MEMORANDUM FOR: Distribution

FROM: W/OPS1 - John McNulty

SUBJECT: Expansion of Console Replacement System (CRS)

1. Material Transmitted:

   Engineering Handbook No. 7, Communications Equipment, Section 3.4, Modification Note 47, Console Replacement System Output Channel Expansion (Large 5 to a Large 6).

2. Summary:

   Request for Change NWS504D authorizes CRS expansion for Weather Forecast Office (WFO), Raleigh/Durham, North Carolina (RAH) and WFO Paducah, Kentucky (PAH).

3. Effect on Other Instructions:

   None.

   Distribution:

   W/OPS11 - D. Bosco
   W/OPS12 - J. Earl
   W/OPS12 - G. Sikora
   W/OPS13 - J. Sabel (2)
   W/OPS13 - M. Brown
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   W/WFO - GYX - J. Lucas
   W/WFO - PHI - R. Paxson
   W/WFO - PAH - M. Luecke
   W/WFO - RAH - L. Bequette (5)

COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 47 (for Electronics Technicians)
Engineering Division
W/OPS12: GSS

SUBJECT : Console Replacement System (CRS) Output Channel Expansion

PURPOSE : To expand the capabilities of the CRS system from a Large 5-channel to a Large 6-channel configuration.

SITES AFFECTED :

Site Name	SID	Org. Code
WFO Raleigh/Durham, NC	RAH	WN9306
WFO Paducah, KY	PAH	WR9957

EQUIPMENT AFFECTED : CRS (B440)

PARTS REQUIRED : The parts required will be issued to each site by W/OPS12 from the National Logistics Support Center under the applicable approved site-specific Request for Change.

(1) DECtalk card (ASN: B440-2A2A11)
(1) Audio switch module (ASM) card (ASN: B440-2A6A3)
(1) DECtalk-ASM audio cable (ASN: B440-4W12)
(1) NOAA Weather Radio Specific Area Message Encoder (NWRSAME)-audio control panel (ACP) interface cable (ASN: B440-1A5W4)
(1) DOS formatted diskette with CRS test database ASCII files (provided by W/OPS12)

PARTS SUPPLIED BY THE SITE : The following parts shall be provided by the site:
(1) Transmitter audio output cable (prepared by the site)
(1) NWRSAME (if available)
Cable marking tags, as needed

TOOLS AND TEST EQUIPMENT REQUIRED :
#1 and #2 Phillips screwdrivers
CRS test database ASCII files diskette provided by W/OPS12 (see parts required)
Small flat-blade jeweler's screwdriver
Root mean square (RMS) voltmeter/dB meter
600-ohm dummy load with an RJ-11 plug attached
Antistatic workstation kit

TIME REQUIRED : 2 Hours

EFFECT ON OTHER INSTRUCTIONS : None

AUTHORIZATION : The authority for this modification is Request for Change NWS504D.

VERIFICATION STATEMENT : This procedure has been verified at Weather Service Headquarters, Silver Spring, MD (SLVM2).

GENERAL : The attachments included in this modification provide instructions for adding output channels to the CRS.

PROCEDURE : Attachment **A** provides procedures for implementing this modification.
Attachment **B** (CRS Hardware Drawings) provides reference information.
Attachment **C** provides verification of the new physical configuration (used before applying power).
Attachment **D** provides a completed sample of a WS Form A-26, Maintenance Record.

REPORTING INSTRUCTIONS : Report the completed modification on a WS Form A-26 according to the instructions in Engineering Handbook No. 4 (EHB-4); Engineering Management Reporting System (EMRS), Part 2; and Appendix I. Include the following information on the A-26:

a. equipment code **CRSSA** in block 7.
b. serial number **001** in block 8.
c. the modification number **47** in block 17a.

A sample WS Form A-26 is provided as attachment **D**.

John McNulty
Chief, Maintenance, Logistics, and Acquisition Division

Attachment A - Modification Procedure
Attachment B - CRS Hardware Drawings
Attachment C - New Configuration Physical Verification
Attachment D - WS Form A-26 Sample

Attachment A

Modification Procedure

Attachment A
Modification Procedure

Overview
This modification note provides instructions for expanding a Console Replacement System (CRS) from a Large 5-channel configuration to a Large 6-channel configuration. The Modification Procedure contains seven parts:

1. CRS Power-Down Procedures
2. Equipment Upgrade Procedures
3. CRS Power-Up Procedures
4. CRS Login and Test Database ASCII File Loading Procedures
5. Post Hardware Expansion Channel Operability Verification Procedures
6. Adding New Transmitter Channels and Editing Site Database ASCII File Procedures
7. ASM Alignment Procedures

NOTE:
1. Read the entire procedure and verify receipt of all required parts before proceeding with the actual modification.
2. Coordinate with the operations staff before performing this procedure.

CAUTION

CRS must be down to perform the expansion modification. This modification contains test messages that should not be broadcast on any transmitter.

In addition, the site database ASCII file will be recompiled and all dictionary files will be lost! Switch to backup NWR system and ensure the dictionary files are backed up (see the *CRS Administration Manual*) before performing this modification.

PART 1–CRS POWER-DOWN PROCEDURES

1.1 CRS Application Shutdown Procedure

1. Click on the **System** menu and click on **Stop System**.
2. Wait until all icons on the **CRS System Status** menu turn **red**.

1.2 UNIX Shutdown Procedure

NOTE: 1. The shutdown of the CRS application is just one task before the graceful power-down. After stopping the CRS application software, implement a "controlled/orderly UNIX shutdown with NO automatic reboot" on the main processor (MP), and implement a "controlled/orderly UNIX shutdown" on all front-end processors (FEP). Upon completion of the controlled/orderly UNIX shutdown, power-down the processors in the following order: MPs first, followed by the FEPs.

1. Click on the **Maintenance** menu in the main CRS menu to access the *Maintenance* pull-down menu.
2. Click on **UNIX Shell** in the *Maintenance* pull-down menu. A *UNIX xterm* window pops up for the entry of UNIX commands.
3. Type the following UNIX command in the *xterm* window:

   su root
4. Press the **ENTER** key. The shell responds with a prompt to enter root passwords.
5. Type the password for the root.
6. Press the **ENTER** key. The shell prompt changes to a pound sign, indicating that all subsequent UNIX command entries have root authority.
7. Type the following UNIX command in the *xterm* window:

   rsh 5MP /sbin/shutdown -i0 -g0 -y
8. Press the **ENTER** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 5MP. UNIX on processor 5MP shuts down.
9. Type the following UNIX command in the *xterm* window:

   rsh 1FEP /sbin/shutdown -i0 -g0 -y
10. Press the **ENTER** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 1FEP. UNIX on processor 1FEP shuts down.
11. Type the following UNIX command in the *xterm* window:

    rsh 2FEP /sbin/shutdown -i0 -g0 -y
12. Press the **ENTER** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 2FEP. Unix on processor 2FEP shuts down.

13. Type the following UNIX command in the *xterm* window:

    rsh 4BKUP /sbin/shutdown -i0 -g0 -y

14. Press the **ENTER** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 4BKUP. The UNIX on processor 4BKUP shuts down.

15. Type and enter the following UNIX commands in the *xterm* window:

    a. **cd /**.

    b. Press the **ENTER** key.

    c. Type **/sbin/shutdown -i0 -g0 -y**.

    d. Press the **ENTER** key. Each CRS processor for the system may be safely powered-down when UNIX indicates shutdown is complete with the following message:

    Press any key to reboot…

NOTE: 2. Do not reboot any machine, go to step 1.3.

1.3 Power-down all CRS equipment at the operator's station and in the equipment room by turning off the following equipment:

NOTE: When powering down the MPs, begin with the "Master" and then the "Shadow." After successfully powering-down the MPs and FEPs, power-down the remaining CRS hardware devices via their respective power switches.

Operators Station	Equipment Room
0MP and Monitor	4BKUP
5MP and Monitor	1FEP
NWRSAME (all)	2FEP
	LAN Bridge
	LAN Server
	Audio Switching Assembly (ASA) power supplies
	Monitor
	Printer
	Modem

PART 2–EQUIPMENT UPGRADE PROCEDURE

2.1 2FEP Setup Procedure

NOTE: The removal and replacement of circuit cards must be accomplished in an antistatic work area using approved antistatic procedures.

1. Remove all cabling from 2FEP, and remove the FEP from the equipment rack to the antistatic work area (see attachment **B**, figure A-5).
2. Remove the right side cover of the 2FEP unit using the following procedure:
   a. Remove the right three screws located on the back of the system unit (see attachment **B,** figure A-1). These screws secure the right side access panel of the system to the chassis.
   b. Pull the panel backward while lifting it upward.
3. Remove the screws holding expansion slot cover 4 on 2FEP. Retain the screws (see attachment **B**, figure A-13).
4. Remove the expansion slot cover.

2.2 DECtalk Cards Input/Output (I/O) Address Configuration Procedure

1. Configure the new DECtalk card for the appropriate I/O address through switch 2 (SW2), as defined in table 1 and pictured in attachment **B**, figure A-11.

NOTE: 1. Depending on the CRS site configuration, there may be as many as five DECtalk cards per FEP located in slots 2 through 6.

Table 1. DECtalk Card Switch 2 (SW2) Settings

Module Number	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	I/O Address	PC Slot
4	off	off	off	off	on	on	380	6
3	off	off	on	on	off	on	360	5
2	on	off	on	off	off	on	328	4
1	off	on	off	on	off	off	250	3
0	off	off	off	on	off	off	240	2

NOTE: 2. Regardless of FEP, DECtalk card configuration remains constant, meaning modules 0, 1, 2, 3, and 4 are configured the same for each FEP.

2. Use table 1 to set up the DECtalk card with the I/O address: 328.
   Install the DECtalk card into slot 4 of 2 FEP and reinstall a retaining screw.
3. Replace the 2FEP cover, using the reverse procedure in section 2.1, step 2.

2.3 ASM Card Installation Procedure

1. Remove the ASA slot 6 cover by removing the two screws.

NOTE: There are five jumpers to be set on each ASM card.

2. Take the new ASM card (ASN: B440-2A6A3) and set the jumpers for slot 6 of the ASA in accordance with table 2.
3. Install the new ASM card into slot 6 of the ASA chassis and tighten the two screws

Table 2. ASM Card Jumper Settings

	ASA Slot #	Silence Alarm Jumper "JP1"	ACP Channel Sel. Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	FEP1
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	FEP1
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	FEP1
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	FEP1
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	FEP2
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	FEP2
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	FEP1
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	FEP2

2.4 DECtalk-ASM Audio Cable Installation Procedure

Using write-on cable labels, mark and connect the new and existing DECtalk-ASM audio cables on 2FEP in accordance with table 3.

Table 3. DECtalk to ASM Audio Cables

From	To	Cable Label
1FEP DECtalk 1 “J2” Port	ASM 1 “IN Port”	1-1
1FEP DECtalk 2 “J2” Port	ASM 2 “IN Port”	1-2
1FEP DECtalk 3 “J2” Port	ASM 3 “IN Port”	1-3
2FEP DECtalk 4 “J2” Port	ASM 4 “IN Port”	2-1
2FEP DECtalk 1 “J2” Port	ASM 5 “IN Port”	2-2
2FEP DECtalk 2 “J2” Port	ASM 6 “IN Port”	2-3
1FEP DECtalk 5 “J2” Port	ASM PB1 “IN Port”	1-5
2FEP DECtalk 5 “J2” Port	ASM PB2 “IN Port”	2-5

2.5 New Transmitter Audio Output Cables Installation Procedure

1. Connect the “OUT 1” port of the new ASM card at slot 6 of the ASA chassis by installing the new audio output cable to the demarc panel position for the new transmitter.
2. Install the new NWRSAME (if available) into the top panel of the 5MP workstation (if available).
3. Install the NWRSAME-ACP interface cable from the NWRSAME rear connector to the “NWRSAME INPUT socket 1" port of the ACP2 rear panel; this connects to pins 2, 6, 7, 9, and 10 of the NWRSAME (if available).

NOTE: This completes the hardware modification.

PART 3–CRS POWER-UP PROCEDURES

*****WARNING*****

Prior to powering-up the FEPs, perform the *New Configuration Physical Verification* procedure contained in attachment C to verify proper system configuration. Failure to perform the procedure can result in the assignment of transmitter broadcasts to incorrect output channels.

3.1 Power-Up FEP Procedure

1. Press the **ON/OFF** switch on the front, center-right, of the enclosure to power-up the MPs. A green power LED on each FEP lights up, indicating the power is on. The FEPs can be powered-up in any sequence. The FEPs go through a memory check, display the system configuration [as recognized by the basic I/O system (BIOS)], and then boot the embedded UNIX operating system. At the completion of the boot process, the console screen displays the prompt:

   Console Login:

   The embedded operating system automatically initializes to a preset level, it then waits for final start-up commands from the master MP.

NOTE: The FEPs share a common console through the *Shared Monitor Switch*. The console displays messages while completing the boot process of the FEP currently switched in.

2. Use the *Shared Monitor Switch* to select the next FEP. The console monitor displays:

   Press <F1> to resume, <F2> to Setup

3. Press **F1** to complete the boot process. The prompt displays:

   Console Login:

4. Repeat for each remaining FEP.

3.2 Power-Up Main Processors Procedure

NOTE: 1. Power-up 0MP as the master main processor and 5MP as the shadowing processor.

Press the **ON/OFF** switch on the front, center-right, of the enclosure to power-up the FEPs. A green power LED on each MP lights up, indicating the power is on. The MPs can be powered up in any sequence. The MPs go through a memory check, file system check, system configuration verification (as recognized by the BIOS), and finally boot the embedded UNIX operating system. At the completion of the boot process, the workstation screen displays the CRS Login screen. The MPs are now ready for the initialization of the CRS application software.

NOTE: 2. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click on the **Acknowledge** button.

3. Whenever the MPs are powered-up, they automatically step through the boot process and into the multiuser mode, without operator intervention.

PART 4–CRS LOGIN AND TEST DATABASE ASCII FILE LOADING PROCEDURES

4.1 CRS Login Procedure

NOTE: 1. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click on the **Acknowledge** button.

2. The *CRS Login Screen* allows you to log onto CRS. This screen contains two fields: *Login ID* and *Password*. The fields are provided to allow you to type in your assigned login ID and password.

1. Type **admin** (for system administrator) in the *Login ID* field and press **ENTER**. The cursor moves to the *Password* field.
2. Type in your assigned password and press **ENTER** to complete the CRS login process. The system displays the *CRS main* display. The system then displays the following error message:

   System is not operational. Perform 'Start CRS' to start system.
3. Click on **OK** to clear the message.

NOTE: 3. The error message is only a status message indicating CRS is not running.

4.2 CRS Test Database ASCII File Loading Procedure

NOTE: 1. The following instructions for loading the CRS test database ASCII assume everything is executed with 0MP set as the MP.

1. Open a *UNIX Shell*:
   a. Click on **Maintenance**.
   b. Click on **UNIX Shell**.
2. Place the diskette with CRS test database ASCII files in the 0MP diskette drive to copy the desired file from the diskette to CRS.
   a. Type **dosdir a:** and press the **ENTER** key to display a directory listing of the files on the test database diskette. There are 13 files on the diskette with the following filename convention:

      TYP*W*_CFG.ASC where *W* = 1 - 4
      LRG*X*_CFG.ASC where *X* = 5 - 8
      MAX*Y*_CFG.ASC where *Y* = 9
      MAX*Z*_CF.ASC where *Z* = 10 - 13
      (*W*, *X*, *Y*, and *Z* represent the number of transmitters supported by your CRS.)
   b. Locate the applicable test database ASCII file.
   c. Type **doscp a:*filename* /crs/data/SS/*filename*** (where *filename* is the name of the CRS test database ASCII file to be used).
   d. Press the **ENTER** key.
3. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the *XCRS_SITE Utility* window.
4. Click on the **Select ASCII Site Setup** button to view the list of ASCII files.
5. Select the desired database ASCII filename copied from the diskette in section 4.2, step 2.c, and double click.

NOTE: 2. The directory selection block has a default directory name of */crs/data/SS*; the file filter block has a default file name of */crs/data/SS/*.ASC*. If the desired filename does not appear, it may have copied to the wrong directory in section 4.2, step 2.c. Should this be the case, change the default directory name to the directory specified in section 4.2, step 2.c. The other reason the filename does not appear is because it has been filtered out. Remember, UNIX is case-sensitive: if copied with an ASC extension in lowercase, the filename does not display. Change the filter filename to **/crs/data/SS/*.asc** and the filename displays.

6. Select **Initialize System Configuration** *and* **Database** to ensure the entire system database and configuration is erased and replaced.

7. Click on the **Start Site Configuration** button. The system displays:

   Will now perform FULL site reconfiguration. Continue?

8. Click on **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message reads:

   Finished with site configure

   The "wristwatch" and "working" message disappear. Ensure there are no error messages at the completion of the site configuration process.

9. Restart CRS by clicking on **Start CRS System**. The system displays:

   The CRS system will be STARTED. Continue?

10. Click on **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message refers to starting 4BKUP. The "wristwatch" and "working" message disappear.

11. Click on **EXIT** to close the *XCRS_SITE Utility* window.

12. Click on the **UNIX shell** window to select it. At the prompt type **exit** and press **Enter** to close the UNIX Shell.

13. Open the *System Status* window:

    a. Click on **System**.

    b. Click on **System Status**.

14. Monitor the *System Status* window and ensure the system is operational.

PART 5–POST HARDWARE EXPANSION CHANNEL OPERABILITY VERIFICATION PROCEDURES

5.1 Channel Operability Verification Procedure

NOTE: The CRS test database ASCII files contain test messages configured for continuous broadcast of channel operability verification.

1. Connect a monitor speaker or headphones to the ACP.
2. Using the *Channel Select* control, select each channel, one at a time, and monitor the output for the correct message (i.e., with channel one selected, the message output is: *This is transmitter one, audio switch module one*).

5.2 FEP Backup Mode Channel Operability Verification Procedure

1. Click on **Maintenance**.
2. Click on **Front-End Processor Switch**.
3. Select **2** in the *Front-End Processor Switch* window, under FEP.
4. Select **Out** under *Switch*.
5. Select **Yes** under *Backup*.
6. Click on the **Save the current record** icon to execute the FEP switch process. The *Question* box displays:

   Switch out the FEP FULLY offline ???
7. Click on **OK** to continue. The system displays the “wristwatch” and the message:

   Requesting FEP Switchout
8. Monitor the *FEP2* and *BKUP* system status icons. Verify *FEP2* is in backup mode and the *BKUP* icon displays the online status.
9. Upon completion of the FEP switch process, repeat section 5.1, steps 1 and 2.
10. Upon completion of the FEP backup mode channel operability verification, perform the following to display the *Front-End Processor Switch* window:
    a. Click on **Maintenance**.
    b. Click on **Front-End Processor Switch**.
11. In the *Front-End Processor Switch* window under *FEP*, select **2**.
12. Under Switch, select **IN** to switch FEP2 back in.

13. Click on the **Save the current record** icon to execute the FEP switch process. The system displays the “wristwatch” and the message:

    Requesting FEP switch-in...

14. Monitor the *FEP2* and *BKUP* system status icons. Verify *FEP2* is online and the *BKUP* icon displays the backup mode status.

15. When the system returns to normal operation, perform the following steps to close the *Front-End Processor Switch* window and stop CRS:

    a. On the *Front-End Processor Switch* window:

        1) Click on **File**.

        2) Click on **Exit**.

    b. On the *Main CRS* menu:

        1) Click on **System**.

        2) Click on **Stop System**.

        3) Click on **OK**.

        4) Click on **Close**.

16. Monitor the *System Status* window and verify the CRS application has stopped.

PART 6–ADDING NEW TRANSMITTER CHANNELS AND EDITING SITE DATABASE ASCII FILE PROCEDURES

6.1 Adding New Transmitter Channels Procedure

1. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the *XCRS_SITE Utility* window.

2. Click on the **Select ASCII Site Setup** button to bring up the list of ASCII files.

3. Select the current site database ASCII file and double click.

4. Click on the **Add Transmitter(s)** button to start the *addxmt* program. It displays how many transmitters are currently available, the next available transmitter to be added, and its appropriate processor and slot.

5. Use the following steps to add a new transmitter to the *Site Database ASCII* file:

    a. **Mnemonic**

        1) Type option number **1** and press **Enter** to select *Mnemonic*.

        2) Type **a** and press **Enter** at the program prompt to add the *Mnemonic*.

3) Type **mmmmm** and press **Enter** (where mmmmm is the desired *Mnemonic*, up to a length of 5 characters). The program returns the *Mnemonic*.

4) Type **0** or press **Tab**. Press **Enter** to complete the *Mnemonic* selection.

b. **Call Sign**

1) Type option number **2** and press **Enter** to select *Call Sign*.

2) Type **a** and press **Enter** at the program prompt to add the *Call Sign*.

3) Enter the *Call Sign* in the same manner as the *Mnemonic*, up to a length of 5 characters. The program returns the *Call Sign*.

4) Type **0** or press **Tab**. Press **Enter** to complete the call sign selection.

c. **Frequency**

1) Type option number **3** and press **Enter** to select *Frequency*. The *Frequency* option only allows a selection of one of the seven choices listed.

2) Type **n** and press **Enter** (where n is the desired frequency choice). The program returns the *Frequency* choice by displaying an asterisk next to the *Frequency* selection.

3) Type **0** or press **Tab**. Press **Enter** to complete the *Frequency* selection.

d. **Location**

1) Type option number **4** and press **Enter** to select *Location*.

2) Type **a** and press **Enter** at the program prompt to add the *Location*.

3) Enter the *Location* (in the same manner as the *Mnemonic* and the *Call Sign*) up to a length of 40 ASCII characters. The program returns the *Location*.

4) Type **0** or press **Tab**. Press **Enter** to complete the *Location* selection.

e. **Add Transmitter**

1) Type option number **5** and press **Enter** to use all the parameters defined in the first four steps to configure a new transmitter in the database ASCII file. The program verifies a new transmitter is necessary.

2) Type **y** and press **Enter**. The program returns the assignment of each transmitter to its proper processor and slot. The program confirms the appropriate database ASCII file has been updated and the original has been saved with the .SAV extension.

6. The program asks if another transmitter is needed. If so, repeat steps a-e for the next new transmitter. If not, type **n** and press **Enter** to exit the program.

6.2 Editing the Site Database ASCII File Procedure

1. When exit **addxmt** is complete, the *Question* box displays:

   Ready to recompile selected ASCII file. Continue?

2. Click on **Cancel** to close the *Question* box.

3. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.

4. Click on **Start Site Configure**. The *Question* box displays:

   Will now perform FULL site reconfiguration. Continue?

5. Click on **OK** to recompile the database ASCII file. Upon completion of the database ASCII file recompile process, the system displays:

   Finished with site configure.

6. Restart CRS by clicking on **Start CRS System**. The system displays:

   The CRS system will be STARTED. Continue?

7. Click on **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message refers to starting 4BKUP and the "wristwatch" and "working" message disappear.

8. Click on **Exit** to close the *XCRS_SITE Utility* window.

9. Open the *Alert Monitor* window:

   a. Click on **System**.

   b. Click on **Alert Monitor**.

NOTE: No attempt is made by **addxmt** to establish station identifiers, broadcast programs, broadcast suites, message types, voice parameters, keep alive messages, interrupt messages, etc. for the new transmitters. These must be configured through the CRS graphical user interface (see the *CRS Site Operator's Manual*) and updated in the site database ASCII file.

PART 7–ASM ALIGNMENT PROCEDURES

NOTE: The output of each added ASM card must be aligned before each card is placed in service. The alignments must be performed in the following sequence:

1. Verify ACP Ref. Mark Alignment.
2. ASM Card Alignment.

7.1 Verify ACP Ref. Mark Alignment Procedure

NOTE:
1. The ACP Ref. Mark Alignment can be performed independently and does not require the use of any tool or equipment.
2. Transmitter x, in this procedure, refers to the channel under test.

1. Set up the CRS for backup live (BUL). No system database is required.
2. Set the index mark on the **tone volume control** knob to the **Ref.** position.
3. Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the **BACKUP LIVE** block area on the ACP front panel.

NOTE: 3. Do not send audio to a transmitter while performing this procedure.

4. Push the **Alert Tone 1** button to generate the 1050 Hz warning alert tone (WAT).
5. Ensure the VU meter on the ACP front panel indicates **0 dBm**.

NOTE: 4. The duration of 1050 Hz WAT is 10 seconds.

6. Adjust the tone volume control for a reading of **0 dBm**.
7. Repeat steps 4, 5, and 6, as necessary, to obtain a reading of **0 dBm**.

NOTE: 5. When the tone volume control is set to the true Ref. position, the ACP provides the selected WAT output level of **0 dBm**.

8. To stop BUL, first push the **Enable** button, then push the **Transmitter x** button.

7.2 ASM Card Alignment Procedure

NOTE:
1. This alignment requires two people: one in the operations room and one in the equipment room.
2. When performing any of the following alignments, the system's output(s) must be disconnected from the telecommunications link and terminated into a 600-ohm load. All audio signal level measurements are taken across the 600-ohm load.

1. Assemble the following required Equipment:
   - dB Meter to read the audio signal level
   - Small jeweler's screwdriver
   - 600-ohm dummy load with RJ-11 plug attached
2. Set up the CRS for BUL. No system database is required.
3. Set the index mark on the **tone volume control knob** to the *Ref***.** position.
4. Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the **BACKUP LIVE** block area on the ACP front panel.
5. Plug the RJ-11 connector, with the 600-ohm load attached, into the RJ-11 jack of **OUT1** on the ASM of transmitter **x** (output channel **x**).
6. Connect the dB meter across the 600-ohm load.
7. Push the **Alert Tone 1** button to send a WAT to the **OUT 1** jack of ASM card 1.
8. Measure and record the signal level in dB across the 600-ohm load.
9. Using a small jeweler's screwdriver, adjust the transmitter gain control potentiometer through the ASM front panel until a reading of **0 dBm** is obtained across the 600-ohm load.

NOTE:
3. Table 4 provides equivalent V rms and V p-p values related to dBm (all referenced to 600-ohms) as an aid in referencing readings taken with measurement equipment that may not read directly in dBm.

Table 4. Voltages vs dBm (into 600-ohm load)

dBm	RMS	P-P	dBm	RMS	P-P	dBm	RMS	P-P
10	2.440	6.93	-4	0.480	1.35	-17	0.110	0.301
9	2.183	6.17	-5	0.430	1.20	-18	0.097	0.270
8	1.946	5.50	-6	0.390	1.03	-19	0.087	0.240
7	1.734	4.90	-7	0.345	0.96	-20	0.0775	0.215
6	1.546	4.37	-8	0.306	0.85	-21	0.690	0.194
5	1.377	3.89	-9	0.275	0.76	-22	0.061	0.170
4	1.228	3.47	-10	0.245	0.68	-23	0.054	0.152
3	1.094	3.01	-11	0.213	0.61	-24	0.048	0.135
2	0.975	2.75	-12	0.192	0.54	-25	0.043	0.120
1	0.869	2.46	-13	0.173	0.48	-26	0.039	0.108
0	0.775	2.15	-14	0.154	0.43	-27	0.034	0.096
-1	0.690	1.94	-15	0.138	0.38	-28	0.031	0.085
-2	0.610	1.70	-16	0.125	0.34	-29	0.028	0.076
-3	0.540	1.52				-30	0.024	0.068

NOTE:

4. The WAT output from the ACP nominally lasts 10 seconds. It is recommended that a second person push the **Alert Tone1** button for a near continuous tone output. This will smooth out the calibration effort and minimize the time required.
5. Primary (Out1) and secondary (Out2) outputs are two independent outputs. However, the output level of Out1 is affected by approximately 1.5 dB if Out2 is loaded.
6. During BUL, the VU meter monitors the ACP tone output, not the output of the ASM card. The ACP tone output is sent to the ASM card via the ASC for final output.

10. Repeat steps 7, 8, and 9, as necessary, to obtain a reading of **0 dBm** for the channel under test.
11. To stop BUL, first push the **Enable** button and then push the **Transmitter x** button.
12. Repeat steps 1 through 10 to align each of the new ASM cards in the system.
13. Remember to activate each ASM card output by pushing the respective **Transmitter x** button, followed by the **Enable** button.

Attachment C

New Configuration
Physical Verification

Attachment C
New Configuration Physical Verification

6 Channel System

Required MPs, FEPs, DECtalks, ASC, and ASMs

The **LARGE-6** system has two MPs (0MP and 5MP), three FEPs (1FEP, 2FEP, and 4BKUP), 12 DECtalk cards, one ASC card, and nine ASM cards:

0MP		main processor 1	
5MP		main processor 2	
1FEP		front end processor 1	
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 1	(slot 2)
	DECtalk 2	channel 2	(slot 3)
	DECtalk 3	channel 3	(slot 4)
	DECtalk 5	PB1	(slot 6)
2FEP		front end processor 2	
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 4	(slot 2)
	DECtalk 2	channel 5	(slot 3)
	DECtalk 3	channel 6	(slot 4)
	DECtalk 5	PB2	(slot 6)
4BKUP		backup front end processor	
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	backup channel 1 or 4	(slot 2)
	DECtalk 2	backup channel 2 or 5	(slot 3)
	DECtalk 3	backup channel 3 or 6	(slot 4)
	DECtalk 5	backup PB1 or PB2	(slot 6)
ASA		audio switch assembly	
	ASC	audio switch controller	
	ASM 1	channel 1	(slot 1)
	ASM 2	channel 2	(slot 2)
	ASM 3	channel 3	(slot 3)
	ASM 4	channel 4	(slot 4)
	ASM 5	channel 5	(slot 5)
	ASM 6	channel 6	(slot 6)
	ASM PB1	monitor/playback channel 1	(slot PB1)
	ASM PB2	monitor/playback channel 2	(slot PB2)
	ASM Spare	spare	(slot S)

DECtalk Card Configurations

There is one I/O jumper to be set on each DECtalk card:

	FEP Name	FEP EISA Slot #	I/O Address Jumper
1FEP DECtalk 1 (channel 1)	1FEP	2	240
1FEP DECtalk 2 (channel 2)	1FEP	3	250
1FEP DECtalk 3 (channel 3)	1FEP	4	328
1FEP DECtalk 5 (mon/playback chan 1)	1FEP	6	380
2FEP DECtalk 1 (channel 4)	2FEP	2	240
2FEP DECtalk 2 (channel 5)	2FEP	3	250
2FEP DECtalk 3 (channel 6)	2FEP	4	328
2FEP DECtalk 5 (mon/playback chan 2)	2FEP	6	380
4BKUP DECtalk 1	4BKUP	2	240
4BKUP DECtalk 2	4BKUP	3	250
4BKUP DECtalk 3	4BKUP	4	328
4BKUP DECtalk 5	4BKUP	6	380

ASM Card Configurations

There are five jumpers to be set on each ASM card:

	ASA Slot #	Silence Alarm Jumper “JP1”	ACP Channel Sel. Jumper “JP2” & “JP3”	BKUP Live/ Playback Cntrl Jumper “JP4”	FEP Select Jumper “JP5”
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	FEP1
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	FEP1
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	FEP1
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	FEP2
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	FEP2
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	FEP2
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	FEP1
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	FEP2

ASC Card Configuration

There is a 7-by-3 matrix switch to be set up on each ASC card:

Set the backup channel configuration using the 7 jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration. The center row of pins being common. Example: Using **Figure 1** as a reference, if your site configuration had 5,6,9, or 10 channels the jumpers would connect from the center row of pins to the top row of pins. If your site configuration had 1,2,3,4,7,8,11,12, or 13 channels the jumpers would connect from the center row of pins to the bottom row of pins.

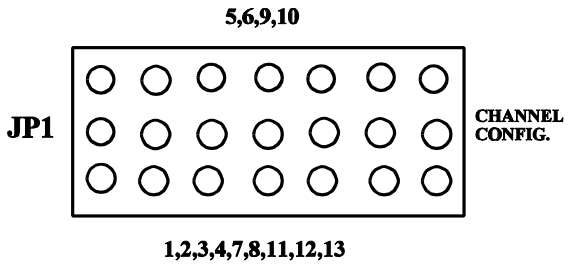

Figure 1 ASM Card Jumper Block

Cable Label Between DECtalk Card and ASM Card

From	To	Cable Label
1FEP DECtalk 1 “J2” Port	ASM 1 “IN Port”	1-1
1FEP DECtalk 2 “J2” Port	ASM 2 “IN Port”	1-2
1FEP DECtalk 3 “J2” Port	ASM 3 “IN Port”	1-3
2FEP DECtalk 1 “J2” Port	ASM 4 “IN Port”	2-1
2FEP DECtalk 2 “J2” Port	ASM 5 “IN Port”	2-2
2FEP DECtalk 3 “J2” Port	ASM 6 “IN Port”	2-3
1FEP DECtalk 5 “J2” Port	ASM PB1 “IN Port”	1-5
2FEP DECtalk 5 “J2” Port	ASM PB2 “IN Port”	2-5

Cable Label Between DECtalk Card and ASC Card

From	To	Cable Label
4BKUP DECtalk 1 “J2” Port	ASC “BKUP Audio 1” Port	4-1
4BKUP DECtalk 2 “J2” Port	ASC “BKUP Audio 2” Port	4-2
4BKUP DECtalk 3 “J2” Port	ASC “BKUP Audio 3” Port	4-3
4BKUP DECtalk 5 “J2” Port	ASC “BKUP Audio 5” Port	4-5

Attachment D

WS Form A-26 Sample

WS FORM A-26 (4/94)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

ENGINEERING MANAGEMENT REPORTING SYSTEM
MAINTENANCE RECORD

Document Number: **G 49986**

General Information

1. Open Date	Time	2. Initials	3. Response Priority (check one)	4. Close Date	Time
8 / 21 / 00	0900	JMM	○ Immediate ○ Low ○ Routine ◉ Not Applicable	8 / 21 / 00	1100

5. Description: **Expand CRS from a Large 5 to a Large 6 Configuration**

Equipment Information

6. Station ID	7. Equipment Code	8. Serial Number	9. TM	10. AT	11. How Mal.
RAH	CRSSA	001	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

13. *Parts Failure Information*

Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.
1	B440-2A2A11	5998-01-448-9178	M	M	999	1	1:00
2	B440-2A6A3	NWS9-80-990-0017	M	M	999	1	1:00
3							
4							
5							

14. *Work Load Information*

Type	Staff Hrs.
a. Routine	
b. Non-Routine	
c. Travel	
d. Misc.	2:00
e. Overtime	

Miscellaneous Information

15. Maintenance Comments: **Installed 1 DECTalk card (2A2A11) and 1 ASM card (2A6A3) to expand CRS from Large 5 to Large 6, I.A.W. Mod Note 47**

16. Initials: **JMM**

17. *SPECIAL PURPOSE REPORTING*

a. Mod. No.	b. Mod./Act./Deact.Date	c.	d.	e.
47				

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

ASN	Vendor Part No. (New Part)	Serial Number (Old Part)	Serial Number (New Part)
B440-2A2A11	EBD07-AA/DTC07-BM	N/A	N123456789
B440-2A6A3	CRS-ASM	N/A	1234