3.3.2 All references to changing sensitivity should be stricken from the Manual. SR&DC makes these adjustments.

Page 6-8, Par. 6.4.5 g. Change 10°C. to 30°C.

Page 8-9, Par. 8.4.4 Change as follows: Should read:

- a. Unplug the videograph from the 117VAC source before removing the receiver amplifier.
- b. Remove the top cover from the amplifier and reinstall the amplifier in the Videograph.
- c. Connect a DMM of 10M impedance or better to terminals 10 and 11 in the junction box above the 12VDC power supply.
- e. Restore the 117VAC power and perform Fail Safe tests. Turn on the regulated power supply and adjust its output voltage to be  $12.0 \pm .15$  volts dc. Allow approximately 10 minutes for equipment warm-up. Check the receiver calibration at 1 mi reading on the visibility meter during Fail Safe tests. Leave the switch in the Inst and Rec position.
- f. Remove the photodiode plug from the amplifier.
- g. Change visibility to DVM.

- i. Throw the switch (calibrate switch) at the upper center of the amplifier to the .1 mi (50 MV) position.
- k. Adjust potentiometer R312 Figure 8-1a for a DMM reading of between 3.80 and 3.88 VDC centered around 3.84 VDC .
- l. Throw the calibrate switch to the 2 mi (1.5 MV) position.
- m. Adjust the potentiometer R314 Figure 8-1a for a DMM reading of between 1.16 and 1.24 VDC centered around 1.20 VDC .
- n. Return the calibrate switch to the off position and recheck the electrical zero on the DMM.
- p. Restore R3 to the value recorded in Step h.

Page 8-12      Figure 8-1 Change to 8-1A

Page 8-13      Figure 8-1 Change to 8-1B

1

- Page 8-15, Par. 8.4.6
- a. Change .8 and 1.2 to approximately .4 and 3 nautical miles.
  - b. Change .8 and 1.2 miles to .4 and 3 nautical miles.

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# NATIONAL WEATHER SERVICE

## Engineering Handbook

<b>Program</b>	<b>Part</b>	<b>Section</b>
EHB-11	02	2.2

### MAINTENANCE NOTE INDEX - AMOS III-70/73

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	August 1, 1974	AMOS 3-70/73 Maintenance Notes
2	August 1, 1974	Wind Speed/Direction Sensor Torque Threshold Test
5	April 5, 1976	Zero Set Adjustment for the Rosemount Pressure Sensor
6	March 2, 1977	AMOS III-73 Temperature and Dewpoint Calibration
7	May 17, 1977	AMOS III-73 Preventive Maintenance Teletype Clock and Ten Second One Shot
8	May 17, 1977	Correction to AMOS III-73 Dewpoint Sensor Schematic
9	June 16, 1977	AMOS III-73 Precaution to be observed when servicing Processor Drawer
10	August 24, 1977	Correction to AMOS III-73 Dewpoint Sensor Schematic
11	March 14, 1978	Battery Charger Regulator 1A2A17
12	April 12, 1978	Temperature Sensor S007-2A3
13	July 14, 1978	Corrections to AMOS III-70/73 Maintenance Notes 1 through 4
14	September 28, 1978	Corrections to Prior Maintenance Notes

Items 3 and 4 have been deleted.

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**NATIONAL WEATHER SERVICE**  
**Engineering Handbook**

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EHB-11	02	2.2

MAINTENANCE NOTE INDEX - AMOS III-70/73

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
15	September 28, 1978	Unmanned AMOS Stations
16	April 20, 1981	LED substitution for Miniature Lamp.
17	March 12, 1982	Lithium Chloride Solution Change
18	April 15, 1987	Manual Inserts for AMOS Manual
19	May 17, 1991	Errata Sheet 19



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

W/OS0321: TEC

April 16, 1987

MEMORANDUM FOR: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM: J. Michael St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT: AMOS Parts

There is an extreme shortage of AMOS 3/73 printed circuit boards. Critically needed are the dew point and temperature boards (S007-1A2A8 and -1A2A9). We can no longer purchase the Signetics chips that are used in the boards. The Engineering Design Branch has developed replacement units using CMOS circuits and is testing the boards. We plan to place about 25 boards into stock before the end of this summer.

In the interim, we would appreciate it if all stations with spare temperature and dew point boards return them to NRC. There are AMOS's down due to these shortages, and your fellow technicians will be grateful for your assistance at this time.





**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

Date: August 20, 1974  
Reply to: W514  
Attn of:  
Subject: AMOS 3-70 Maintenance Notes No. 1 through No. 4 for Engineering Handbook No. 11, Issuance 74-1.  
To: All Regional Headquarters, Area Electronic Supervisors, and Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment Part 02, Section 2.4; AMOS 3-70/73 Maintenance Note No. 1 AMOS 3-70/73 Maintenance Notes; Maintenance Note No. 2, Wind Speed/Direction Sensor-Torque Threshold Test; Maintenance Note No. 3, AMOS 3-70 Pressure Sensor, Vacuum/Pressure Pump; Maintenance Note No. 4, AMOS 3-70 Pressure Sensor Scanner Range Verification.

2. Summary:

Maintenance Note No. 1 introduces the AMOS 3-70/73 series. Maintenance Note No. 2 is a procedure for testing the shaft bearings of both the Wind Speed and Direction sensors used in AMOS 3-70 and AMOS 3-73 systems. Maintenance Note No. 3 introduces the test equipment required for AMOS 3-70 Pressure Sensor maintenance. Maintenance Note No. 4 is a procedure for testing the AMOS 3-70 Pressure Sensor, Scanner Range Verification.

In the Table of Contents, Part 01 of EHB 11 under Section 2, "Equipment Maintenance Notes", add Section 2.4, AMOS 3-70/73.

3. Effect on Other Instructions:

None.

J. M. St. Clair  
Acting Chief, Engineering Division



AMOS 3-70/73 MAINTENANCE NOTES  
(For Electronics Technicians)1. AMOS 3-70/73 Maintenance Notes.

This is the first of a series of maintenance notes pertaining to the Maintenance and Operation of the Automatic Meteorological Observing System, Model 3-70 and Model 3-73 (AMOS 3-70/73). The purpose of this series is to provide a unified set of Instructions for the Operation, Calibration and Maintenance of the AMOS 3-70/73 System and its test equipment. The AMOS 3-70 Instruction Manuals, Volume No. 1 through Volume No. 4 are expected from the contractor about September 1974. They will be sent directly to AMOS field stations. The new series AMOS 3-70/73 Maintenance Notes should be inserted in EHB-11 after page 11. Notation should be made to the EHB index that Section 2.4 covers AMOS 3-70/73 maintenance notes.

2. Wind Speed/Direction Sensor - Torque Threshold Test.

The following test equipment is required to perform this test:

1. Torque Watch, Waters Mfg. Company Model 651C-1. Range 0.05 to 1.2 inch/ounce.
2. Torque Watch Adaptor, 1/4" to 3/8" Shaft Adaptor.

These two items will be provided to each AES having an AMOS 3-70 system in his area.

Shaft Torque Test Procedure: Reference AMOS 3-70 Volume 2, Part 1, Chapter V, Par. 5.1.3.1 Vane Shaft Test (Wind Direction) or Part 2, Chapter V, Par. 5.1.3.2 Shaft Bearings Test (Wind Speed)

The purpose of the shaft torque test is to determine if the shaft meets the required torque threshold and if the bearings are in good condition. The following steps must be followed after the wind sensor has been removed from its mast:

1. Set sensor in upright position and remove cover by rotating it clockwise until the stops are reached, then pull upward.
2. For Wind Direction only-Using the three locking screws stored in the Top Support Frame (refer to Figure 5-2, Wind Direction), secure the Damper Ring to prevent losing oil from the Damper (Dash Pot) if the sensor is tipped on its side for a long period of time.

3. For Wind Direction only-Remove the coupling spring using a 1/8" diameter blade screwdriver.
4. Attach the 1/4" to 3/8" shaft adaptor to the Wind Sensor Shaft and set Allen screw.
5. Attach the Torque Watch to the Torque Watch Adaptor and chuck snugly. Slowly rotate the wind shaft using the Torque Watch as the point of thrust. Rotate the shaft through 360° clockwise and counterclockwise. Observe that the peak torque reading does not exceed 0.05 inch/ounce. Starting or running torque in excess of this indicates defective shaft bearings and the Wind Sensor should be reassembled with the Damper ring locked, prior to shipment to the Kansas City Quality Control and Instrument Repair Center.
6. Remove the torque Watch and Adaptor. Spin the wind shaft by hand at a high rate of speed. Observe for wobble, squeaking, or chattering noises.
7. If all of the above tests are satisfactory, reassemble the wind sensor. NOTE: Unlock the Damper Ring and install the three locking screws in the storage holes.
8. Install sensor on mast and using handheld wind measuring set, if available, observe wind speed and direction to insure that they agree with transmitted values.

### 3. AMOS 3-70 Pressure Sensor, Vacuum/Pressure Pump.

The following test equipment is required to check the full scale range of the AMOS 3-70 Pressure Sensor:

1. Hand Pump (Vacuum or Pressure) Nolge "Nolgene" Catalog #61300010.
2. ASI, Pump Tubing Adaptor with gasket ring, brass, drilled .0312 in diameter hole.

These two items will only be provided to each AMOS 3-70 station for maintenance use.

### 4. AMOS 3-70 Pressure Sensor, Scanner Range Verification.

The following procedure requires the use of the vacuum/pressure pump and ASI, pump tubing adaptor:

1. Remove all ac power to the AMOS equipment rack.
2. Install the ASI Pump Tubing Adaptor using one or two gasket rings, as required to insure a good seal. The adaptor is installed in the base of the ASI housing. Check that the hole through the adaptor is clear of obstructions before installation. Use a 1/4" blade screwdriver to screw the adaptor in place. Tube adaptor may be left in place after use.

3. Connect one end of the PVC tubing to the adaptor and the other end to the vacuum nozzle of the pump.
4. Operate the hand pump a few times. The vacuum guage on the pump should indicate a reading in inches of Mercury (Hg). If reading falls check tube connections.

CAUTION: Care must be exercised NOT to exceed the range of the ASI or to change pressure, or vacuum suddenly. Damage to the sensitive ASI movement may result. Always use the Red discharge valve to release vacuum without disengaging the pump from the line.

NOTE: Turn off overhead lights to minimize light reflections on the ASI scanner.

5. Using the pump, carefully adjust the vacuum to obtain a reading of 28.00 inches on the ASI Meter.
6. On the Processor install TEST Jumper and simulate a "Station Call". The Teletype printout should be approximately equal to 800. It should be noted that this is not a calibration but a check of range adjustment, i.e., the adjustment of the Scale, Stop, and Reset Pulses.
7. Using the pump, adjust the vacuum to obtain a reading of 29.00 inches on the ASI Meter. Check Teletype printout.
8. Adjust the pressure pump, change hose connection to obtain a reading of 30.00 inches. Check Teletype printout.
9. Carefully adjust the pressure pump to obtain a reading of 31.00 inches. Check Teletype printout.
10. Adjust Scale, Stop, or Reset as required. Reference: AMOS 3-70 Volume 3, Chapter V, Par. 5.2.1.3.1 Focus Adjustment and Par. 5.2.1.3.3 Reset Adjustment.



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

May 11, 1976

W514

SUBJECT: Transmittal Memorandum for Engineering Handbook No, 11, Issuance 76-1

TO : All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment Part 2,  
Section 2.4; AMOS 3-70/73, Maintenance Note No. 5, Zero Set  
Adjustment for the Rosemount Pressure Sensor.

2. Summary:

Maintenance Note No. 5, relocates the Pressure Sensor 1A1, and provides  
for the adjustment of the Zero Set potentiometer R204.

3. Effect on Other Instructions:

None.

J.M. St. Clair  
Chief, Engineering Division

EHB-11  
Issuance 76- 1



AMOS 3-70/73 MAINTENANCE NOTES  
(For Electronics Technicians)

5. Zero Set Adjustment for the Rosemount Pressure Sensor.

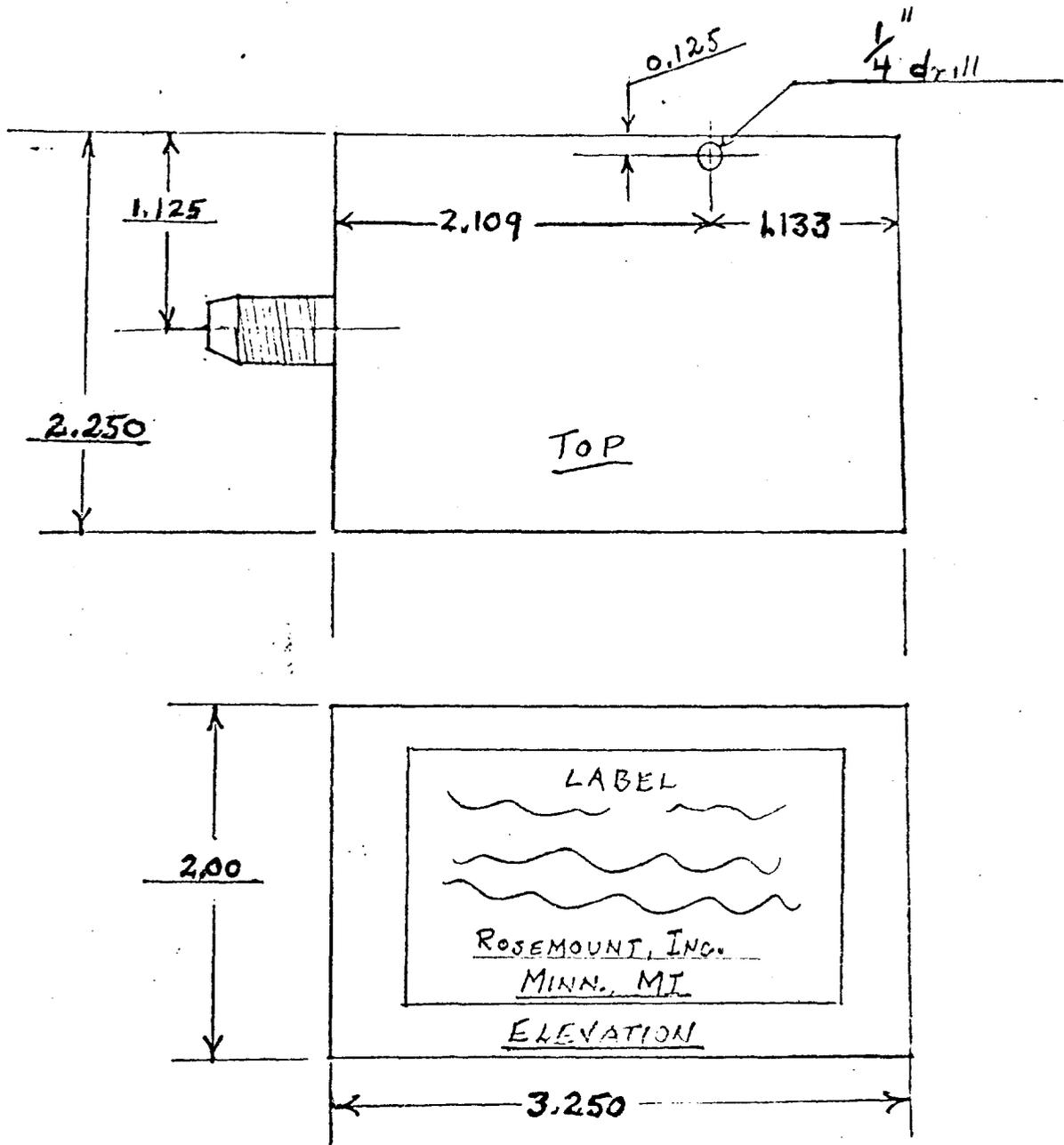
It has been determined that the Rosemount Pressure Sensor requires an on-site adjustment of the Zero Set potentiometer, R204. This adjustment will enable the ASI printout reading to agree with the station barometer, or Altimeter Setting Indicator. To accomplish this requires two changes:

First, relocate the Pressure Sensor 1A1, from its present location above the Processor 1A2 in the Unit 1 Console, to the lowest position in the Unit 1 Console.

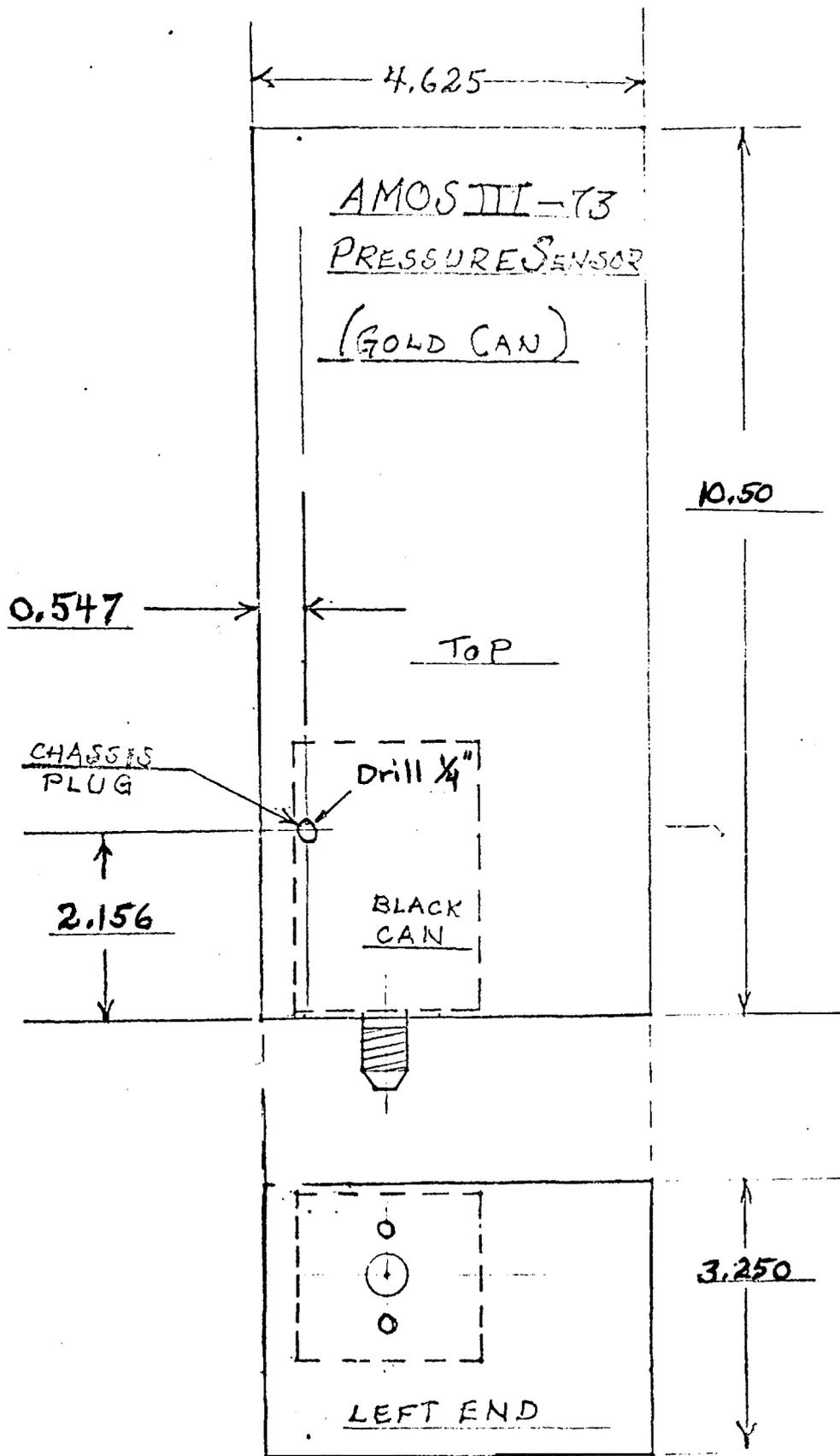
Second, provide an access in the Transducer cover to permit adjustment of the Zero Set potentiometer, R204.

1. Dismantle the Pressure Sensor, 1A1, and remove the black box assembly labeled: Transducer, PS Pressure. Remove the black cover and locate the red potentiometer R204. Drill a quarter-inch hole in the cover that will allow access to R204 so adjustment can be made after the Transducer is reassembled in its cover. Place the Transducer, PS Pressure Assembly in the Pressure Sensor, 1A1 cover so that this cover may be drilled with a quarter-inch hole through which R204 may be adjusted when reassembled and placed back into the Unit 1 Console.
2. Adjust R204 to cause the ASI printed readout to correspond with the true altimeter setting value, as determined by the station barometer, or Altimeter Setting Indicator.

Attachment: Drawing of Transducer Can (Page 1 of 2)  
Drawing of Pressure Sensor (Page 2 of 2)



TRANSDUCER CAN (BLACK)





U.S. DEPARTMENT of COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE

March 30, 1977

W514

TO : All Regional Headquarters, Electronic Program Officers,  
and Electronics Technicians

FROM : J. M. St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT : Transmittal Memorandum for Handbook No. 11, Issuance No.  
77-1

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment,  
Section 2.4; AMOS III-73 Maintenance Note No. 6.

2. Summary:

Maintenance Note No. 6, informs field personnel of the proper  
ground reference point to be used when calibrating the AMOS  
III-73 Temperature and Dewpoint printed circuit boards.

3. Effect on Other Instructions:

This maintenance note reflects changes that should be annotated  
in the AMOS Instruction Manual 11-103.

EHB-11  
Issuance 77-



AMOS III-73 MAINTENANCE NOTES  
(For Electronics Technicians)

6. AMOS III-73 Temperature and Dewpoint Calibration.

In reference to the temperature and dewpoint calibration procedure (AMOS Instruction Manual 11-103, Page 2-35, Steps 4 and 5), R1 and R2 potentiometer adjustments are made by measuring voltages with respect to P1, pin 1 (ground). It has been found that using P1, pin 1 for ground reference can introduce an error as much as 3° in the resultant printout. Using TP101 as a ground test point for this calibration test, indicates a similar error. A more stable and reliable ground test point is P1, pin 28 (refer to Drawing Page 2-129). All references to P1, pin 1, should be changed to read P1, pin 28 (EHB 11-103, Volume 2, Page 35, lines 4 and 5 under Temperature and Dewpoint).

Reference should be made to proper adjustment of R3 in this same section. Insert as 6, under Temperature calibration: Adjust R3 to produce the following outputs on the ADC with open sensor:

Pin:	3	4	5	6	7	8	9	10	11	12	13	14	15
Output:	0	1	0	0	1	1	0	0	1	0	0	0	0

Insert as 6, under Dewpoint calibration: Adjust R3 to produce the following outputs on the ADC with open sensor:

Pin:	3	4	5	6	7	8	9	10	11	12	13	14	15
Output:	0	1	0	0	1	0	1	1	0	1	0	0	0

(NOTE under both sections: To update ADC readings, TWX S2 must be depressed.) Existing Step Numbers 6, 7, and 8 must now be changed to Step Numbers 7, 8, and 9.

Page 2-126 incorrectly lists the dewpoint offset voltage as 1.404 volts. This should be changed to read 1.436 volts. (Middle of page under Dewpoint PCB, TPB). This error in offset voltage also appears on Page 2-127 where Values under "Dewpoint Circuit Board" should be changed to read as follows:

2.396	-	-96°
1.936	-	-50°
1.436	-	0°
.936	-	+50°
.436	-	+100°



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE

June 28, 1977

W514

TO : All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

FROM : J. M. St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 77- 3

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.4; AMOS III-73, Maintenance Note No. 7, Preventive Maintenance Processor Teletype Clock and 10 Second One Shot; and Maintenance Note No. 8, Correction to AMOS III-73 Dew Point Sensor Schematic.

2. Summary:

Maintenance Note No. 7 informs technicians of the preventive maintenance procedure to follow in maintaining the processor teletype clock and ten second one shot circuits.

Maintenance Note No. 8 provides the technicians with the correct dew point schematic for the AMOS III-73.

3. Effect on Other Instructions:

Maintenance Notes 7 and 8 reflect both additions and correction to the AMOS Instruction Manual 11-103.



AMOS III-73 MAINTENANCE NOTES  
(For Electronics Technicians)

7. AMOS III-73 Preventive Maintenance Teletype Clock and Ten Second One Shot.

The following items of preventive maintenance instructions shall become a part of the maintenance procedure for the AMOS III-73 (Instruction Manual 11-103, Volume 1, Section 4, Subsection 4, Page 4-3).

Note that the Teletype Clock is actually an adjustment of the TW oscillator using an oscilloscope, The maintenance philosophy here is that an oscilloscope is always readily available to the electronics technicians, whereas, an electronic counter may not be.

8. Correction to AMOS III-73 Dew Point Sensor Schematic.

The attached Dew Point Schematic shall replace the existing schematic in the AMOS Instruction Manual 11-103, Volume 2, Page 2-257.

Make pen and ink changes as follows:

Processor Function, Page 2-45: Change Dew Point Sensor Power Supply J602-A to read - J602-B.

System Interconnect, Page 2-59: 1) Change J602-A to read - J602-B.  
2) Change J602-F to read - J602-E.

Dew Point Power Supply, Page 2-263: 1) Change J602-F to read J602-E  
2) Change J602-A to read J602-B  
3) Change spare pins P602-B and E to read P602-A and F.

Attachments: 1 ea. AMOS III-73 Teletype Clock  
1 ea. 10-Second One Shot  
1 ea. Dew Point Sensor Schematic

### AMOS III-73

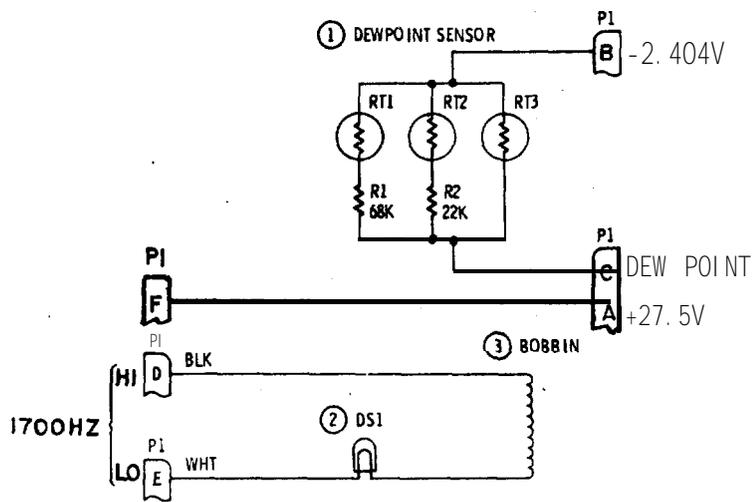
Teletype Clock. (Baud Rate Oscillator.)

1. Place unit #3 switch in Local position.
2. Use an oscilloscope to monitor TP107 on the processor chassis. (shift from TW card)
3. Install test jumper on TW module.
4. Place the test mode switch (S1 on the TW module) in the "run continuously" position (bat handle at center).
5. Turn teletype off. (Saves paper)
6. Simulate a station call by momentarily depressing S2 on the TW module.
7. As the AMOS cycles continuously, adjust the oscilloscope sweep and gain controls to obtain a stable square wave having the following characteristics:
  - a. Amplitude - +0.2 to ±4.5 volts, PW = 4 MSEC
  - b. Period - 100 msec.
8. If frequency is not the above value, adjust R2 (2K), located on top of the TW module in the vicinity of the test jumper, until the period is 100 msec.
9. Turn on Teletype and insure that the AMOS message will print correctly.

10-second One Shot.

1. Place unit 3 (Local/Long Line) in Local position.
2. Turn off processor power.
3. Remove the wind speed card (1A2A11).
4. Remove the test jumper from the TW module and place S1 in the 'normal single observation' position (bat handle towards rear of chassis).
5. Reapply power to the processor.
6. Using a stop watch or sweep second-hand time piece for timing, initiate a station call. (Insure that the test jumper is not in place).
7. Observe the time the station call indication (DS102) remains operative (flickering) after the station call up. Note that if the Teletype is on, the AMOS message will be correct up to wind speed, then zero's will be printed until the timer runs out. It should be a minimum of ten seconds and not over 40 seconds.
8. Turn Processor power off.
9. Replace wind speed card.
10. Turn Processor power on.
11. Place unit #3 in Long Line position.

2A4 DEWPOINT SENSOR S007-2A4



REF DESIG PREFIX 2A4

GENERAL NOTES
UNLESS OTHERWISE SPECIFIED: A. RESISTANCE VALUES ARE IN OHMS, 0.2%.

SOURCE DATA
S007-T/HP1-DR001

SPARE PINS.
P1 H

DA174-54-710

2A4 DEWPOINT SENSOR 2-257/(2-258 blank)  
SCHEMATIC



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

July 15, 1977

W5141/ARP

TO : All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

FROM : J. M. St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 77- 4

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section  
2.4; AMOS III-73, Maintenance Note No. 9.

2. Summary:

Maintenance Note No. 9 informs electronics technicians of the power  
problems that may be encountered with the Teletype Relay P.C. Board  
(1A2A19) when servicing processor drawer.

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 77- 4



AMOS III-73 MAINTENANCE NOTES  
(For Electronics Technicians)

9. AMOS III-73 Precaution to be observed when servicing Processor Drawer.

This maintenance note is intended to bring to the attention of electronics technicians the possible shorting problems encountered with the Clare relay (KA2A19-K1, teletype relay card) when tilting the processor drawer for servicing. Even a slight tilt of the drawer could cause mercury of the relay (K1) to form a common buss between all three relay contacts. The result is to create a complete short to ground of the 4.75 volt power supply. Although the 4.75 volt power supply is protected for overvoltage and overcurrent eventualities, there could be considerable damage to the relay and related circuit wires.

Although most AMOS III-70/73 equipment racks do not have provisions for tilting the drawer, attention is brought to those systems that have tilting drawer channels, and in those instances when a drawer is bench checked. Bear in mind that the processor drawer should not be tilted when power is being applied to it.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

September 27, 1977

W5141/ARP

TO: All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

FROM: J. M. St. Clair *J. M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 77- 5

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.4;  
AMOS III-73, Maintenance Note No. 10, Correction to Maintenance Note  
No. 8 AMOS III-73 Dew Point Sensor Schematic.

2. Summary:

Maintenance Note No. 10 provides correction to AMOS III-73 Dew Point  
Sensor Schematic originally submitted as Maintenance Note No. 8.

3. Effect on Other Instructions:

This maintenance note reflects changes that should be annotated in AMOS  
Instruction Manual 11-103.

EHB-11  
Issuance 77-5



AMOS III-73 MAINTENANCE NOTES

(For Electronics Technicians)

10, Correction to AMOS III-73 Dewpoint Sensor Schematic.

The attached Dewpoint Sensor Schematic shall replace the existing schematic in the AMOS Instruction Manual 11-103, Volume 2, Page 2-257.

Make pen and ink changes as follows (these changes are in addition to those submitted in Maintenance Note No. 8):

Power Distribution, Page 2-37: 2PS2 Temperature/Dewpoint Sensor Power Supply,

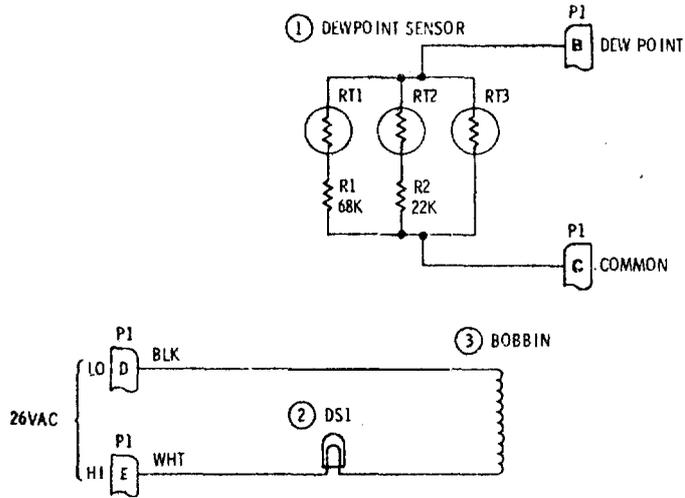
change J602-F to read: J602-E.

2PS2 Temperature/Dewpoint Sensor Power Supply, Page 2-263 to read:

Steps down applied AC input to 6VAC output for operation of the Dewpoint Sensor. The sensor plugs in J602 and J601, and the A and C connection points are connected to J603 and B and C to J604, which provide interconnection between the processor and sensor,

Attachment: 1 ea. Dewpoint Sensor Schematic

2A4 DEWPOINT SENSOR S007-2A4



REF DESIG PREFIX 2A4

GENERAL NOTES
UNLESS OTHERWISE SPECIFIED: A. RESISTANCE VALUES ARE IN OHMS. 0.2%

SOURCE DATA
S007-T / HPJ-DR001

SPARE PINS
P1 H

DATA-54-710



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md 20910

MAR 20 1978

W5141

TO: All Regional Headquarters , Electronic Program Officers, and  
Electronics Technicians

*J.M. St. Clair*  
FROM: J.M. St. Clair  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Handbook No. 11, Issuance 78- 3

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment,  
Section 2.2, AMOS III-70/73 Maintenance Note No. 11, Battery  
Charger Regulator Module 1A2A17.

2. Summary:

Maintenance Note No. 11 instructs Electronics Technicians to examine  
the BCR Module (1A2A17) resistor R16 and capacitor C5 for proper  
value.

3. Effect on Other Instructions:

None.



AMOS III-73 MAINTENANCE NOTES  
(For Electronics Technicians)11. Battery Charger Regulator 1A2A17.

Remove the Battery Charger Regulator Module 1A2A17 from the Processor Drawer of the AMOS III-73. Locate the resistor R16 and C5 in the lower right-hand corner of the module. The resistor should be 15 K and the capacitor should be 10 ufd, 10 volts.

Some regulators have been found to have different values for these components. If these components are not the values stated above, replace them with components of the correct value.

Make pen and ink changes to the AMOS Instruction Manual No. 11-103, Volume II Schematic Diagram, Page 2-233, Q-Det-1, change the value of R16 from 5.1 K to 15K. Parts List, Page 2-237, change R16 from 5.1 K to 15K.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE

May 9, 1978

W5141/GAR

TO: All Regional Headquarters, Electronic program Officers,  
and Electronics Technician

FROM: *J.M. St. Clair*  
J.M. St. Clair  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Handbook No. 11,  
Issuance 78- 5

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment,  
Section 2.2, AMOS III-70/73 Maintenance Note No. 12, Temper-  
ature Sensor S007-2A3.

2. Summary:

Maintenance Note No. 12 clarifies repair and return of Temper-  
ature Sensor and associated transducer (S007-2A3E1).

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 78- 5



Engineering Division  
W514

April 12, 1978

AMOS III-73 MAINTENANCE NOTES  
(For Electronics Technicians)

12. Temperature Sensor S007-2A3.

The Instruction Manual No. 11-103 AMOS, Vol. 2, Page 2-255 shows the complete Temperature Assembly and lists it as Temperature Sensor 2A3. The thermistor or transducer as it is noted in the Darts list, is the first item listed but has no reference designator. QC&IRB has informed the Engineering Division that the field El Techs are returning the complete Temperature Assembly for repair when the problem is only in the transducer (S007-2A3E1). This causes undue expense for shipping and handling both by the field El Tech and QC&IRB personnel.

The Temperature Assembly itself has very little requirement for repair by QC&IRB. The "R" disposition in the Equipment Catalog is for return for repair. The intent is to see what can be salvaged from the Assembly for future use rather than repair.

It is more convenient for the El Tech to remove the transducer (S007-2A3E1) from the Assembly and return it to QC&IRB for repair. We hope this will clarify any misunderstanding on the return of the transducer.

This same philosophy also applies to the Dewpoint Sensor 2A4 and the associated transducer (S007-2A4E1).

EBB-11  
Issuance 78-5



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

July 31, 1978

W514

TO: All Regional Headquarters, Electronic Program Officers, and  
Electronics Technicians

From: *J. M. St. Clair*  
J. M. St. Clair  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Handbook No. 11, Issuance 78- 6

1. Material Transmitted:

Engineering Handbook No. 11 Automatic Observing Equipment, Section 2.2  
AMOS III - 70/73 Maintenance Note No ~~12~~. Corrections to AMOS III -  
70/73 Maintenance Notes 1 through 4. <sup>13</sup>

2. Summary:

<sup>13</sup>  
Maintenance Note No. ~~12~~ instructs Electronics Technicians to make pen and  
ink corrections to Maintenance Notes 1 through 4.

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 78- 6



Engineering Division  
W514

July 14, 1978

AMOS III - 70/73 MAINTENANCE NOTES  
(For Electronics Technicians)

*13,*

~~12~~ Corrections to AMOS III - 70/73 Maintenance Notes 1 through 4.

- a. Make the following pen and ink corrections to Maintenance Note No. 1 . . . . in the last two sentences . Page 11 should be Page 12, and Section 2.4 should read 2.2.
- b. Make the following pen and ink correction to Maintenance Note No. 2. Delete the fourth sentence of the Note. "These two items will be provided to each EPO having an AMOS 3-70 system in his area."
- c. Maintenance Notes 3 and 4 address test equipment and procedures for the Kollsman type Pressure Sensor. That type was formerly used in the AMOS 3-70. Those Maintenance Notes do not apply to the Rosemont type Pressure Sensor. Therefore, by this issuance, Maintenance 3 and 4 are invalid and are to be ignored.

EHB-11  
Issuance 78- 6



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

10 OCT 1978

OA/W5143 - GR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians

FROM: OA/W51- *J.M. St. Clair*  
J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 78- 10

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.2;  
AMOS III - 70/73 Maintenance Note No. 14, Corrections to prior Maintenance  
Notes No. 7, 9, 10, and 12; and Maintenance Note No. 15, Unmanned AMOS  
Barometer Comparisons by EI Techs.

2. Summary:

Maintenance Note No. 14 informs the EI Techs of errors in prior Maintenance Notes  
and gives the necessary pen and ink corrections.

Maintenance Note No. 15 informs the EI Techs of assigned responsibility for AMOS  
Barometer Comparisons.

3. Effects on Other Instructions:

Pen and ink corrections required on Maintenance Notes, 7, 9, 10, and 12.

EHB-11  
Issuance 78-10



Engineering Division  
W514

September 28, 1978

AMOS III - 70/73 MAINTENANCE NOTES  
(For Electronics Technicians)

14. Corrections to Prior Maintenance Notes,

AMOS III - 70/73 Maintenance Notes Nos. 7, 9, and 10, have the wrong Section Numbers on the headings. They read Section "2.4." Make a pen and ink change on those notes to correct the Section Number to "2.2."

Maintenance Note No. 12, entitled "Corrections to AMOS III - 70/73 Maintenance Notes 1 through 4." should be Number 13. The correct Number 12 is entitled "Temperature Sensor S007-2A3. Make a pen and ink change to correct the Number "12" to "13".

15. Unmanned AMOS Stations.

At the unmanned AMOS Stations the requirement for the EI Tech to make barometer comparisons to determine the accuracy of the pressure readout will be effective immediately after the EI Tech has been trained by Meteorological personnel from the responsible NWS Office.

The procedures for these comparisons are in the enclosed instructions entitled: "Quality Control of AMOS/RAMOS Pressure Observations", and is filed with Weather Meteorological Handbook Number 8. Study the instructions carefully for thorough understanding when making comparisons. It will be the responsibility of the assigned EI Tech to perform the comparisons and make the necessary adjustments to either the sensor or the AS1 card as required at unmanned AMOS stations.

Attachment: Quality Control of AMOS/RAMOS  
Pressure Observations

EHB-11  
Issuance 78- 10

## Quality Control of AMOS/RAMOS Pressure Observations

Standardization and comparison procedures for aneroid instruments installed on AMOS or RAMOS differ from the procedures that apply to non-automated systems described in FMH #1 Chapter A-12. These differences are necessitated by the communications mode and remoteness or accessibility of the site. Because of the extreme conditions the sensors are exposed to high quality aneroids that are expected to have a low rate of drift are used. For the unmanned stations, accuracy requirements were lowered to  $\pm 0.04$  inch Hg. The pertinent instructions are:

1. Instructions for Unmanned AMOS/RAMOS.
  - 1.1. Comparisons when AMOS/RAMOS is installed.
    - 1.11. When the RAMOS is being assembled on site, the pressure sensor should be installed as soon as practicable, and the barometer comparisons taken just prior to leaving the site, in order to allow as much time as possible for the pressure sensor to come to equilibrium before starting the comparisons.
    - 1.12. Instructions for taking the comparisons are contained in paragraphs 1.22 - 1.28.
  - 1.2. On site Inspection and Comparisons.
    - 1.21. On site inspection and comparison of the pressure sensor and module should be performed annually, and whenever the altimeter setting error is believed to be  $\pm 0.04$  inch Hg. or greater, and cannot be corrected before transmission.
    - 1.22. A comparison standard barometer is required for the comparison. The G 131, Wallace and Tiernan Portable Precision Aneroid barometer is recommended because it can be calibrated for use over an extended range of temperature. If it's necessary to make comparisons when the ambient temperature is below  $50^{\circ}\text{F}$ , a low temperature calibration can be obtained from NWSH ENG W515. The Negretti and Zambra comparison standard can be used if the ambient temperature remains between  $60-90^{\circ}\text{F}$ .
    - 1.23. The comparison standard barometer must be placed at the site elevation marker or at the height of the RAMOS pressure sensor prior to making the comparison, so that an accurate altimeter-setting can be determined. The barometer must be shaded from the sun at all times.
    - 1.24. A Data Precision Model 245, LaBarge RAMOS test set is necessary for RAMOS comparisons. A digital voltmeter is necessary to zero reset the AMOS. At AMOS without a local teletype, a digital voltmeter is necessary to make the comparisons.
    - 1.25. The ASI or pressure circuit board module has to be tested to ascertain that it's functioning properly before making any comparisons.

- 1-26. Barometer comparisons for VHF AMOS or RAMOS shall consist of a series of five simultaneous readings of the comparison standard barometer and pressure sensor, provided that it's possible to get the intermediate RAMOS readouts. If necessary, arrange with the interrogating station to obtain the readouts at previously agreed upon times. Record the ambient temperature to the nearest F or .5 C for each reading.
- 1.27. For Barometer comparisons at satellite interrogated RAMOS or other sites where the RAMOS cannot be interrogated, make simultaneous readings of pressure and temperature at the scheduled interrogation time for at least two hourly RAMOS observations.
- 1.28. Before and after each trip to the site the comparison standard must be compared to a home station standard or regional standard in accordance with FMH #8 paragraph 6.5.1. The barometer comparisons will be evaluated at the home station or regional headquarters as appropriate utilizing WS Form B-1.
- 1.3. Monitoring performance.
  - 1.31. The WSFO responsible for monitoring the AMOS or RAMOS performance will carefully evaluate the pressure reports. Whenever the observations are believed to be  $\pm 0.04$  inch Hg. or more in error, the following steps will be taken:
    - a. For VHF RAMOS, if the amount of error can be determined, the message should be manually corrected.
    - b. The satellite and ADAS RAMOS require sensor recalibration or replacement when the .04 inch Hg. tolerance is exceeded. The sensor should be placed out of service if possible or the appropriate FAA circuit controller should be requested to issue a NOTAM. Instructions for contacting the FAA are in the addendum. Regional DATAC should be notified as soon as practicable after the malfunction is noted.
  - 1.32. Monitoring stations should report to Regional DATAC any AMOS or RAMOS where the altimeter-setting is consistently unrepresentative of those from surrounding stations. NWS DSD W521 will develop special techniques for evaluating those reports.
- 2.0. Standardization and Comparisons at Manned AMOS/RAMOS

The WSO or WSFO responsible for monitoring the AMOS/RAMOS performance will run a barometer comparison program which differs from the procedures contained in FMH #1, Chapter A-12 because of the difference in instrumentation, exposure and communications mod.
- 2.1. Standardization
  - 2.11. The altimeter setting indicator will be standardized when it is installed, whenever the pressure sensor is replaced, or whenever the ASI interface board is recalibrated.
  - 2.12. It is essential that ASI interface board be properly calibrated before any standardization or reset of the pressure sensor.
  - 2.13. If the difference in elevation between the AMOS/RAMOS pressure sensor and the station barometer used for the comparisons is less than 100 ft., no elevation correction is necessary. When the difference is 100 ft. or more, the procedures in FMH #8. paragraph 8.0.7 should be used to determine the correction. Note that this correction is necessary when the difference between the ambient temperature and the standard atmosphere temperature are sufficiently large.

- 2.14. Form MF-13 should be used For the comparisons. However, the readings of the station barometer should be converted to altimeter setting and entered to the nearest .01 inch Hg. in column 8.
- 2.15. When standardization of an aneroid instrument is required, make comparisons and determine mean corrections as follows:
- a. Make 10 comparisons of the aneroid instrument with the mercury barometer. If practicable, make these readings at hourly intervals; but, in no case should the interval be less than 15 minutes.
  - b. After the 10 comparisons have been made, compute the mean of the column 10 entries. Check the reliability of the instrument by verifying that the difference between corrected readings does not exceed allowable differences (paragraph 2.3, 2.4). If determined reliable and the ASI interface board is properly calibrated, the pressure sensor should be adjusted to zero corrected, if practicable, utilizing the mean correction in column 12. Otherwise, include the correct altimeter setting in the remarks section of the transmission, e.g., COR ALSTG 989.
  - c. On each of the next 5 workdays, make two additional comparisons at a 6-hour interval and determine the mean correction as in b above, using the last 10 entries in column 10; e.g., using comparisons 3 through 12 on the first of the 5 days, 5 through 14 on the second day, etc.
  - d. After the comparisons above have been completed, and none of the differences between corrected readings-exceed allowable differences specified in paragraphs 2.3 and 2.4, determine a new mean correction. If the new correction is greater than .01 inches Hg., the calibration of the ASI card should be checked, and if the calibration has not changed the sensor should be reset to zero correction if practicable. Otherwise enter the correct altimeter setting in the remarks section.
- 2.2. Routine Comparisons.
- After an aneroid instrument has been standardized and accepted as reliable in accordance with paragraphs 2.3, and 2.4, make two comparisons at a 6-hour interval on the same day of each week, and:
- a. Following each comparison, conduct a check for reliability according to procedures in paragraph 2.3 and 2.4.
  - b. At the time of the second comparison, determine a mean of the last 10 correction values (column 10).
  - c. Enter the mean correction in column 12, and check for excessive drift (paragraph 2.3).
  - d. Provided the instrument is determined reliable, use the mean (column 12) as the new correction to be applied to the altimeter setting; i.e., until the mean correction is redetermined the following week. This corrected altimeter setting should be transmitted as a remark at the end of the AMOS/RAMOS message (see paragraph 2.15b).

- e. Whenever practicable, the altimeter setting indicator should be reset to zero correction. However, before any adjustments are made to the pressure sensor, the altimeter setting indicator interface board calibration has to be checked. If the board is out of calibration, it has to be recalibrated, and the altimeter setting indicator has to be restandardized according to instructions in paragraph 2.1.
- 2.3. Allowable Drift  
Drift in excess of .01 inch Hg. per 29 days (i.e., over a period of 5 successive weekly comparisons) should be reported to Regional DATAC.
- 2.4. Variability  
Whenever the difference between the station pressure derived from the mercury barometer and the corrected reading of the altimeter setting indicator exceeds .02 inch Hg., the difference should be immediately verified by making a second comparison, preferably by another observer.
- a. If the difference between the second set of corrected readings does not exceed 0.010 inch, disregard the first set of readings and use the second set in computing the correction to the altimeter setting.
  - b. If verified differences between corrected readings for both the first and second comparisons are 0.02 to 0.04 inch Hg., check to see if extreme weather conditions are occurring (e.g., temperatures below 0°F or above 100°F, Gusty winds with sustained speeds above 30 knots). If the cause of the differences can be attributed to weather conditions, take another comparison as soon as the conditions subside. If the differences are not attributed to weather or other unusual circumstances that might affect a particular reading, and the difference exists through two comparisons, the Regional DATAC should be notified, and the altimeter setting indicators should be compared every day to see that the .04 inch Hg., tolerance is not exceeded. If the differences do not appear to be random but a new correction will eliminate the source of error, than restandardize according to paragraph 2.1.
  - c. If the difference exceeds .04 inch Hg., the pressure instrument should be placed out of service if possible or the appropriate FAA circuit controller should be requested to issue a NOTAM. Instructions for contacting the FAA are in the addendum. Regional DATAC should be notified as soon as practicable after the malfunction is noted.
- 2.5. Special instructions for AMOS operating at part-time manned stations. Altimeter settings should not be transmitted when they are in error by .04 inch Hg., or more, and cannot be corrected.

At part-time stations during the hours that the AMOS observation cannot be manually corrected, and the uncorrected altimeter setting is in error by .04 inch Hg., or more, the altimeter setting card should be replaced with a service card, so that the altimeter setting will not be transmitted. If it is not possible to change the card, contact the appropriate FAA circuit controller and request that a NOTAM be issued. Instructions for contacting the FAA are in the addendum.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

April 20, 1981

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM:   
OA/W51 - J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 81- 5

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment,  
Section 2.2; AMOS 3-73 Maintenance Note No. 16, LED substitution  
for miniature lamp.

2. Summary:

Maintenance Note No. 16 instructs Electronics Technicians on the  
availability of a LED to be used as a substitute for a miniature  
lamp.

3. Effect on Other Instructions:

AMOS 3-73 Instruction Manual Volume 2, Page 205: Change descrip-  
tion of DS1, DS2, DS3 to read Lamp, LED, Litronix RLC210. Page  
2-225: Change DS1 description to read Lamp, LED, Litronix RLC210.  
Page 2-207, paragraphs 8 and 9, insert note referring to AMOS  
Maintenance Note No. 16.

EHB-11  
Issuance 81-5



Engineering Division  
OA/W514

AMOS 3-73 MAINTENANCE NOTE NO. 16  
(For Electronics Technicians)

16. LED Substitution for Miniature Lamp.

WSN 017-L-8-6 Chicago Miniature Lamp replacements are no longer available. We are now supplying a Light Emitting Diode to replace that lamp. This LED is current regulated and is rated at 4.5V to 11V.

The LED substitution can be used to replace DSI on the 1A2A15 and 1A2A15A; also DSI, DS2, and DS3 on the 1A2A14 PCB's in the AMOS. When used on the teletype card as a parity lamp, the LED should be lighted in the standby condition and flash off when interrogated. When used in the precip accumulation PCB, the LED operation is as before. Check the pushbutton switch to assure proper operation.

When installing the LED be sure to observe polarity. The short lead is negative and the long lead is positive.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

March 12, 1982

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM: *Henry C. Besman*  
for OA/W51 - J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance No. 82-2

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment,  
Section 2.2; AMOS 3-73 Maintenance Note No. 17, Lithium Chloride  
Solution Change.

2. Summary:

Maintenance Note No. 17 provides information on how to dilute the  
11% Lithium Chloride Solution to 7%. It also covers problems  
associated with the higher percentage LiCl solution.

3. Effect on Other Instructions:

Maintenance Schedule 76-4 issued July 29, 1976, Page 1, change last  
paragraph to read: "7% solution".

EHB-11  
Issuance 82-2



Engineering Division  
OA/W514

AMOS MAINTENANCE NOTE NO. 17  
(For Electronics Technicians)

17. Lithium Chloride Solution Change.

Last year, the manufacturer of the HO-63 dewcell recommended that a lithium chloride solution strength of 11 +2 percent be used on their dewcells. We then contacted the manufacturer of the earlier generation dewcells (HO-60, -61, and -62), and they stated that the new solution levels were compatible with their dewcells.

Some stations have reported problems in stabilizing the dewcells, sluggish response, and/or improper readings. We again queried the dewcell manufacturers and they agree that a lower percentage rate of lithium chloride (about 7 percent) would be advisable. NLSC is now stocking only the 7 percent solution of LiCl and water and the bottles are so labeled. The stock number remains the same which is H060-MS103, FSN 6660-00-246-9810,

All 11 percent lithium chloride and water solution that you have should be diluted to the 7 percent level. In order to do this, we suggest you dilute as follows: Mix three parts of distilled water to five parts of 11 percent solution. This will give you a 7 percent lithium chloride and water solution.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

April 15, 1987

W/OS0321 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and  
Electronics Technicians (EHB-11 Distribution)

FROM: W/OS03 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11, Issuance 87-5

1. Material Transmitted:

Engineering Handbook No.11, Automatic Observing Equipment, Section 2.2;  
AMOS Maintenance Note No. 18: Manual Inserts for the AMOS Manual.

2. Summary:

Maintenance Note No. 18 informs electronic technicians of the availability  
of inserts for the AMOS manual. The inserts are available from NLSC.

3. Effect on Other Instructions:

AMOS Manual (EHB 11-103) is updated by the inserts announced in this note.

EHB-11  
Issuance 87- 5



AMOS MAINTENANCE NOTE  
(For Electronics Technicians)

## 18. Inserts for the AMOS Manual

Changes to the AMOS III-73 Manual (EHB 11-103) were necessitated by AMOS Modifications 7 and 10. Modification (Mod) Note No. 10 inserts update a portion of Mod Note No. 7 inserts. Mod Note 10 inserts were provided as an attachment to the note. Before AMOS Mod Note 7 inserts are placed into the manual, remove pages 2-248E through 2-248L, and replace them with the same numbered pages from the inserts that were attached to Mod Note 10.

Holders of the AMOS manual who need the manual inserts may order them from NLSC under the following numbers:

AMOS Mod Note 7 inserts (EHB 11-103) are listed as Change 12 to volume 1 and volume 2.

AMOS Mod Note 10 inserts (EHB 11-103) are listed as Change 14 to volume 2.

ERRATA SHEET 19 (for Electronics Technicians)  
Engineering Division  
W/OS0321: BGM

Pen-and-ink changes to the Instruction Manual Automatic Meteorological Observing System (AMOS-3-73) Volume 1.

General:

The purpose of errata sheet No. 19 is to provide pen-and-ink changes to the Instruction Manual Automatic Meteorological Observing System (AMOS-3-73) Volume 1.

Effects on Other Instructions:

None

Procedure:

Installation section, Paragraph 5.7.5 m. (p.5-9) change output frequency 730 kHz to read  $720 \pm 20$  kHz.



J. Michael St. Clair  
Chief, Engineering Division

---

Author: Paul Nipko at W-0S017

Date: 5/14/97 11:50 AM

Priority: Normal

TO: Tom Grayson at W-SR-SRH

TO: Herschel Knowles at W-AR-ARH

TO: Glenn Rasch at W-WR-WRH

TO: Thomas Schwein at W-CR-CRH

TO: Theodore Wilk at W-ER-ERH

TO: Jack Fey at W-AR-ARH

TO: Alvin Gushikuma at W-PR-HUB

TO: Victor Murphy at W-SR-SRH

TO: Kevin Murray at W-ER-ERH

TO: Tim Ross at W-WR-WRH

TO: Tom Townsend at W-CR-CRH

TO: John McNulty at W-0S03

TO: Joseph Facundo at W-0S016

TO: Bryan Moore at W-0S016

TO: Al Wissman at W-0S03

Subject: Proposed Policy for Commissioning OTAs at Airport Locations

----- Message Contents -----

All,

I have scheduled a VTC for Friday, May 16, 11:00-12:00 EDT to discuss the proposed policy for commissioning of Other than ASOS (OTA) at airport locations. Please let me know if you or an acceptable representative can not participate at this time.

Background:

The additional ASOS systems being purchased by the NWS and known collectively as OTAs are predominantly AMOS/RAMOS replacements. The maintenance concept for AMOS/RAMOS was that any system failure would be repaired when time and resources were available. There was no hard restoration requirement for these systems. For a variety of reasons, some of the OTAs have been sited at airport locations. The FAA, however, has not stated an aviation requirement for these systems, which would then result in an FAA obligation to fund their maintenance. Never the less, additional sensors have been added at some airport locations which would be useful for aviation support and the local communities expect that the ASOS will perform this function.

The NWS, faced with major resource reductions, can not sign up to unfunded requirements which essentially further erode the NWS base program funding.

Current Status: The current NWS policy is that the OTAs are AMOS/RAMOS replacements and are not intended to support airport operations even when located at an airport facility. There is, therefore, no restoration requirement for these systems.

Question: Should/can ASOS systems located at airports be commissioned for aviation (terminal operations) use?

Issues:

If these systems are commissioned for aviation use, the aviation industry will come to rely on them and will not tolerate extended outages. The NWS will be faced with inquiries directly from airlines

and airport facilities, as well as local, state, and Federal government demanding to know "Why our ASOS isn't maintained the same as other airports?"

If these airports are not commissioned for aviation use, at least some local communities will feel they have been misled and let down by the NWS.

Proposal:

Option 1:

1) NWSH provide direction to the field that there is no requirement to commission these locations for aviation use. When commissioned as an AMOS/RAMOS replacement, the Regions need clearly demonstrate to potential users that the system is not intended for aviation support. This will be done by adhering to the following guidelines:

- a) Do not commission the OTA with the airport SID.
- b) Do not publicize the commissioning and the dial-in phone numbers in aviation aides, such as FLIPs ect.
- c) Do not issue a NOTAMS on the commissioning or operational status of the system.
- d) Do not install Ground to Air (GTA) radios on the systems.
- e) Do not pass the observations through the AOMC into the FAA observation dissemination system.

2) Empower the Regions to make exceptions on a case by case basis as they determine that community relations, interagency cooperation, and honoring of prior commitments, and proximity of the supporting WFO results in making an exception to be in the best interest of the NWS.

- a) The site will be commissioned as a D-level aviation site.
- b) All conditions for commissioning of a D-level site must be fully satisfied.
- c) The Region is committing to meeting all D-level restoration requirements with currently authorized maintenance staffing and resources.

THIS OPTION COULD BE IMPLEMENTED IMMEDIATELY SINCE IT IS TOTALLY CONSISTENT WITH CURRENT POLICY.

Option 2:

1) Commissioning for non-aviation use the same as 1) for Option 1.

2) Attempt to define a "new" aviation service level for sites where there is no established aviation requirement but the aviation industry could benefit from the use of a "conveniently located OTA.

- a) Define a restoration requirement of somewhere in the range of 48-72 hours which NWS would commit to meeting.
- b) Obtain NWS senior management approval for this additional commitment without an FAA statement of requirement.
- c) Coordinate with the FAA to obtain its indorsement for these

locations to be used for aviation support even though the restoration requirement is less than that defined for D-level sites.

d) Commission in accordance with D-level checklist, with one change pertaining to ability to meet restoration requirements.

THIS OPTION COULD NOT BE IMPLEMENTED UNTIL FAA AND NWS APPROVALS ARE OBTAINED.

Option 3:

1) Include all of Option 1, but plan to implement the Regional empowerment piece sparingly.

2) Advise the FAA that the currently proposed interagency recommendation to increase the field el tech staffing by 11 and to transition to an integrated maintenance work force will significantly impact our ability to support these additional sites. Assuming these recommendations are fully implemented, the NWS will reevaluate its ability to support OTAs located at airports as D-level sites with the expectation that we will be able to make this commitment.

a) Advise NWS senior management of FAA willingness to make additional contributions to the end-state support infrastructure:

i) Agreement to cost share 11 additional ETs in proportion to the number of sponsored sites,

ii) Agreement to cost share 9 additional FTE for AOMC (50/50).

iii) Agreement to cost share purchase of additional spares kits to enable transition to integrated field maintenance concept.

b) Seek NWS approval to OTAs at airports as aviation service level D sites.

Recommendation:

Option 3

Paul

<i>Issue Date</i>	<i>Org. Code</i>
2-5-92	W/OS032

**NATIONAL WEATHER SERVICE**  
**Engineering Handbook**

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-11	02	2.3

MAINTENANCE NOTE INDEX - RAMOS

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	September 8, 1978	Maintenance Philosophy
2	September 6, 1978	Adjustments to 1PS1 Power Supply Assembly
4	February 28, 1979	Second Space in Message Format
5	March 15, 1982	Lithium Chloride Solution Change

Item #3 has been deleted.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

13 SEP 1978

OA/W5141/GR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians

FROM: OA/51 J.M. St. Clair

SUBJECT: Transmittal Memorandum Engineering Handbook No. 11,  
Issuance 78- 9

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.3:  
RAMOS Maintenance Note No. 1, Maintenance Philosophy.

2. Summary:

Maintenance Note No. 1 sets forth the concept of the maintenance require-  
ments needed to effectively maintain the RAMOS Systems.

3. Effects on Other Instructions:

None.

EHB- 11  
Issuance 78- 9



Engineering Division  
W514

September 8, 1978

RAMOS MAINTENANCE NOTES  
(For Electronics Technicians)

1. Maintenance Philosophy.

The Maintenance Philosophy for the RAMOS is based primarily on module or subassembly replacement. The reasons for this concept are: 1) to minimize the ever increasing EI Tech workload; 2) the requirement for special handling techniques to prevent static discharge damage to the C-MOS logic through handling and, 3) the final and most important reason, to optimally support the remote locations of RAMOS which preclude maintenance to the piece part level,

To facilitate this philosophy, the following spares will be provided to each EI Tech (or station) maintaining a RAMOS: a complete set of spare modules, a limited replacement parts kit containing discrete components for those items other than the modules that may likely need replacement, and complete communications subassemblies, i.e., complete VHF Transceivers, DCPRS's, and Interrogation Devices. A RAMOS Maintenance Test Set is also being provided to further aid the EI Tech in maintenance. Through the use of this test set, the troubleshooting can be isolated to a sensor, module, or subassembly for rapid restoration of the RAMOS System. The defective items are then to be returned to the Quality Control and Reconditioning Branch (QC&IRB) for repair and return to the supply loop.

EHB-11  
Issuance 78-9



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

8 SEP 1978

W5141/GR

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians

FROM: J.M. St. Clair *J.M. St. Clair*  
Chief, Engineering Division

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 78- 8

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.3;  
RAMOS Maintenance Note No. 2, Adjustments to 1PS1, Power Supply  
Assembly.

2. Summary:

Maintenance Note No. 2 instructs the EI Techs to limit the charging current of  
this power supply to 1.5 amps. It has come to our attention that the power  
supply is improperly set at values high enough to cause overheating and destruc-  
tion of the unit.

3. Effects on Other Instructions:

None.

EHB-11  
Issuance 78- 8



Engineering Division  
W514

September 6, 1978

RAMOS MAINTENANCE NOTES  
(Electronics Technicians)

2. Adjustments to 1PS1, Power Supply Assembly,

The RO Model 106 Power Supply, used as the charging source for the Gel/Cel Batteries, is to be adjusted to limit the charging current to 1.5 amps. Refer to the RAMOS Instruction Manual 11-104, Volume 3, Manufacturer's Manuals. Turn to the RO Associates Incorporated Drawings C1344 and C520. There are no page numbers in that portion of the Manual, The adjustment is made with potentiometer P2.

Turn OFF the power to the RAMOS at the Power Switch Box with CB1. Disconnect and remove the 1PS1 Power Supply from the shelf it is mounted to, and place on a suitable working area. It may be necessary to remove the shelf in order to prevent ruining the six screws which secure the Power Supply to the shelf. The end pieces of the Power Supply are fastened to the chassis with four screws on each end, Remove these screws and ease the end pieces from the chassis. The perforated top must be moved back toward the rear of the supply to gain access to P2.

Connect a suitable current measuring instrument such as a Data Precision 248 VOM to the + and - output terminals on the power supply. Set the D.P.248 VOM on DC mA and 1K scale, Reconnect the AC terminals of the power supply to the RAMOS power and turn ON the power with CB1. Adjust P2 of the power supply to read approximately 1.5 amps current. Turn the power OFF with CB1, disconnect the RAMOS power and the VOM from the power supply. Reassemble the power supply. Mount the 1PS1 unit back in the BEA and reconnect to the RAMOS power connections.

Place the RAMOS back in operational status.

EHB-11  
Issuance 78- 8



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

March 19, 1979

OA/W5141-JM

TO: All NWS Regional Headquarters, Area Electronic Supervisors,  
and Electronics Technicians

FROM: OA/W51 *J.M. St. Clair*  
J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 79- 1

1 . Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 2.3;  
RAMOS Maintenance Note No. 4, Second Space in Message Format.

2. Summary:

Maintenance Note No. 4 informs the Electronics Technicians on how to  
eliminate a second space in message format.

3. Effect on Other Instructions:

Pen and ink changes in RAMOS Manual where applicable.

EHB-11  
Issuance 79- 1



RAMOS MAINTENANCE NOTE No. 4  
(For Electronics Technicians)4. Second Space in Message Format.

The RAMOS output message has two optional spaces in the format. Jumpers are provided on the control board to program the spaces. When the jumpers shown in Block 27 of Page 2-89 of the RAMOS Instruction Manual 11-104 are removed, the spaces should be eliminated.

In some instances, even with the jumpers removed, some control boards continue to generate the spaces. To correct this problem, R61, originally 22K ohms, has been increased to 68K ohms. Boards working correctly with the 22K ohm resistor need not be changed. In the future, contractor supplied boards will be delivered with the 68K ohm resistor.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

March 15, 1982

OA/W5141 - JM

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM: OA/W51- J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance No. 82-3

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment,  
Section 2.3; RAMOS Maintenance Note No. 5, Lithium Chloride  
Solution Change.

2. Summary:

Maintenance Note No.5 provides information on how to dilute the  
11 percent Lithium Chloride Solution to 7 percent. It also covers  
problems associated with the higher percentage LiCl solutions.

3. Effect on Other Instructions:

Maintenance Schedule Issuance 79-2 dated March 9, 1979, Page 1,  
under "Note": Change percentage to read 7 percent.

EHB-11  
Issuance 82- 3



Engineering Division  
OA/W514

RAMOS MAINTENANCE NOTE No. 5  
(For Electronics Technicians)

5. Lithium Chloride Solution Change.

Last year, the manufacturer of the HO-63 dewcell recommended that a lithium chloride solution strength of 11 +2 percent be used on their dewcells. We then contacted the manufacturer of the-earlier generation dewcells (Ho-60, -61, and -62), and they stated that the new solution levels were compatible with their dewcells.

Some stations have reported problems in stabilizing the dewcells, sluggish response, and/or improper readings. We again queried the dewcell manufacturers and they agree that a lower percentage rate of lithium chloride (about 7 percent) would be advisable. NLSC is now stocking only the 7 percent solution of LiCl and water, and the bottles are so labeled. The stock number remains the same which is H060-MS102, FSN 6660-00-246-9810.

All 11 percent lithium chloride and water solution that you have should be diluted to the 7 percent level. In order to do this, we suggest that you dilute as follows: Mix three parts of distilled water to five parts of 11 percent solution. This will also give you a 7 percent lithium chloride and water solution.

EHB-11  
Issuance 82-3  
3-15-82

<i>Issue Date</i>	<i>Org. Code</i>
2-5-92	W/OS032

# NATIONAL WEATHER SERVICE

## Engineering Handbook

<i>Program</i>	<i>Part</i>	<i>Section</i>
EHB-11	02	2.4

### MAINTENANCE NOTE INDEX - MANUAL ENTRY DEVICE

<u>Number</u>	<u>Date of Issue</u>	<u>Title</u>
1	March 14, 1980	AMOS MED Window
	June 6, 1982	Errata Sheet #1
2	June 17, 1980	RAMOS MED Tone Level Adjustment
	July 30, 1984	MED Maintenance Note #2, Rev. #1: RAMOS MED Tone Level Adjustment
3	August 5, 1980	RAMOS-MED Precipitation and Peak Wind Reset Problem
4	September 24, 1980	MED Extender Boards
5	October 31, 1986	MED 4.2V Battery Availability



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

OA/W5141 - JM

March 14, 1980

TO: All NWS Regional Headquarters, Area Electronic Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM: OA/W51 *J. M. St. Clair*  
J. M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance No. 80-1

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment,  
Section 2.4; MED Maintenance Note No. 1: AMOS MED Window.

2. Summary:

Maintenance Note No. 1 informs the Electronics Technician on how to  
correct the Peak Wind and Cumulative Precipitation Reset problem.

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 80-1



Engineering Division  
W514

MED MAINTENANCE NOTE No. 1  
(For Electronics Technicians)

1. AMOS MED Window.

There is a problem with the AMOS MED in resetting of the Peak Wind and Cumulative Precip before the hourly report is transmitted.

The quickest and easiest way to correct this problem is to have the window open at H+05. This can readily be done by setting the clock to read 10 minutes slower than the actual time.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

OA/W5141 - JM

June 17, 1980

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM:   
OA/W51- J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance No. 80-5

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 2.4;  
MED Maintenance Note No. 2: RAMOS MED Tone Level Adjustment.

2. Summary:

Garbled messages received at the RAMOS MED may be due to the signal input  
being out of adjustment. Adjusting the tone level at the input and  
output may alleviate this problem.

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 80-5



Engineering Division  
W514

MED MAINTENANCE NOTE NO. 2  
(For Electronics Technicians)

2. RAMOS MED Tone Level Adjustment.

In most instances the tone level adjustments will not be necessary. However, if no signal or garbling is received at the MED from the RAMOS, the following adjustments and/or checks should be performed. Two technicians are required for this operation, one at each site with a reliable communications link.

Incoming Tone Adjustment:

- a) Connect an oscilloscope at Test Point J3 of the MED. Turn R47 completely clockwise. This will null the outgoing tone.
- b) Monitor Test Point J3 of the MED and adjust R1 on the RAMOS Type V COMMS board for a 0.5V pp level.
- c) Remove the scope connection at J3 and monitor Test Point J2 of the MED. Adjust R57 of the MED for a 0.5V pp level. Remove scope from J2.

Outgoing Tone Adjustment:

- a) Temporarily disconnect the telephone line at the MED. Place a 560-ohm resistor across TB102-2 and 4 of the MED.
- b) Monitor J3 of the MED with an oscilloscope. Adjust R47 of the MED for a 2.0V pp signal level. Remove scope.
- c) Disconnect the 560-ohm resistor and replace the telephone line. This completes the adjustments for the tone levels.

EHB-11  
Issuance 80-5



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

July 30, 1984

W/OTS141 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB11-Distribution)

FROM: W/OTS1 - J. Michael St. Clair *J. Michael St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance 84-4

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.4;  
MED Maintenance Note No. 2: Revision No. 1: RAMOS MED Tone Level  
Adjustment.

2. Summary:

Garbled messages received at the RAMOS MED may be due to the signal input  
voltage level being out of adjustment. Adjusting the tone voltage level  
at the input and output may alleviate this problem.

3. Effect on Other Instructions:

This revision updates MED Maintenance Note No. 2 and includes procedures  
for one technician calibration or two technicians.

EHB-11  
Issuance 84-4



Engineering Division  
W/OTS14

MED MAINTENANCE NOTE NO. 2 REVISION NO. 1  
(For Electronics Technicians)

## 2.1 RAMOS MED TONE VOLTAGE LEVEL ADJUSTMENT

### GENERAL:

This Maintenance Note Revision contains instructions to correct the problem of no signal or garbled signal at the MED by adjusting the signal levels on the line drivers and receivers in the RAMOS and the MED.

### I. TWO-TECHNICIAN ADJUSTMENT PROCEDURE

#### PURPOSE:

This procedure provides a quick method of making these adjustments when two technicians are available, and requires a technician at each equipment site with a reliable communications link between them. Alternatively a single technician can perform this procedure, but must make three round trips between sites. See next page for an alternate single technician procedure.

Equipment, Tools Required: 2 oscilloscopes, standard complement of tools.

Reference documentation required: See attached sheets.

#### Procedure:

1. At RAMOS, turn off basic electronics assembly using switch 1A1S101 (at lower right of chassis).
2. At MED, depress and hold the reset pushbutton.
3. At MED, adjust 1A3R47 for 0.7 VPP (-10 dBm) across the telephone line, TB102-2 and TB102-4 (MED Transmit).
4. At RAMOS Communication Assembly, Adjust 2A1R12 for 3 VPP between TB1-2 (Ground) and TB1-3. (RAMOS RECEIVE)
5. At MED, release reset pushbutton, thus reversing Step 2 above.

6. At RAMOS, turn on BEA (1A1S101), thus reversing Step 1 above.
7. At RAMOS, adjust 2A1R1 for 0.7 VPP (-10dBm) across the telephone line, TB2-4 and TB2-5. (RAMOS Transmit).
8. At MED, adjust 1A3R57 for 3 VPP between 1A3J2 and E101 (ground stud at chassis rear). (MED Receive).

This completes the adjustment procedure.

## II. SINGLE-TECHNICIAN ADJUSTMENT PROCEDURE

### PURPOSE:

The purpose of this procedure is to provide an alternate method of adjustment when only one technician is available. It requires only one round trip to the RAMOS.

Equipment, Tools Required: 1 oscilloscope, standard complement of tools. 600-ohm resistor 1/4 watt min.

Reference Documentation Required: See Attached Sheets.

### Procedure:

1. Begin at the MED. Temporarily disconnect the telephone lines and install the 600-ohm resistor in their place between TB102-2 and TB102-4.
2. Depress and hold the reset pushbutton. (The single technician can hold it depressed with a piece of tape or a stick.)
3. Adjust 1A3R47 for 0.7 Vpp (-10dBm) across the telephone line, TB102-2 and TB102-4. (MED Transmit)
4. Remove the 600-ohm resistor and reconnect the telephone lines, thus reversing Step 1 above.
5. Proceed to the RAMOS. Temporarily disconnect the telephone lines and install the 600-ohm resistor in their place between the TB2-4 and TB2-5 in the Communications Assembly.
6. Adjust 2A1R1 for 0.7 Vpp (-10dBm) across the telephone line, TB2-4 and TB2-5. (RAMOS Transmit)

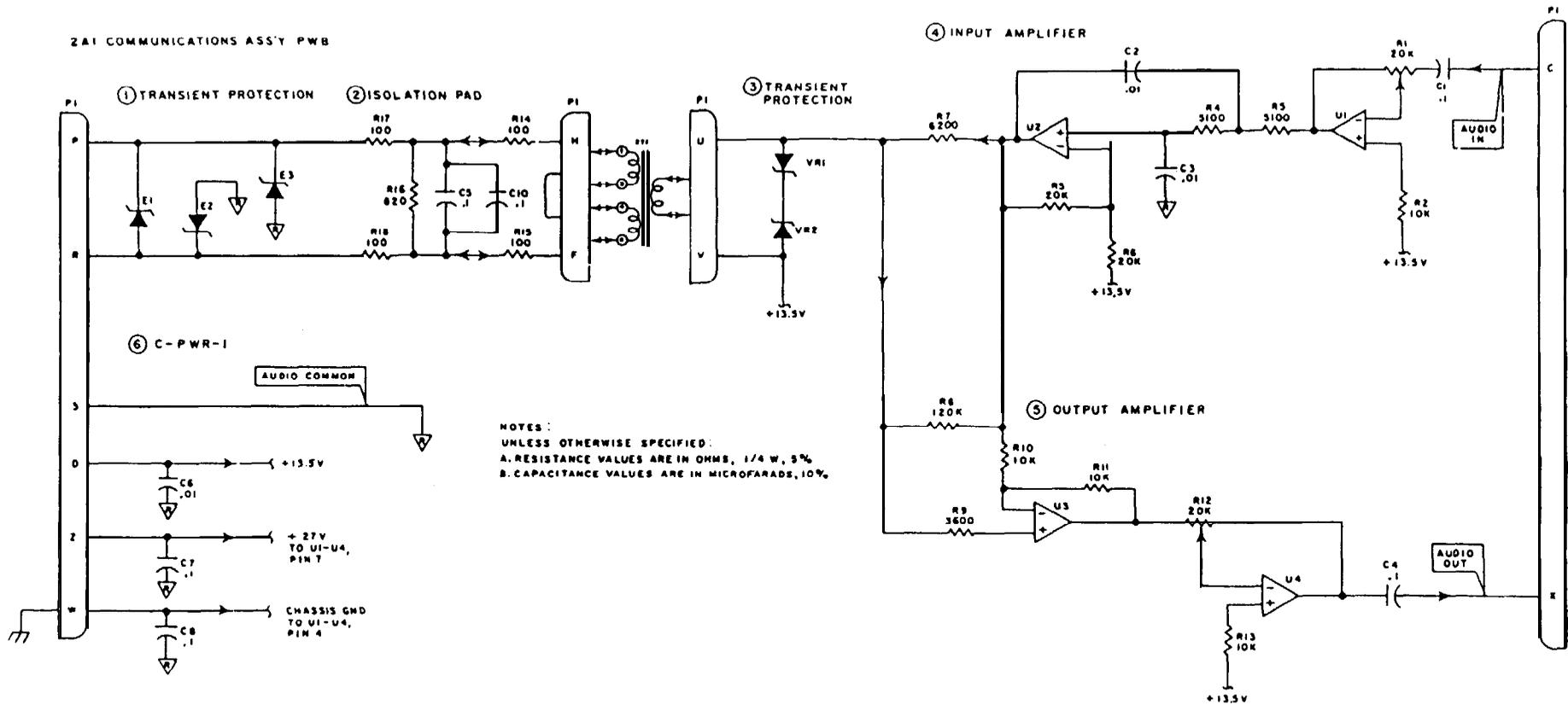
7. Remove the 600-ohm resistor and reconnect the telephone line, thus reversing Step 5 above.
8. Turn off Basic Electronics Assembly using switch 1A1S101 (at lower right of chassis).
9. Adjust 2A1R12 for 3 Vpp between TB1-2 (Ground) and TB1-3. (RAMOS Receive),
10. Turn on BEA (1A1S101), thus reserving Step 8 above.
11. Return to the MED. Release reset pushbutton, thus reversing Step 2 above.
12. Adjust 1A3R57 for 3 Vpp between 1A3J2 and E101 (Ground stud at chassis rear). (MED Receive),

This completes the alternate adjustment procedure.

Attachments:

Communications Assembly-Type V, (Half-Duplex), PWB 2A1,	2 each
1A3 RAMOS MED Interface PWB (Sheet 2 of 2),	2 each
Communications Assembly-Type V, (Half-Duplex), Unit 2,	2 each

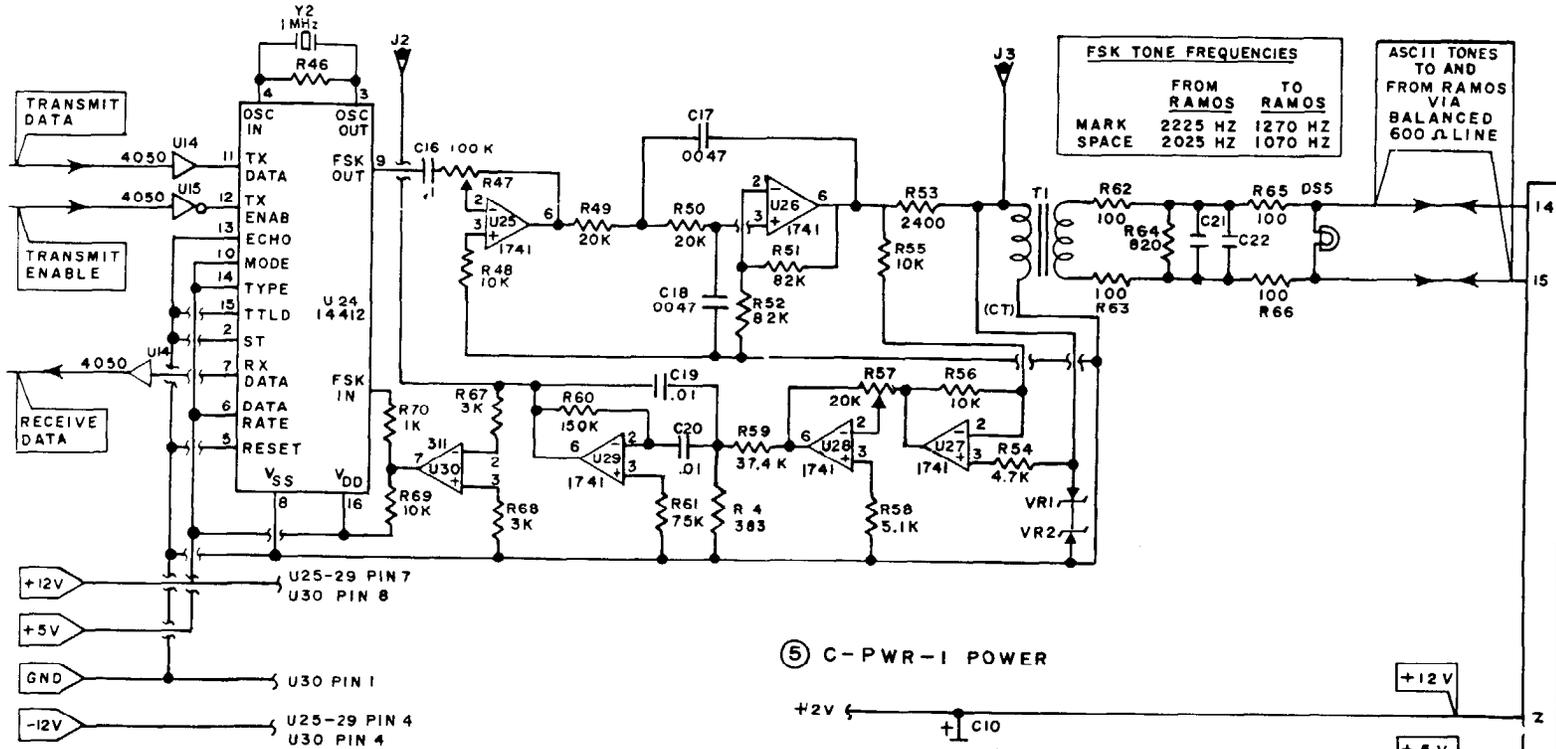
2A1 COMMUNICATIONS ASS'Y PWB



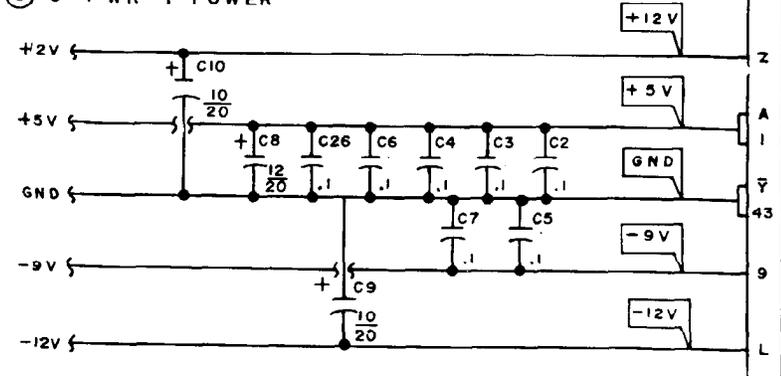
NOTES:  
 UNLESS OTHERWISE SPECIFIED:  
 A. RESISTANCE VALUES ARE IN OHMS, 1/4 W, 5%  
 B. CAPACITANCE VALUES ARE IN MICROFARADS, 10%

Communications Assembly Type V  
 (Half-Duplex) PWB 2A1

④ FSK MODULATOR - DEMODULATOR



⑤ C-PWR-1 POWER







UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

OA/W5141 - JM

August 5, 1980

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM: OA/W51-1 *for* M. St. Clair *Kenneth E. Deaver*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11,  
Issuance No. 80-7

1. Material Transmitted:

Engineering Handbook No. 11 - Automatic Observing Equipment, Section 2.4;  
MED Maintenance Note No. 3: RAMOS-MED Precipitation and Peak Wind Reset  
Problem.

2. Summary:

Maintenance Note No. 3 informs the Electronics Technician how to correct  
the Precipitation and Peak Wind Reset Problem.

3. Effect on Other Instructions:

None.

EHB-11  
Issuance 80-7



Engineering Division  
W514

MED MAINTENANCE NOTE NO. 3  
(For Electronics Technicians)

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### 3. RAMOS-MED Precipitation and Peak Wind Reset Problem.

The present version of the RAMOS-MED fails to send the proper Reset Characters ":" for Peak Wind, and " / " for Precipitation, to the RAMOS unit when the following conditions occur: The Validate Key has been activated, and either or both Hour Flags are "SET", and Service "A" requests a transmission.

We have identified the source of the problem as EPROM RD6 and have revised the program. The Western Region has performed a successful Field Verification Test on this revision. We had planned on distributing revised EPROM chips to all RAMOS-MED stations, but unfortunately there is a shortage of them, and we do not expect to obtain enough units in the near future.

All Electronics Technicians possessing spare RAMOS-MED I/O Memory Boards (S090-1A2-2) should remove the EPROM labelled "RD6", and send the EPROM together with proper station and site identification to the following address:

NOAA-National Weather Service  
National Reconditioning Center, WF516  
605 Hardesty Street  
Kansas City, Missouri 64124  
Attn: MED Note #3

Please exercise caution to prevent electrostatic discharge during handling and use conductive foam or aluminum foil for shipment. Upon receipt of the EPROM, it will be reprogrammed and returned. After you receive the EPROM, insert it into the system and send the other chip for reprogramming and it will also be returned to you.

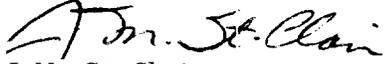


UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

OA/W5141 - JM

September 24, 1980

TO: All NWS Regional Headquarters, Area Electronics Supervisors,  
and Electronics Technicians (EHB-11 Distribution)

FROM:   
OA/W51 - J.M. St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11.  
Issuance 80- 8

1. Material Transmitted:

Engineering Handbook No. 11- Automatic Observing Equipment,  
Section 2.4; MED Maintenance Note No. 4: MED Extender Boards.

2. Summary:

MED Maintenance Note No. 4 informs the Electronics Technicians on the  
availability of MED Extender Boards.

3. Effect on Other Instructions:

None.

EHB- 11  
Issuance 80- 8



Engineering Division  
OA/W514

MED MAINTENANCE NOTE NO. 4  
(For Electronics Technicians)

4. MED Extender Boards.

Electronics Technicians who maintain AMOS or RAMOS MED's may order and receive a set of MED Extender Boards from CLSC. A Stores Requisition, NOAA Form 37-4, should be submitted to:

Central Logistics Supply Center  
619 Hardesty Street  
Kansas City, Missouri 64124  
Attn: SPECIAL PROJECTS

The cost accounting information should be omitted from the form as the extender boards were procured with W514 funds.

EHB-11  
Issuance 80-S



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
Silver Spring, Md. 20910

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W/OS0321 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and  
Electronics Technicians (EHB-11 Distribution)

FROM: W/OS03 - J. Michael St. Clair *J.M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 11, Issuance 86-5

1. Material Transmitted:

Engineering Handbook No. 11, Automatic Observing Equipment, Section 2.4,  
MED Maintenance Note No. 5: MED 4.2V battery availability.

2. Summary:

MED Maintenance Note No. 5 informs the Electronics Technicians of the  
availability of MED 4.2V batteries for the I/O Memory Clock Modem Printed  
Circuit Board, 1A2A.

3. Effect on Other Instructions:

None.



MED MAINTENANCE NOTE  
(for Electronics Technicians)

5. MED 4.2V Battery Availability

Electronics Technicians who maintain AMOS or RAMOS MED's have sometimes found it difficult to find a source for the 4.2V Mallory Duracell Mercury Battery (TR133), which is used in the I/O Memory Clock Modem Printed Circuit Board, 1A2A. The following list gives parts numbers for eight different manufacturers as identical replacements, and one replacement which, while not identical, will work satisfactorily.

Mallory	TR133	4.2v
Burgess	H133	4.2v
Neda	1306M	4.2V
Eveready	EI 33	4.2v
Ray-O-Vat	T133M	4.2V
RCA	VS133	4.2v
Western Auto	7D9304	4.2v
Newark Catalog	49F536	4.2v
Duracell Alkaline (K-Mart)	PX21	4.5v