NOAA
Weather Radio

INSTRUCTIONS FOR THE SPECIFIC AREA MESSAGE DECODER (SAME) AND THE WEATHER EAGLE®

I. SAME THEORY AND OPERATION:

SAME is a digital burst broadcast by the National Weather Service (NWS) at the beginning and end of each weather alert. Each packet of data is broadcast 3 times (3 bursts) as there is no error checking or correction in the data stream itself.

SAME is susceptible to noise and bad signals. *** You MUST be receiving a strong, full quieting (noise free) signal for SAME to operate reliably.

The initial(3) data bursts contain information about the alert to be broadcast. The information contains the type of event, its duration, counties effected, organization issuing the alert and the date and time the alert is issued.

The three initial SAME bursts are followed by the 1050 Hz alert tone and then by the voice alert message.

The alert message is followed by three bursts of the digital "end of message" indication.

SAME from the NWS has been integrated into the national Emergency Alert System (EAS). The main difference is no 1050 Hz alert tone after the initial EAS SAME burst. You may hear the EAS on your commercial radio and television stations.

Radio and television stations broadcast SAME/EAS weather messages voluntarily. This means that many weather alerts are not

rebroadcast by commercial broadcasters as it interrupts programming over a wide area.

Therefore, you should listen to NOAA Weather Radio to receive all SAME weather alert messages.

Excellent detailed information on SAME and NOAA Weather Radio, including frequencies and locations of NWS transmitters and SAME codes for every county in the United States, is located on the NWS national web site at "www.nws.noaa.gov".

II. SAME INTEGRATION INTO THE WEATHER EAGLE®

We have studied the SAME alerting system extensively and have tried to make SAME as reliable as possible.

a) Morris Softronics
The SAME board is designed and manufactured by Morris Softronics, P.O. Box 48, Hooper, NE 68031-0048, t (402) 654-2482. Please direct technical questions about the SAME board operation to them.

b) Theory of Operation

The SAME board "listens" to unmuted NOAA weather radio all the time. When the SAME board detects the digital information bursts, it analyzes them to determine whether there is a "match" to event and location codes preprogrammed by the user into the SAME board.

The Weather Eagle® has a secondary computer which determines whether there has been a "match" or a "no match" of the SAME signals.

The SAME board is located in a separate plastic case. There is a red power LED to show that the SAME board has power. The unmuted audio into the SAME board comes from Weather Eagle® pin J6-8.

LED's on the front of the SAME board case show decoding of match, no match and the 1050 Hz alert tone from the NWS.

To prevent a no match from placing alerts on the air, during the 2 minutes after a no match, the Weather Eagle® computer opens a relay which disconnects the audio to the Weather Eagle® speaker.

During the 2 minute time period of a no match live and recorded weather alert audio will NOT be available as the relay is open. Normal functions, including the last recorded weather alert, will become available 2 minutes after a no match alert.

A no match may be caused either by an actual no match, or by the SAME board failing to decode a message. Failure to decode may

be for many reasons including errors in encoding and/or bad or noisy signal into the receiver.

III. Programming the SAME Board

This is to supplement the instructions which came with the SAME board.

To program the SAME board you will need an external computer (such as a laptop) running a communication program and a 9 pin serial cable.

Connect the female end of a serial cable to your computer's serial port. Connect the other (male) end of the serial cable to the SAME board DB9 pin connector.

While most communications programs will work, a commonly available free program which is usually part of Windows is Hyperterminal. It is usually located in the accessories folder.

For Windows 95 press the start button. Then access Programs. Then access Accessories. Then access Hyperterminal. Double click on the Hyperterm icon.

At the dialog box, enter a name (like "SAME Board") and choose an icon of your choice and press OK.

When the dialog box appears and asks for a phone number hit the arrow for "connect using" and choose the com port to which the cable to the SAME board is connected. (like Com 1, etc.) Then click the settings button. Then click the configure setup button. Then choose 9600 baud, 8 bits, no parity, 1 stop bit and none (for control).
Then press OK and OK again to exit.

Press a return and the SAME menu should come up on the screen.

If it does not go back and check everything including: Does the SAME board have power (check LED)?; Is the com cable connected?; Have you chosen the correct com port?; Have you selected the correct parameters?

Once you have the SAME menu on the screen you need to select the various setup options. See Morris instructions for details. The following will give you a fast start.

1) Hardware Set Up Menu

This menu adjusts many of the parameters of the "normal" Morris SAME board configuration which are NOT used in the Weather Eagle® 200 configuration. There is nothing to adjust under this menu. Leave the default parameters in place.

2) Decoder Configuration Menu

O) Origin Configuration

This menu lets you choose the agencies from which you want to receive alerts. It is suggested to leave all the agencies active.

The Menu Options:

Choice (E) edit, the choice number (1-5) enter, then Y (yes) or N (no). Choose (R) redisplay to verify your choices. Then choose (Q) quit to exit.

The agency choices include:
          CIV = civil emergency
                (like local/state emergency management)
          EAN = Emergency Action Notification (Presidential)
                (that EAS has been activated for a national
                emergency)
          EAS = Emergency Alerting System
                (Broadcasters and cable operators)
          PEP = Primary Entry Point
                (entry of warning into each network)
          WXR = Weather (National Weather Service)

Hit Q to exit the menu.

E) Event Codes

This menu lets you choose the types of events for which you want to receive alerts.

Choice (E) edit, the choice number (1-32) enter, then Y (yes) or N (no). Choose (R) redisplay to verify your choices. Then choose (Q) quit to exit.

EVENT CODE	EVENT
ADR	Administrative Message
BZW	Blizzard Warning
CEM	Civil Emergency Message
DMO	Wednesday/Other System Test
EAN	Emergency Action Notification
EAT	Emergency Action Termination
EVI	Evacuation Immediate
FFA	Flash Flood Watch
FFS	Flash Flood Statement
FFW	Flash Flood Warning
FLA	Flood Watch
FLS	Flood Statement
FLW	Flood Warning
HLS	Hurricane Statement

HUA	Hurricane Watch
HUW	Hurricane Warning
HWA	High Wind Watch
HWW	High Wind Warning
NIC	National Information Center
NPT	National Periodic Test
RMT	Required Monthly Test
RWT	Required Weekly Test
SPS	Special Weather Statement
SVA	Severe Thunderstorm Watch
SVR	Severe Thunderstorm Warning
SVS	Special Weather Statement
TOA	Tornado Watch
TOR	Tornado Warning
TSA	Tsunami Watch
TSW	Tsunami Warning
WSA	Winter Storm Watch
WSW	Winter Storm Warning

L) Location Codes

This menu lets you choose up to 16 county locations from which you want to receive alerts.

The county locations are based on the national FIPS (federal information processing system) codes. Each state has a two digit code (like 51 for Virginia) and each county has a 3 digit code (like 059) for Fairfax County, VA.

The FIPS codes for the country, broken down by state and NOAA Weather Radio transmitter are located at the NWS national web site at www.nws.noaa.gov. Click NOAA Weather Radio information and follow the menus.

Zeros are important!!!

The leading digit is for part of county (0-9). Zero (0) is for the entire county. Digits other than 0 are seldom used in the country so you should usually enter a leading 0 before the state two digit code. "051" and not "51"

Many county codes have a leading zero. This MUST be entered.

So, for Fairfax County, VA (county 059 in state 051) the code would be 051059.

The Menu Options:

Choice (A) add, (D) delete, the choice number (1-30) enter, then Y (yes) or N (no).

Generally you want to permit "wild carding" (Y) to cover the unlikely event that the NWS or some agency uses a partial county

code and you do not want to miss that warning for the county. See Morris instructions for details.

To "edit" an entry, add (A) the new entry and then delete (D) the old entry.

To "delete" an entry, choose (D) and the bin number.

To "add" (A) new entry, choose the next number bin (1-16).

Choose (R) redisplay to verify your choices. Then (S) save your choices. Then choose (Q) quit to exit.

M) Maximum Airtime

This feature is not used in the Weather Eagle® 300.

S) Morris Software Information

Choose (S) to find contact information for Morris Software.

IV. Weather Eagle® 100 and SAME Board Wiring

Note: "n/c"=no connection

SAME Board DB9:

SAME Board Female DB 9 Pin:	Function:	Connected To:	Wire Color:
1	N/C		
2	Output Audio	n/c	
3	Audio 1 Input	Unmuted Audio In from WE 100 J6-8	Yellow
4	Audio 2 Input	n/c	
5	Reserved	n/c	
6	Signal Ground	Interface Ground We100 J6-16	Blue
7	Signal Ground	Interface Ground J6-16	Blue
8	Aux Control	n/c	
9	Aux Control	n/c	

SAME Board DB9:

SAME Board DB 9 Male Pin:	Function:	Connected To:	Wire Color:
1	12+ volts supply	WE100 J6-13	Red
2	Live Pulsar Out	WE100 J6-7	Orange
3	Live Pulsar Out	We100 J6-10	Tan
4	Test Mode	We100 J6-12	White
5	N/C		
6	N/C		
7	N/C		
8	Audio from WE100	WE100 Speaker +	Greent
9	Ground	WE100 J6-1	Black
10	N/C		
11	N/C		
12	N/C		
13	N/C		
14	N/C		
15	N/C		

VI. SAME Test Procedures

Reset the 7K by pulling and reinserting the power plug (back of the 7K) to make sure any macros in progress are terminated.

Press the 1050Hz Test button on the Weather Eagle®. The 1050 Hz alert LED should come on immediately. Within about 5 seconds No Match LED on the SAME box should come on and the relay from the Weather Eagle® should open.

Test that the relay is open by pressing Live on the Weather Eagle® and pressing live. No audio should be heard for 2 minutes.

In about 2 minutes the Match and No Match LED's should reset (go off). Again, press the live button on the Weather Eagle® and audio should be heard from the speaker.

Test a Match condition by pressing the 1050Hz Test button and within 3 seconds, press the Match Test button on the SAME box. The 1050 Hz LED and the Match LED should light. Press live and audio should come from the speaker.

NOTE: There is a 5 second reboot-up delay built into the SAME Stamp to prevent falsing on power glitches. The Alert Timer Test button will not activate the 1050 Hz LED for 5 seconds after power up.

revised 8/1/01