ASOS MODIFICATION NOTE 76 (for Electronics Technicians)
Maintenance, Logistics, and Acquisition Division
W/OPS12: AL

SUBJECT	:	410.5 MHz Radio Frequency (RF) Filter Installation
PURPOSE	:	To prevent potential interference with the Federal Aviation Administration (FAA) Low-Level Windshear Alert System (LLWAS). This modification enables wind data at LLWAS remote sensor station sites to be transmitted to the FAA master station without interference from Automated Surface Observing System (ASOS) communications. LLWAS generates warnings for Air Traffic Control Towers (ATCT) when windshear or microburst conditions are detected.
EQUIPMENT AFFECTED	:	ASOS Acquisition Control Unit (ACU) and Data Collection Package (DCP)
PARTS REQUIRED	:	S100-1A6A4-FL1 bandpass filter (1 each per ACU & 1 each per DCP) S100-1A6W3 male to female BNC co-axial antenna cable (RG58) 3" wire-ties (up to 7 for each bandpass filter installed) Self-adhesive velcro strip (1 for each bandpass filter installed)
SPECIAL TOOLS REQUIRED	:	None.
MODIFICATION PROCUREMENT	:	The following items should be obtained locally: 3" wire-ties and self-adhesive velcro strip The following items will be initial issued from OPS12: S100-1A6A4-F61 (2 each) and S100-1A6W3 (2 each) per site
EFFECTIVITY	:	All ASOSs listed in attachment A
ESTIMATED TIME REQUIRED	:	1 Hour
EFFECT ON OTHER INSTRUCTIONS	:	None.
AUTHORIZATION	:	This modification is authorized by Request for Change FAA176.
VERIFICATION STATEMENT	:	This modification has been tested for operational integrity at Page Field - (FMY) Fort Myers, Florida (FL) and at Southwest Florida International Airport - (RSW) Fort Myers, FL and verified by the National Weather Service at Silver Spring, Maryland.
SPECIAL INSTRUCTIONS	:	None.

GENERAL:

This modification note provides instructions for installing a 410.5 MHz bandpass filter inside both the ACU cabinet and DCP cabinet. The S100-1A6A4-FL1 bandpass filter is inserted between the antenna and RF modem (transceiver) using the S100-1A6W3 male to female BNC co-axial antenna cable. Any signal above 411.0 MHz and below 410.0 is heavily attenuated. Signals at 410.5 MHz ± 0.5 MHz pass with virtually no attenuation. The filter is completely passive to eliminate the possibility of noise or distortion being introduced to the transceiver.

BEFORE INSTALLING THE BANDPASS FILTER

1. Notify the AOMC of which ASOS will have the new hardware installed by calling 1-800-242-8194.
2. Get approval from the responsible MIC/OIC before starting installation. If restrictions in steps 3 and 4 are satisfied, installation may be done on any day of the month.
3. Commissioned sites only: Do not start installation during bad weather, precipitation, instrument flight rule (IF) conditions, or if any of those conditions are expected within 3 hours. The responsible MIC/OIC will define those meteorological conditions.
4. The installation will conflict with scheduled synoptic observations. Allow 2 hours to complete installation and restart ASOS. Also, inform the MIC/OIC/Observer that this condition will occur.
5. Immediately before work begins at NWS staffed sites, the MIC/OIC/Observer informs the tower and any other critical users that ASOS will be shut off for thunderstorm sensor installation. At an unstaffed site, the electronics technicians (ET) informs the tower using Controller Video Displays (CVD) and Operator Interface Devices (OID) to log off and shut down display power to avoid confusion.
6. Implement normal backup observing procedures at NWS-staffed sites.
7. Make the appropriate SYSLOG entries (MAINT-ACT-FMK) Mod 76.
   a. Log on as **TECH**.
   b. Key the **MAINT** screen.
   c. Key the **ACT** page.
   d. Key **START** - Stop here and perform Mod 76. As described in Appendix B. Upon completion of the Mod 76, log onto the system.

AFTER INSTALLING THE BANDPASS FILTER

1. At unstaffed sites, call and inform the ATCT, using CVDs and OIDs, to turn their displays on. At staffed sites, the MIC/OIC observer calls the ATCT.
2. If on-site NWS staff provided backup during installation, no special observation is needed when ASOS is restarted.

If there is no backup at a site and a record observation was missed during the installation, a special observation must be taken when ASOS is restarted. The ET should take the following steps at the ASOS keyboard after installation:

a. Press **SIGN**.

b. Type his/her initials and press **Enter**.

c. Type the observer level password and press **Enter**.

d. Press **GENOB**.

e. Press **SPECL**.

f. Press **EXIT**.

g. Press **SIGN**.

h. Type his/her initials again and press **Enter**.

i. Press **Enter** twice. This signs off the observer from the ASOS system.

j. Leave ASOS running.

NOTE: The observer must sign off before the 5-minute edit time is up.

3. Inform the office staff that ASOS is again operational. If less than 25 minutes remain until the next hourly observation, augmentation of the ceiling may be required. Augmenting several elements or even the entire observation may be necessary.

4. Verify that the ASOS transmitted an hourly observation.

5. Call the AOMC at 1-800-242-8194 and inform the operator of:

   a. The ASOS location.

   b. The installation of firmware version 2.6W has been completed and all trouble tickets should be closed.

   c. The ASOS is operational.

6. Sign on the system as a technician and in the SYSLOG enter that maintenance has been completed.

   a. Key the **MAINT** screen.

   b. Key the **ACT** page.

   c. Key **FMK** - Enter the field modification kit (FMK) number as: **Mod 76**.

   d. Press **ENTER**. On the second line of the screen, verify that only Mod 76 is displayed.

   e. Complete by entering **Y** in the [Y/N] area if only Mod 76 is displayed.

f. Check the SYSLOG and verify the FMK message.

g. Enter a comment in the SYSLOG stating Mod 76 has been installed.

h. Clear any maintenance flags.

PROCEDURE:

NOTE: One (1) bandpass filter and one (1) BNC cable per cabinet is required. Sites with more than one DCP require an additional bandpass filter and BNC cable.

1. Connect the male side of the S100-1A6A4-FL1 bandpass filter to the female end of the S100-1A6W3 BNC co-axial antenna cable. Do this for the ACU and each DCP.
2. At each DCP, open the cabinet and secure the door.
3. Place the bandpass filter to the right of the P/O Faraday Box (A3) (**Figure 1**). Do Not apply the velcro strips at this time.
4. Locate the RF mounting plate assembly (see **Figure 2**. On a Class I system there is a single RF modem and on a Class II there are two RF modems and an RF modem switch.
5. Remove the male BNC connector from the RF modem switch output (*center connector on Class II ASOS*) or from the RF modem output (*Class I ASOS*). There is no need to turn the ASOS ACU power OFF, the RF modem is internally protected from antenna power overload.
6. Connect the male BNC connector, removed in step 5, to the female connector on the bandpass filter.
7. Connect the female BNC connector (*BNC antenna cable from step 1*) from the bandpass filter to the male

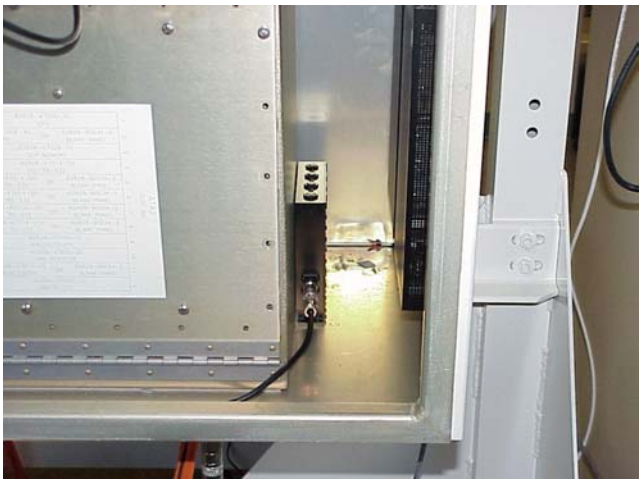

Figure 1: Bandpass Filter placed to the right of the Faraday Box - Class II ASOS

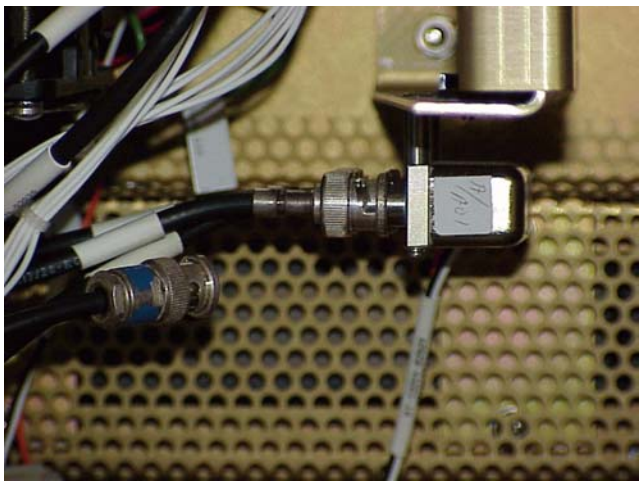

Figure 2: RF Modem Switch at base of RF Mounting Plate Assembly - Class II ASOS

connector on the RF modem switch output (*center connector on Class II ASOS*) or on the RF modem output (*Class I ASOS*).

8. Secure bandpass filter using self-adhesive velcro strips and secure the Co-axial antenna cable using 3-inch tie-wraps, both purchased locally.

9. Close the DCP cabinet, secure the door and proceed to the ACU.

10. Open the ACU cabinet and pull out the RF/pressure mounting shelf (A6).

11. Locate the RF modem(s) to the rear of the RF/pressure mounting shelf. On a Class I system there is a single RF modem and on a Class II there are two RF modems and an RF modem switch.

12. Place the bandpass filter in the ACU directly on the RF/pressure mounting shelf (A6) just below the RF modem on a Class I system and just below and to the left of the RF modem switch (S1) on a Class II system (**Figure 3**). Do Not apply velcro strips at this time.

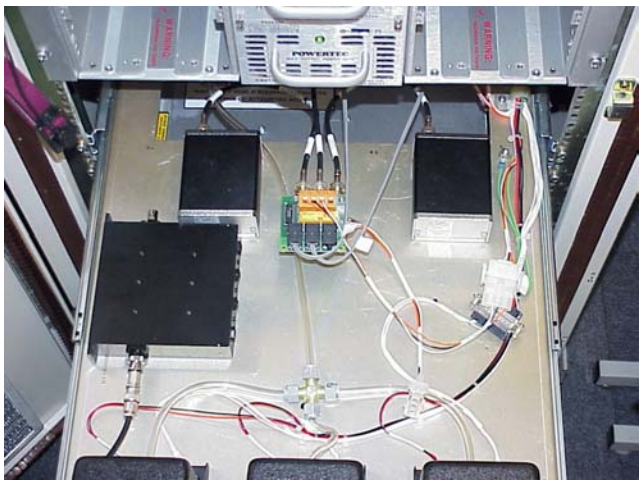

Figure 3: RF Modem Switch RF Modems and Bandpass Filter on RF/Pressure Shelf in ACU - Class II ASOS

13. Remove the male BNC connector from the RF modem switch output (*center connector on* Class II ASOS) or from the RF Modem output (*Class I ASOS*) (**Figure 4**). There is no need to turn the ASOS AC power OFF, the RF modem is internally protected from antenna power overload.

14. Connect the male BNC connector, removed in step 13, to the female connector on the bandpass filter.

15. Connect the female BNC connector (*co-axial antenna cable from step 1*) from the bandpass filter to the male connector on the RF modem switch output (*center connector on Class II ASOS*) or on the RF modem output (*Class I ASOS*).

16. Secure bandpass filter using self-adhesive velcro strips and the co-axial antenna cable using 3-inch tie-wraps, both purchased locally.

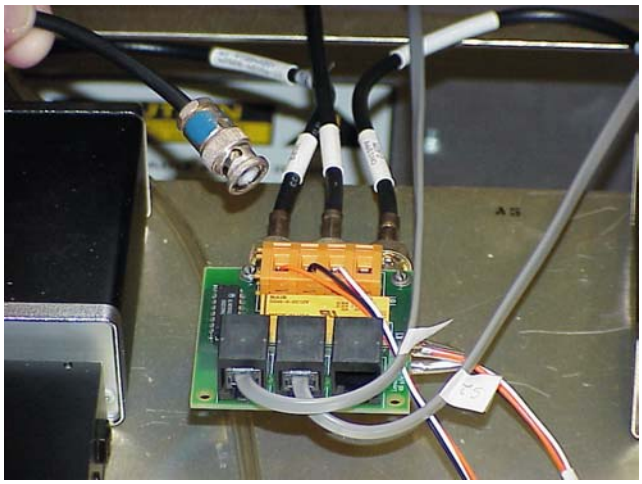

Figure 4: RF Modem Switch (S1) - Class II ASOS

17. Slide the RF/pressure mounting shelf (A6) back into the ACU cabinet, close the cabinet and secure the door.

REPORTING MODIFICATION:

Target date for completion of this modification is listed in appendix A, last column. Report completed modification on a WS Form A-26, Maintenance Record, Appendix B, using the instructions in Engineering Handbook No. 4 (EHB-4), Engineering Management Reporting System (EMRS), Part 2, Appendix F. Include the following on the WS Form A-26:

- An equipment code of **AACU** in block 7 for the modification to the ACU.
- The appropriate serial number in block 8.
- A modification number of **76** in block 17a.

See attachment B to this modification note for a completed sample of a WS Form A-26.

Mark Paese (acting)
Chief, Maintenance, Logistics, and Acquisition Division

Attachment A - LLWAS Baselined Installation Schedule
Attachment B - WS Form A-26

Attachment A

LLWAS Baselined Installation Schedule (02/2002)

Sequence Number	Site ID	Location	Region	Projected FAA LLWAS Installation Date (*Start Date*)	**Required ASOS Bandpass Filter Installation Date** (*Start Date - 31 Days*)
1	RSW & FMY	Ft. Myers, FL	ASO	04/15/02	**03/15/02**
2	JAN	Jackson, MS	ASO	06/04/02	**05/04/02**
3	COS	Colorado Spr., CO	ANM	06/07/02	**05/03/02**
4	SPI	Springfield, IL	AGL	07/28/02	**06/27/02**
5	CAE	Columbia, SC	ASO	08/12/02	**07/12/02**
6	BIL	Billings, MT	ANM	08/19/02	**07/19/02**
7	SFO	San Francisco, CA	AWP	08/26/02	**07/26/02**
8	RST	Rochester, MN	AGL	08/26/02	**07/26/02**
9	PNS	Pensacola, FL	ASO	09/09/02	**08/09/02**
10	FSD	Sioux Falls, SD	AGL	09/08/02	**08/08/02**
11	OMA	Omaha, NE	ACE	09/16/02	**08/16/02**
12	TRI	Bristol (Tri Cities), TN	ASO	09/30/02	**08/30/02**
13	PIA	Peoria, IL	AGL	10/07/02	**09/06/02**
14	LNK	Lincoln, NE	ACE	10/14/02	**09/13/02**
15	PVD	Providence, RI	ANE	10/21/02	**09/20/02**
16	DAB	Daytona Beach, FL	ASO	10/28/02	**09/27/02**
17	AGS	Augusta, GA	ASO	11/11/02	**10/11/02**
18	SHV	Shreveport, LA	ASW	11/18/02	**10/18/02**
19	CHA	Chattanooga, TN	ASO	12/02/02	**11/01/02**
20	FSM	Fort Smith, AR	ASW	12/09/02	**11/08/02**
21	SAV	Savannah, GA	ASO	01/13/03	**12/13/02**
22	BTR	Baton Rouge, LA	ASW	01/20/03	**12/20/02**
23	FAY	Fayetteville, NC	ASO	02/03/03	**01/03/03**
24	MLU	Monroe, LA	ASW	02/03/03	**01/03/03**
25	MGM	Montgomery, AL	ASO	02/17/03	**01/17/03**
26	LIT	Little Rock, AR	ASW	02/24/03	**01/24/03**
27	AVL	Asheville, NC	ASO	03/10/03	**02/07/03**
28	SGF	Springfield, MO	ACE	03/17/03	**02/14/03**
29	CSG	Columbus, GA	ASO	03/31/03	**02/28/03**
30	MAF	Midland, TX	ASW	03/31/03	**02/28/03**
31	GSP	Greer, SC	ASO	04/14/03	**03/14/03**
32	MLI	Moline, IL	AGL	04/28/03	**03/28/03**
33	MOB	Mobile, AL	ASO	05/05/03	**04/04/03**
34	SUX	Sioux City, IA	ACE	05/12/03	**04/11/03**
35	GRB	Green Bay, WI	AGL	05/19/03	**04/18/03**
36	LEX	Lexington, KY	ASO	05/26/03	**04/25/03**
37	LAN	Lansing, MI	AGL	06/02/03	**05/02/03**
38	CRW	Charleston, WV	AEA	07/03/03	**06/02/03**
39	TLH	Tallahassee, FL	ASO	07/03/03	**06/02/03**
40	ROA	Roanoke, VA	AEA	10/03/03	**09/02/03**

Attachment B

ENGINEERING MANAGEMENT REPORTING SYSTEM
MAINTENANCE RECORD

Document Number: **G 49978**

General Information

1. Open Date	Time	2. Initials	3. Response Priority (check one)	4. Close Date	Time
06/01/02	0900	DKR	○ Immediate ○ Low ○ Routine ☒ Not Applicable	06/01/02	1000

5. Description: **RADIO FREQUENCY (RF) FILTER INSTALLATION**

Equipment Information

6. Station ID	7. Equipment Code	8. Serial Number	9. TM	10. AT	11. How Mal.
RSW	AACU	001050	M	M	999

12. EQUIPMENT OPERATIONAL STATUS TIMES

a. Fully Operational	b. Logistics Delay	Partly Operational c. All Other	d. Logistics Delay	Not Operational e. All Other
				1:00

13. Parts Failure Information

Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.
1							
2							
3							
4							
5							

14. Work Load Information

Type	Staff Hrs.
a. Routine	
b. Non-routine	
c. Travel	4:00
d. Misc.	1:00
e. Overtime	

Miscellaneous Information

15. Maintenance Comments: **INSTALLED RF FILTER AND CABLE IAW ASOS MOD 76**

16. Initials: **DKR**

17. SPECIAL PURPOSE REPORTING

a. Mod. No.	b. Mod./Act./Deact. Dat	c.	d.	e.
76	06/01/02			

18. CONFIGURATION MGMT. REPORTING *(use as directed)*

ASN	Vendor Part Number (New Part)	Serial Number (Old Part)	Serial Number (New Part)