Docket File

APP/3

FEBRUARY 28 1980

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I&E (3)
Attorney, OELD
J. Martin

Docket No. 50-305

Mr. Eugene R. Mathews, Vice President
Power Supply and Engineering
Wisconsin Public Service Corporation
Post Office Box 1200
Green Bay, Wisconsin 54305

Dear Mr. Mathews:

The enclosed information on emergency broadcast systems is provided for your information and use with regard to emergency planning at Kewaunee.

Sincerely,

Original Signed By

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosure:
As Stated

cc: w/enclosure
See next page

60

R. Licciardo

OFFICE	DOR:ORB1	DOR:ORB1				
SURNAME	RLicciardo:jb	ASchwencer				
DATE	02/28/80	02/29/80			8004140	490

NRC FORM 318 (9-76) NRCM 0240 ★ U.S. GOVERNMENT PRINTING OFFICE: 1978 - 265 - 769

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 28, 1980

Docket No. 50-305

Mr. Eugene R. Mathews, Vice President
Power Supply and Engineering
Wisconsin Public Service Corporation
Post Office Box 1200
Green Bay, Wisconsin 54305

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Sincerely,

A. Schwencer, Chief
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Division of Operating Reactors

Enclosure:
As Stated

cc: w/enclosure
See next page

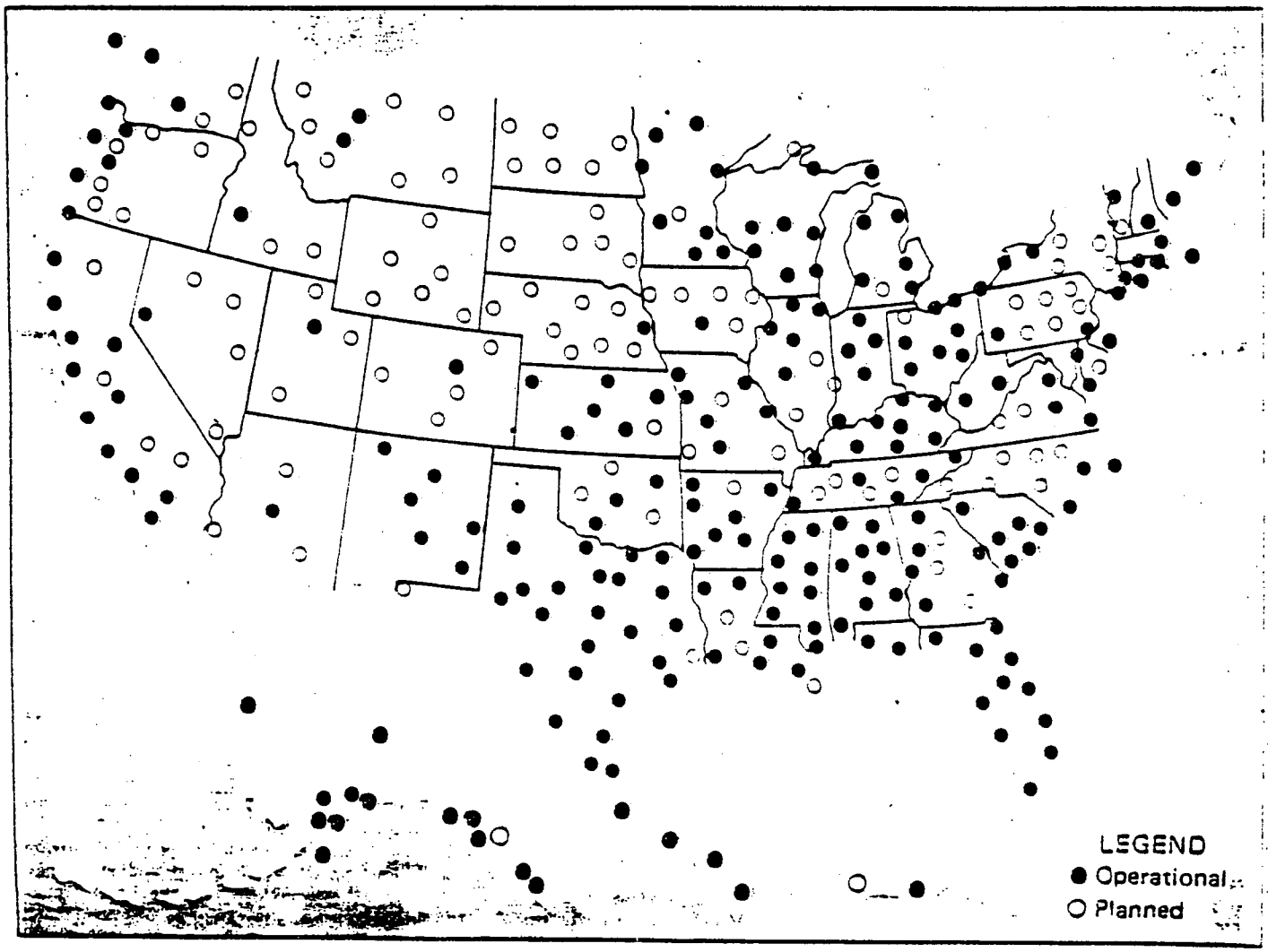
cc: Steven E. Keane, Esquire
Foley and Lardner
777 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

Kewaunee Public Library
822 Juneau Street
Kewaunee, Wisconsin 54216

Stanley LaCrosse, Chairman
Town of Carlton
Route 1
Kewaunee, Wisconsin 54216

noaa reprint
VOLUME 8 NUMBER 4 OCTOBER 1978

NOAA's Ubiquitous Radio



NOAA Weather Radio is a Service of . . .

. . . the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce. It provides continuous broadcasts of the latest weather information directly from National Weather Service offices. Taped weather messages are repeated every four to six minutes and are routinely revised every one to three hours, or more frequently if needed. Most of the stations operate 24 hours daily.

The broadcasts are tailored to weather information needs of people within the receiving area. For example, stations along the sea coasts and Great Lakes provide specialized weather information for boaters, fishers, and others engaged in marine activities, as well as general weather information.

During severe weather, National Weather Service forecasters can interrupt the routine weather broadcasts and substitute special warning messages. The forecasters can also activate specially designed warning receivers. Such receivers either sound an alarm indicating that an emergency exists, alerting the listener to turn the receiver up to an audible volume; or, when operated in a muted mode, are automatically turned on so that the warning message is heard. "Warning alarm" receivers are especially valuable for schools, hospitals, public-safety agencies, and news media offices.

Under a January 1975, White House policy statement, NOAA Weather Radio was designated the sole Government-operated radio system to provide direct warnings into private homes for both natural disasters and nuclear attack. This capability is to supplement warnings by sirens and by commercial radio and TV.

NOAA Weather Radio broadcasts are made on one of three high-band FM frequencies—162.40, 162.475, or 162.55 megahertz (MHz). The 162.475 MHz frequency is used only in special cases where required to avoid channel interference. These frequencies are not found on the average home radio now in use. However, a number of radio manufacturers offer special weather radios to operate on these frequencies, with or without the emergency warning alarm. Also, there are now many radios on the market which offer standard AM/FM frequencies plus the so-called "weather band" as an added feature.

NOAA Weather Radio broadcasts can usually be heard as far as 40 miles from the antenna site, sometimes more. The effective range depends on many factors, particularly the height of the broadcasting antenna, terrain, quality of the receiver, and type of receiving antenna. As a general rule, listeners close to or perhaps beyond the 40 mile range should have a good quality receiver system if they expect reliable reception. Also, an outside antenna may be required in these fringe areas. If practicable, a receiver should be tried at its place of intended use before making a final purchase.

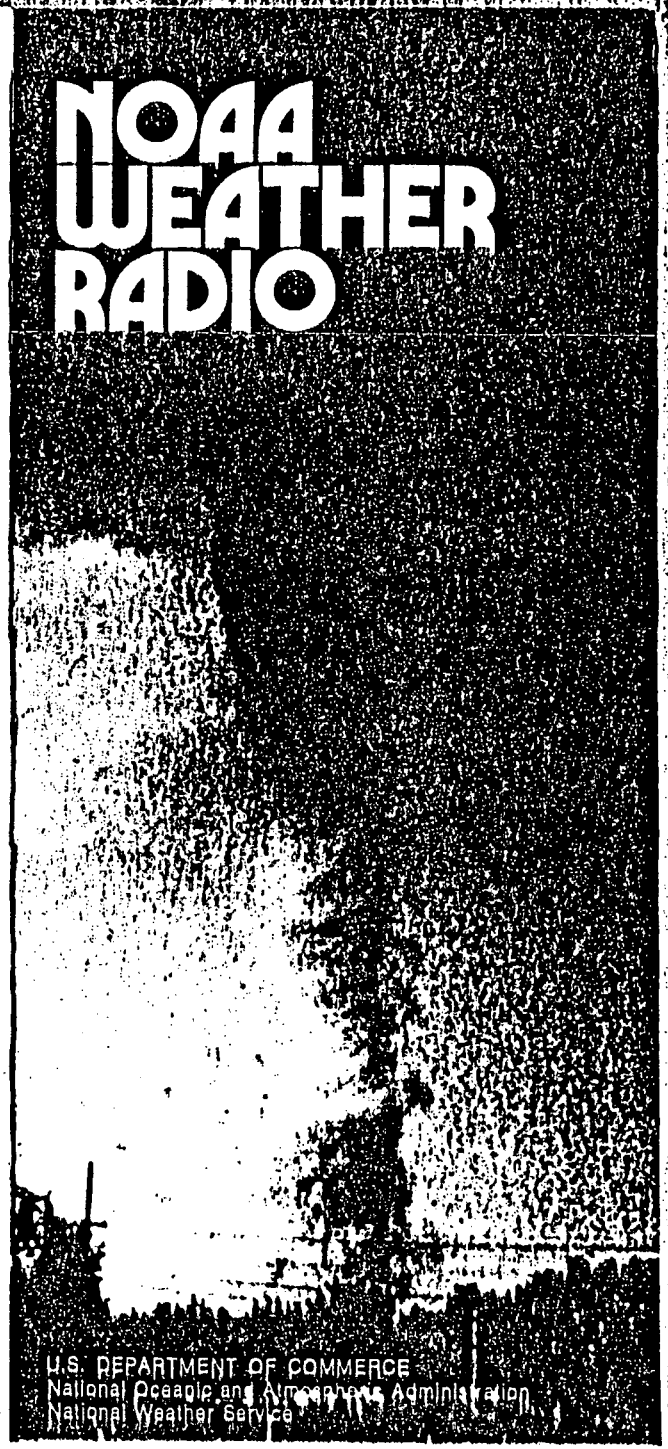
The National Weather Service plans to complete the network by the end of 1979. When these stations are installed, approximately 90 percent of the Nation's population should be within listening range of a NOAA Weather Radio broadcast.

If more information on NOAA Weather Radio is required, please write: National Weather Service (Attn: W112), National Oceanic and Atmospheric Administration, Silver Spring, Md. 20910.

NOAA/PA 76015

(Rev. Dec. 1978)

NOAA WEATHER RADIO

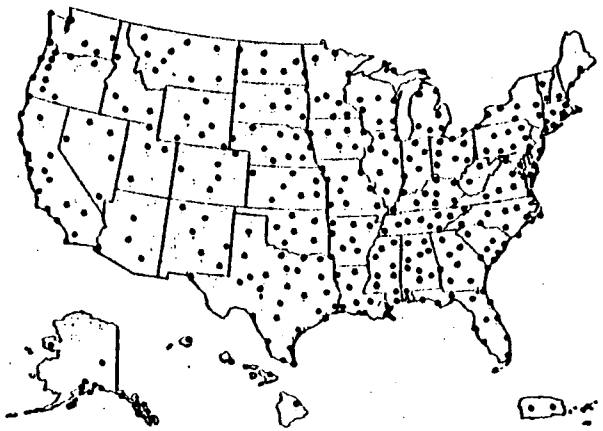


U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service

NWR NETWORK

Planned NOAA Weather Radio Network Fall 1979

Legend—Frequencies are identified as follows:
(1)—162.550 MHz;
(2)—162.400 MHz;
(3)—162.475 MHz.



Location	Frequency
Alabama	
Anniston	3
Birmingham	1
Dozier	1
Florence	3
Huntsville	2
Louisville	3
Mobile	1
Montgomery	2
Tuscaloosa	2
*Demopolis	3
Alaska	
Anchorage	1
Cordova	1
Fairbanks	1
Homer	2
Juneau	1
Ketchikan	1
Kodiak	1
Nome	1
Petersburg	1
Seward	1
Sitka	2
Valdez	1
Wrangell	2
Yakutat	1
Arizona	
*Flagstaff	2
Phoenix	1
Tucson	2
*Yuma (P)	1
Arkansas	
Ash Flat	2
Fayetteville	3
Fort Smith	2
Gurdon	3
Jonesboro	1
Little Rock	1
Star City	2
Texarkana	1
California	
*Bakersfield (P)	1
*Barstow	2
Coachella (P)	2
Crescent City/ Brookings, OR	1

Location	Frequency
California *continued*	
Eureka	2
Fresno	2
Los Angeles	1
*Merced	1
Monterey	2
Point Arena	2
*Redding (P)	1
Sacramento	2
San Diego	2
San Francisco	1
San Luis Obispo (P)	1
Santa Barbara	2
Colorado	
*Alamosa (P)	3
*Colorado Springs	2
Denver	1
*Grand Junction	3
*Sterling	2
Connecticut	
Hartford	3
Meriden	2
New London	1
Delaware	
Lewes	1
District of Columbia	
Washington, D.C.	1
Florida	
Daytona Beach	2
Fort Myers	3
Gainesville	3
Jacksonville	1
Key West	2
Melbourne	1
Miami	1
Orlando	3
Panama City	1
Pensacola	2
Tallahassee	2
Tampa	1
West Palm Beach	2
Georgia	
Pelham	1
Athens	2
Atlanta	1

Location	Frequency
Georgia *continued*	
Augusta	1
Chatsworth	2
Columbus	2
*Macon	3
Savannah	2
Waycross	3
Hawaii	
Hilo	1
Honolulu	1
Kokee	2
Mt. Haleakala	2
Waimanalo (R)	2
Idaho	
Boise	1
Lewiston (P)	1
Pocatello	1
*Twin Falls	2
Illinois	
*Champaign	1
Chicago	1
Moline	1
*Marion	3
Peoria	3
Rockford	3
Springfield	2
Indiana	
Evansville	1
Fort Wayne	1
Indianapolis	1
Lafayette	3
South Bend	2
Terre Haute	2
Iowa	
*Cedar Rapids	3
Des Moines	1
*Dubuque (P)	2
*Fort Dodge	2
*Sioux City	3
*Waterloo	1
Kansas	
*Chanute	2
Concordia	1
Dodge City	3
*Ellsworth	2
Colby	3

Location	Frequency
Kansas *continued*	
Topeka	3
Wichita	1
Kentucky	
Ashland	1
Bowling Green	2
Covington	1
Hazard	3
Lexington	2
Louisville	3
Mayfield	3
Somerset	1
Elizabethtown (R)	2
Pikeville (R)	2
Louisiana	
Alexandria	3
Baton Rouge	2
Buras	3
Lafayette	1
Lake Charles	2
Morgan City	3
New Orleans	1
Monroe	1
Shreveport	2
Maine	
Ellsworth	2
Portland	1
Maryland	
Baltimore	2
*Hagerstown	3
*Point Lookout	2
Salisbury	2
Massachusetts	
Boston	2
Hyannis	1
Michigan	
Alpena	1
*Onondaga	2
Detroit	1
Flint	2
Grand Rapids	1
*Houghton	2
Marquette	1
Sault Sainte Marie	1
Traverse City	2

Location	Frequency
Minnesota	
Duluth	1
International Falls	1
Mankato	2
Minneapolis	1
Rochester	3
Thief River Falls	1
Willmar (P)	2
Saint Cloud (P)	3
Mississippi	
Ackerman	3
Booneville	1
Bude	1
Gulfport	2
Invernesa	1
Jackson	2
McHenry	3
Meridian	1
Oxford	2
Columbia (R)	2
Missouri	
Camdenton	1
*Columbia	2
Hannibal	3
*Joplin/Carthage	1
Kansas City	1
St. Joseph	2
St. Louis	1
Springfield	2
*Sikeston	2
Montana	
Billings	1
*Butte	1
Glasgow	1
Great Falls	1
*Havre (P)	2
Helena	2
*Kalispell	1
*Miles City	2
*Missoula	2
Nebraska	
*Grand Island	2
*Lincoln	3
*Norfolk	1
*North Platte	1
Omaha	2
*Scotts Bluff	1
*Merriman	2
*Bassett	3
*Holdrege	3
Nevada	
*Elko	1
*Ely	2
*Las Vegas	1
Reno	1
Winnemucca	2
New Hampshire	
Concord	3
New Jersey	
Atlantic City	2
New Mexico	
Albuquerque	2
Clovis	3
Farmington	3
Hobbs	2
Ruidoso	1
Santa Fe	1

Location	Frequency
New York	
Albany	1
Binghamton	3
Buffalo	1
New York City	1
Kingston	3
Rochester	2
Syracuse	1
North Carolina	
*Asheville	2
Cape Hatteras	1
*Charlotte	3
*Fayetteville	3
New Bern	2
*Raleigh/Durham	1
*Rocky Mount	3
Wilmington	1
*Winston-Salem	2
North Dakota	
*Bismarck	2
*Dickinson	1
Fargo	2
*Jamestown	1
*Minot	1
*Petersburg	2
*Williston	2
Ohio	
Akron	2
Caldwell	3
Cleveland	1
Columbus	1
Dayton	3
Lima	2
Sandusky	2
Toledo	1
Oklahoma	
Clinton	3
*Enid	3
Lawton	1
*McAlester	3
Oklahoma City	2
Tulsa	1
Oregon	
Astoria	2
Coos Bay	2
Eugene	2
*Klamath Falls	1
*Medford	2
Newport	1
*Pendleton	1
Portland	1
*Roseburg	3
*Salem	3
*The Dalles	2
Pennsylvania	
Allentown	2
*Johnstown	2
Erie	2
Harrisburg	1
Philadelphia	3
Pittsburg	1
Clearfield	1
Wilkes-Barre	1
Williamsport (P)	2
Puerto Rico	
San Juan	2
*Maricao	1

Addendum July 16, 1979

Since the revision of this pamphlet in December 1978, the following stations listed on the pamphlet have been installed and are now on the air:

Demopolis, AL
Twin Falls, ID
Dubuque, IA
Ellsworth, KN
Onondaga, MI
Joplin/Carthage, MO
Sikeston, MO
Havre, MT
Missoula, MT
Grand Island, NE
Lincoln, NE
North Platte, NE
Scottsbluff, NE
Merriman, NE
Holdrege, NE
Ely, NV
Las Vegas, NV
Ashville, NC
Charlotte, NC
Fayetteville, NC
Raleigh/Durham, NC
Rocky Mount, NC
Winston-Salem, NC
Bismarck, ND
Enid, OK
Pendleton, OR
Jackson, TN
Shelbyville, TN
Medford, OR
Spokane, WA

The following stations not listed on the pamphlet have also been installed and are on the air:

Las Cruces, NM	162.40 MHz
Des Moines, NM	162.55 MHz
Worcester, MA	162.55 MHz

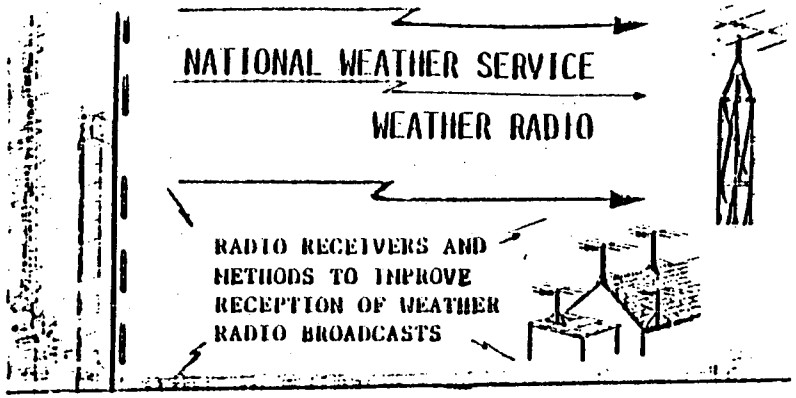
Location	Frequency
Rhode Island	
Providence	2
South Carolina	
Beaufort	3
Charleston	1
Columbia	2
Florence	1
Greenville	1
Myrtle Beach	2
Sumter (R)	3
South Dakota	
*Aberdeen	3
*Huron	1
*Pierre	2
*Rapid City	1
*Sioux Falls	2
Tennessee	
Bristol	1
Chattanooga	1
Cookville	2
*Jackson	1
Knoxville	3
Memphis	3
Nashville	1
*Shelbyville	3
Waverly	2
Texas	
Abilene	2
Amarillo	1
Austin	2
Beaumont (P)	3
Big Spring	3
Brownsville	1
Bryan	1
Corpus Christi	1
Dallas	2
Del Rio	2
*El Paso	1
Fort Worth	1
Galveston	1
Houston	2
Laredo	3
Lufkin	1
Lubbock	2
Midland	2
Paris	1

Location	Frequency
Texas *continued*	
Pharr	2
San Angelo	1
San Antonio	1
Sherman	3
Tyler	3
Victoria	2
Waco	3
Wichita Falls	3
Utah	
*Cedar City	2
*Logan	2
*Roosevelt	2
Salt Lake City	1
Vermont	
*Brattleboro	3
Burlington	2
Virginia	
*Lynchburg	2
Norfolk	1
Richmond	3
Roanoke	3
Washington	
Neah Bay	1
*Richland	2
Seattle	1
*Spokane	1
Yakima	1
West Virginia	
Charleston	2
Clarksburg	1
Wisconsin	
Menomonie	2
Green Bay	1
La Crosse	1
Madison	1
Milwaukee	2
Wausau	3
Wyoming	
*Casper	1
*Cheyenne	3
*Lander	3
*Rawlins	2
*Rock Springs	1
*Sheridan (P)	3

Notes:

1. Stations marked with an asterisk (*) are not operational but should be in operation prior to or during Fall 1979.
2. Stations marked (R) are low powered experimental repeater stations serving a very limited local area.
3. Stations marked (P) operate less than 24 hours/day.
4. Occasionally the frequency of an existing or planned station must be changed because of unexpected radio frequency interference with adjacent NOAA Weather Radio stations and/or with other government or commercial operators within the area.
5. The list of operating stations is updated periodically. For a current list please write:

NOAA
National Weather Service
8060 13th Street
Silver Spring, MD. 20910
Attn: W112



The continuous weather radio broadcasts of the National Weather Servic range between the frequencies of 162.400 megahertz (MHZ) and 162.550 MHZ. These frequencies are in a band referred to as Very High Frequer cy (VHF) that extends from about 50 MHZ to around 175 MHZ. The frequencies used by commercial FM radio stations occupy the lower portion of this band. Also the middle channels of VHF television broadcast in this band. Because of the physical characteristics and behavior of V broadcast signals, it is not uncommon to find owners of weather radio like owners of commercial FM or TV receivers, experiencing difficulty receiving a suitable broadcast even though they are within or near the normal range of the transmitter.

The typical service area or range of weather radio stations can best be approximated by a circle having a radius of 40 miles from the transmitting antenna. Technically, the National Weather Service (NWS) attempts to provide an unobstructed signal level of 8 microvolts to receiving antennas 6 feet above ground at 95% of all points within a radius of 40 miles from the transmitter. This is not always possible because of local terrain features such as valleys, mountains, large buildings, etc. Another factor which could reduce the signal level is where the transmitting antenna is mounted on the side of a tower (i.e the top is already occupied by another antenna). The signal is then reflected off the face of the tower creating a radio shadow, much the same as a light shadow, on the opposite side of the tower. Depending on the width of the tower face, antenna height, and transmitter power, the tower shadow can be quite significant. The NWS office operating the weather radio station can tell prospective weather radio users if and where such a shadow exists.

Weather radio receivers, both crystal-controlled and tuneable, capable of picking up the weather radio broadcasts, are available in a variety of styles and prices. The price is usually proportional to the sensitivity and quality of the receiver. Below are listed the technical specifications to look for when purchasing a radio. The specifications can be compared to those found in the radio operators book that accompanies each radio. The individual radio specifications can usually be found near the front or back of the booklet. This comparison will help the purchaser make a wise and informed choice of radio. For further clarification or assistance, a purchaser may wish to consult with a local electronic supplier or technician. The NWS recommends the public purchase receivers with a 0.5 to 1.0 microvolt sensitivity for 20 decibel (db) quieting, a selectivity of 45 to 70 db down at ± 25 kilohertz (KHZ), tuneable or switchable to all frequencies, a warning alarm feature, dual power source of AC/battery with automatic switchover to battery during commercial AC power outages, and a collapsable or fixed indoor telescoping antenna with a provision for an external antenna coax connection.

If the owner has a weather radio meeting the general specifications outlined above in proper working order or a lesser quality radio and still cannot receive an acceptable broadcast, the cause can usually be found to be:

A) too weak a signal due to distance from the transmitting antenna or loss of signal penetrating into a building,
B) a geographical or man-made obstruction
C) interference from another station on the same frequency (co-channel interference)

It must be remembered the signal gets weaker the further one gets from the transmitter. The strength of these signals on the average becomes quite weak at distances greater than 35 to 45 miles. Also, when the receiving antenna is inside a building (not in an open area) some of the signal will be absorbed and/or reflected by the materials which make up the building resulting in further loss. Buildings constructed of steel and masonary products usually attenuate or weaken the signal more than wood or frame construction. Locations below ground are the worst locations for receiving such a broadcast.

The methods described later are frequently not effective at distances greater than 50-60 miles. Distances on this order and greater are beyond the distance for which broadcast programming is intended or provided.

Geographical obstructions that cause reception problems are usually mountains, a large ridge or hills located between the transmitting and receiving antennas. Man-made obstructions may be classified as large buildings or other structures between the transmitting and receiving antennas resulting in weak or complete loss of signal. Tower shadows would fall into this classification. VHF radio transmissions do not bend to any significant degree and generally follow a line of sight path from the transmitting antenna to the receiving antenna.

Co-channel interference is caused when the receiver lies in or near the fringe area of two different stations transmitting on the same frequency. If two broadcasts are of nearly equal signal strength at the receiving antenna, both stations will be detected by the receiver either causing one to be heard for a few seconds or minutes followed by the other or both mixing and just being garbled.

For the situations just described, moving the radio to another location can frequently improve reception. For example, in fringe areas, placing the radio close to a window on the side of the building from which the broadcast comes will often substantially improve reception. Sometimes placing it near any window will work. In practically all situations described above, the use of a properly matched outside antenna will improve reception of the broadcast.

The illustrations which accompany this pamphlet describe several types of antennas and devices which could be used to enhance a weather radio broadcast. Some general provisions to keep in mind are, (a) the range and clarity of reception is dependent upon the antenna height (the higher the better) and its orientation (toward the desired station), (b) the use of a sensitive and quality receiver with an antenna assures more reliable and clearer reception, (c) weather radio transmits a vertically polarized signal, therefore a vertically polarized receiving antenna (elements up and down perpendicular to the ground) that will receive signals in the 130-175 MHZ range will give best reception, (d) at distances up to 30 to 40 miles, a 1/4 wave length antenna element (18") is suggested; for distances greater than 40 miles a 1/2 wave length antenna (36") should be used.

The simplest antenna to construct is called a 1/2 wave length folded dipole antenna and is shown as number (1) in the illustrations section. The antenna is constructed from a piece of flat type parallel TV antenna lead-in. About 1" of insulation is stripped from the two wires at both ends of a 36" piece of lead-in wire. The ends are twisted together and soldered. Midway between the ends, one wire is cut and the insulation stripped back a sufficient length (1") to attach the leads from a balun. A balun is a device that matches the type of antenna or lead-in to the input of the receiver. Once the connections are made the exposed wires should be taped. A home made balun is shown in (2) and an inexpensive commercial model is shown in (3). The finished antenna should be mounted so the two twisted ends are straight up and down as shown in (1). It could be attached to an inside window sill on a window on the side of the building from which the signal is transmitted or better, it should be placed on the outside possibly next to the window or some other convenient location to easily reach the radio in its most desired location. The lead from the antenna, if it is the parallel flat TV type, should be twisted once for each foot of lead and extended at a right angle from the antenna for approximately 18 inches prior to any vertical run. Another simple antenna to use in improving the reception of the broadcast is to connect the radio to an existing outside TV antenna. This procedure is illustrated in (4). This method is usually very effective when the TV antenna is constantly pointed in the direction of the desired weather radio station. Also, this type antenna will help when another station on the same frequency is interferring with the desired station (co-channel interference). The weather radio frequencies are between TV channels 6 and 7. Therefore, any TV antenna designed for all VHF TV channel reception will work very well. Even though the TV antenna is horizontally polarized (elements parallel with the ground), there is usually enough vertical signal due to scattering and reflection of the signal that it will significantly enhance the received signal. A device called a band separator or splitter (5) is attached to the end of the TV lead with one output connected to the TV and the other to a balun (2/3) then to the weather radio.

For serious problems in receiving weather radio broadcasts, more sophisticated receiving antenna systems will likely be necessary. When a home made 1/2 wave length antenna may not be suitable and an outside TV antenna is not available, a commercially constructed ground plane antenna (6) with an 18" or 36" vertical shaft is recommended where directionality is unimportant. This type of radio receives equally well from all directions.

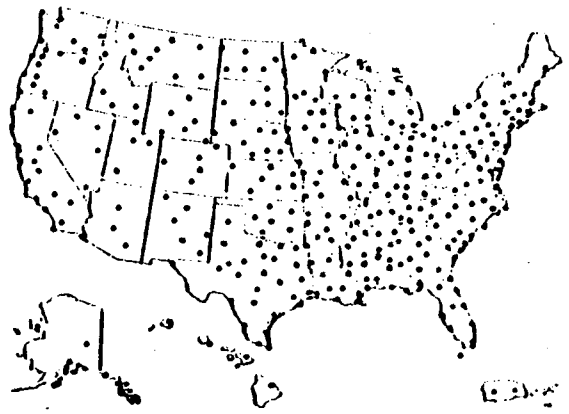
When directionality is important due to a very weak signal strength, co-channel interference, or the desired weather radio station is in a different direction from the most often watched TV station, a specially built antenna (7) or a separate all VHF channel TV antenna can be attached to an existing TV mast (8) and permanently pointed in the direction of the desired weather radio station. To further improve the signal, the antenna should be mounted so the elements of the antenna used for the weather radio are aligned vertically to the ground. The lead-in can be combined with the existing TV lead-in and split (5) once inside the building. It would be better, however, for TV weather/radio reception if the lead-ins are brought separately from the antenna to the radio or TV.

For severe cases of co-channel interference or extremely weak signal areas, a corner reflector (9) will generally be the only one to provide suitable reception. The antennas described here are of the type which can usually be installed by most people with a minimum amount of effort, tools, and experience. As a general rule, it is better to use 50-70 ohm coaxial cable for lead-ins from the antenna to the radios. This type of cable is far less likely to pickup interference and will offer less resistance to the signal picked up at the antenna. For further information regarding antennas available in the local area and specific instructions for connecting such antennas, a radio dealer or electronic shop should be consulted. They can assist the purchaser to select the best antenna system to match the specific radio and to solve reception problems.

The costs of the various methods and devices are listed below and are only estimates of maximum prices, excluding the cost of labor should professional installation be required. (1) $7-10, (2) $3, (3) $5, (4) $30, (5) $3, (6) $30, (7) $50, (8) $30, (9) $175.

As a word of caution, extreme care should be exercised when working with outside antenna systems. Antennas are usually most stable when mounted along the side of a building then extended above the roof line. Sloping roof surfaces, ladders, and roof edges are very dangerous making serious falls possible. Also, support masts or antennas can easily come in contact with above ground electrical lines causing potentially fatal shock. If there is any doubt about one's ability to make an outside antenna installation, professional or experienced help should be obtained.

PLANNED WEATHER RADIO NETWORK FALL 1979



See Consumers Reports Aug 1978

RADIO RECEIVER MANUFACTURERS LIST

1. Federal Sign and Signal Corp.
   136th and Western
   Blue Island, Illinois 60406
   Telephone - 312-468-4500

2. Scientific Radio Systems
   367 Orchard Street
   Rochester, New York 14606
   Telephone - 716-458-3733

3. Motorola Communications Inc.
   2000 L Street, N. W.
   Suite 810
   Washington, D. C. 20036
   Telephone 202-659-3300

4. Regency Electronics Inc.
   7900 Pendleton Pike
   Indianapolis, Indiana 46226
   Telephone 317-547-3581

5. General Electric Company
   P. O. Box 4164
   Lynchburg, Virginia 24502
   Telephone 804-846-7311

6. Weatheralert
   639 South Dearborn
   Chicago, Illinois 60605
   Telephone 312-939-2398

7. Lafayette Radio Electronics Corporation
   111 Jericho Turnpike
   Synosset, New York 11791

8. Windsor Electronics Industries
   10 HUB Drive
   Melville, New York 11746
   Telephone 516-694-1400

9. Electra (Bearcat)
   300 South on East County Line Road
   Cumberland, Indiana 46229
   Telephone 317-894-[illegible]

10. Radio Shack
2617 West 7th Street
Fort Worth, Texas 76107
Telephone 817-335-3711

11. RCA Mobile Communications Division
1901 North Moore Street
Arlington, Virginia 22209
Telephone 703-558-4606

12. Midland International Communications Division
110 West 12th
North Kansas City, Missouri 64114
Telephone 816-474-5080 Mr. Thomas Zillner

13. Benmar Division
3000 W. Warner
Santa Ana, California 92704
Telephone 714-540-5120

14. Plectron Corporation
Overton, Nebraska 68863
Telephone 308-987-2416

15. Heath Company
Benton Harbor, Michigan 49022
Telephone 616-983-3961

16. Pearce-Simpson Division
4701 N. W. 77th Avenue
Miami, Florida 33166
Telephone 305-592-5550

17. Watkins-Johnson Company
CEI Division
700 Quince Orchard Road
Gaithersburg, Maryland 20760
Telephone 301-948-7550

18. Wells-Gardner Electronics Corporation
2701 N. Kildare Avenue
Chicago, Illinois 60639
Telephone 312-252-8220

19. Collins Radio Group
1200 N. Alma Road
Richardson, Texas 75080
Telephone 214-690-5160

20. The Singer Company
30 Rockefeller Plaza
New York, New York 10020

21. Hy-Gain Electronics Corporation
8601 N. E. Highway 6
Lincoln, Nebraska 68505
402-464-9151

22. Hitachi Sales Corporation
48-50 34th Street
Long Island, New York 11101
212-361-3090

23. Sanyo Electric Corporation
1200 W. Artesia Boulevard
Compton, California 90220
213-537-5830

24. Panorama Radio and Electric Corporation
2 Park Avenue
New York, New York 10016
212-686-3332

25. Sterling High Fidelity Inc.
2220 40th Avenue
Long Island City, New York 11101
212-361-8989

26. Sonar Radio Corporation
73 Wartman Avenue
Brooklyn, New York 11207
212-649-8000

27. Viking Instruments, Inc.
73 Jerry Road
Chester, Connecticut 06412
203-963-2575

28. Cobra Electronics, Inc.
1313 N. Brazos
San Antonio, Texas 78207
512-733-1591

29. Sony Corporation of America
47-47 Vand-Dam Street
Long Island, New York 11101
212-361-8600

30. Japan Electronics Manufacturers Agency, Inc.
7550 N. Kolmar, Dept. T
Skokie, Illinois 60076
312-679-2240

31. Sunair Electronics, Inc.
3101 S.W. Third Avenue
Fort Lauderdale, Florida 33315
305-525-1505

32. Kendale Technology Corporation
7855 North West 77 Avenue
Medley, Florida 33166
305-443-4233

33. Corman-Redlich Manufacturing Co.
6 Curtis Street
Athens, Ohio
614-593-3150

34. Zenith Radio Corporation
1000 Milwaukee Avenue
Glenview, IL. 60025
312-391-8194

35. Springfield Instrument Company
260 Railroad Avenue
Hacksonsack, New Jersey 07602
201-342-2700

For further information concerning the EBS, write to:

EMERGENCY COMMUNICATIONS DIV.
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C. 20554

For National Weather Service films and publications on disaster preparedness, write for the "Disaster Preparedness Catalog" NOAA-PA-76021. Request by name and order number from:

SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C. 20402

The following publications:

"Disaster Planning Guide for Business and Industry" CPG 2-5

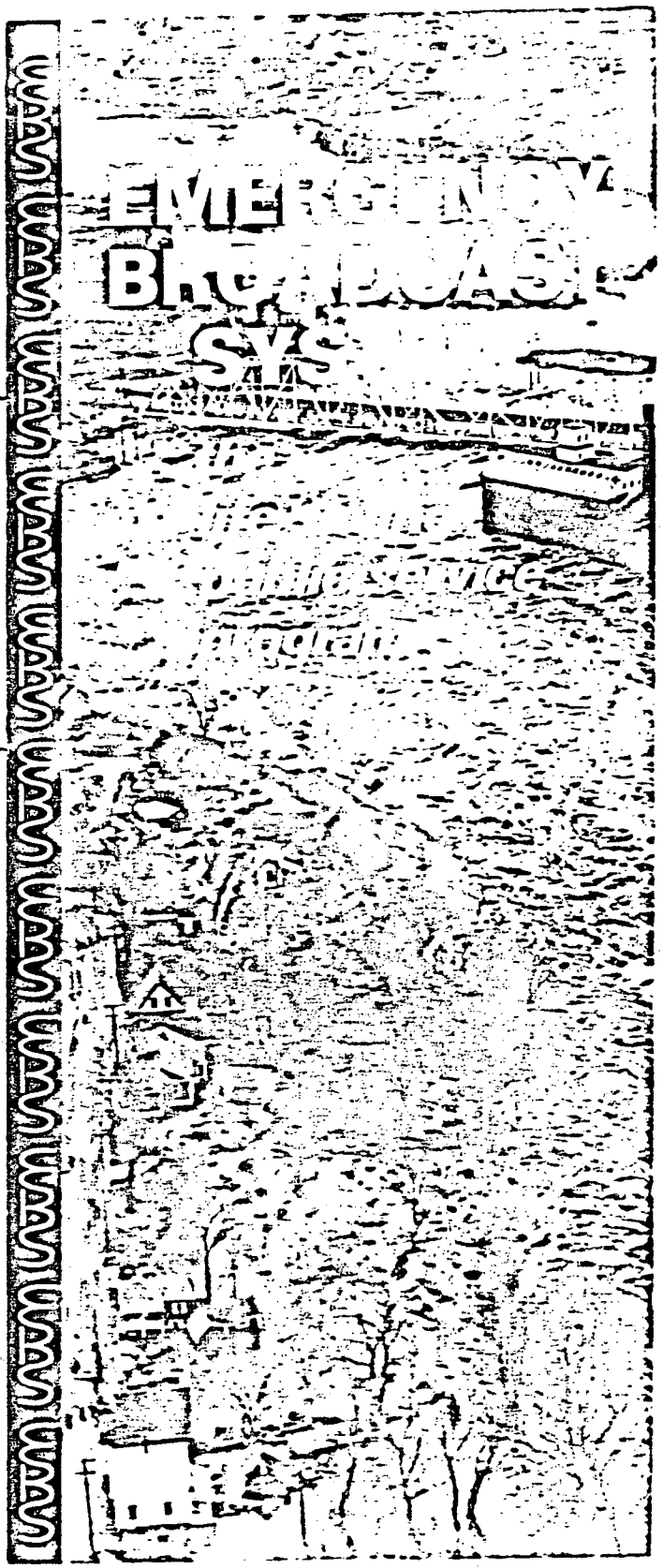
"Electromagnetic Pulse Protection for AM Radio Stations" TR 61-C

"Disaster Operations - A Handbook for Local Government" CPG 1-6

"Protection in the Nuclear Age" H-20

may be obtained by writing to:

DEFENSE CIVIL PREPAREDNESS AGENCY
LIAISON SERVICES DIV. (EBS)
THE PENTAGON, RM. 1D543
WASHINGTON, D. C. 20301



[illegible]

The Emergency Broadcast System (EBS) was established in 1964 to provide the President of the United States with an expeditious method of communicating with the American public in the event of war, threat of war, or grave national crisis. It replaced the CONELRAD (Control of Electromagnetic Radiation) system with which many Americans are familiar.

In the last several years, the original concept of the EBS has been expanded so that it can also be used during day-to-day emergencies at the State and local levels to provide the means for prompt, reliable receipt and release of life- and property-saving warning as well as emergency information. Examples of day-to-day emergencies are: tornadoes, hurricanes, tsunamis, flash floods, blizzards, earthquakes, widespread power failures, fires, industrial, transportation and nuclear accidents involving hazardous materials and toxic gases, and civil disorders.

[illegible] the National Level

Activation of the National-level EBS is initiated by the President. He does this by directing the White House Communications Duty Officer to contact one of two government origination points with the notice to activate the EBS. One of these two origination points, either the Aerospace Defense Command (ADCOM) or the Federal Preparedness Agency (FPA), will release the Emergency Action Notification to control points of the radio and TV networks, participating communications common carriers, and AP and UPI via a dedicated teletypewriter network. Authentication is provided at the control points by preselected code words.

Upon receipt of the activation message and its authentication, participating communications common carriers reconfigure the radio and TV networks to provide a common program source to all affiliates. In addition, independent stations with facilities in place are interconnected with the reconfigured network. AP, UPI, and radio and television networks send the Emergency Action message to all subscribers and affiliates. Broadcast stations will use the two-tone Attention Signal on their assigned broadcast frequency to alert other broadcast stations and the public to stand by for a message from the President.

[illegible]

Government and industry-sponsored surveys following several recent natural disasters reveal that most radio and television broadcast stations have invariably functioned admirably on an individual basis in disseminating emergency information to the public. Still, much remains to be done in an effort to enlist the voluntary participation of all broadcast stations to coordinate their individual efforts and develop an organized system for warning and informing the public. To accomplish this, the National Industry Advisory Committee (NIAC), the Federal Communications Commission (FCC), the NOAA, National Weather Service (NWS), and the Defense Civil Preparedness Agency (DCPA) have combined their resources to assist broadcasters and local officials to develop State and local EBS plans throughout the country.

State and local EBS operations

To activate the EBS at the State level, a request may be directed to an Originating Primary Relay Station (usually an FM station located near the State capital) by the Governor, his designated representative, the National Weather Service, the State Civil Defense or Emergency Services Office, or other designated State authority.

At the local level, a request for activation may be directed to the Common Program Control Station (CPCS-1), by the National Weather Service, local Civil Defense, local government, or public safety officials.

In either case, communications facilities developed for use in contacting and providing emergency program material may include any of the following: telephone, remote pickup units, NOAA Weather Wire Service or NOAA Weather Radio, police and fire communications, amateur and citizens band radio. Station management at the Originating Primary Relay

Station and/or the Common Program Control Station authenticates the validity of all requests to activate the system. Other broadcast stations may activate the EBS on an individual basis as needed. This is important since station management is responsible for all program material broadcast to the public.

The Originating Primary Relay Station at the State level, or the Common Program Control Station at the local level, will take the following steps to activate the EBS:

1. Take action to broadcast emergency programming which may include recording the emergency message for use later.
2. Broadcast an initial statement.
3. Transmit the two-tone Attention Signal.
4. Broadcast the emergency announcement.

All other participating stations, alerted via their off-the-air monitoring of the two-tone signal, repeat the above procedures.

Development and use of a Local EBS Operational Area Plan by local broadcasters in cooperation with Federal, State and local officials will provide:

1. Simultaneous broadcast of warnings by all broadcast stations in a community.

2. Authentication of emergency information broadcast to the public.

3. Names of station personnel to call after broadcast station signs off.

4. Procedures so that persons participating will know what to do and who to call in an emergency.

5. Tests to familiarize officials, broadcasters and the public with the local EBS system.

6. Integration of other warning devices such as police or fire sirens to alert people to an emergency situation.

7. Interconnection of all types of communication systems such as police and fire radio, amateur radio and citizens band radio into a coordinated system.

Furthermore, by contacting only one broadcast station, Federal, State and local authorities can provide common emergency programming to all broadcast stations in an area.

To develop or improve an EBS plan in your community, contact the local National Weather Service office, your local Civil Defense Director, or the Chairman of the Operational (local) Area Emergency Communications Committee (OAECC) which has been established in your area by the FCC. The OAECCs are subcommittees of State Emergency Communications Committees (SECC). A State Emergency Communications Committee has been organized in each of the 50 States, Guam, Puerto Rico, Virgin Islands, and the District of Columbia by the FCC. A membership list of the OAECC and SECC for any particular area or State may be obtained by writing to the Executive Secretary, National Industry Advisory Committee, Federal Communications Commission, Washington, D. C. 20554.

Broadcast station personnel can assist their SECC with its principal functions and responsibilities which are:

1. Maintaining liaison with Federal, State and local officials and the communications industry.

2. Monitoring the effectiveness and coordinating State EBS tests and suggesting improvements where deemed necessary.

3. Coordinating with the FCC and State officials to establish authentication procedures for use in the State EBS operational plan.

4. Evaluating proposals for the technical development of operational emergency communications systems, plans, and procedures within the State to include recommendations for changing the designation of EBS stations or changing the boundaries of an operational area.

INTRODUCTION:

This plan was prepared by the Central Arkansas Operational Area Emergency Communications Committee. It provides specific procedures for the broadcast media to disseminate emergency information and warning to the general public in the Central Operational Area or any portion thereof within the stations broadcast coverage capability at the request of designated local, State, and Federal officials. This local EBS plan may be activated on a day-to-day basis in response to such emergencies as: Severe Weather Warnings, Power Failures, Civil Disorders, Industrial Explosions, etc., and any occurrence which poses a danger to life or property.

Acceptance of/or participation in this plan shall not be deemed as a relinquishment of program control, and shall not be deemed to prohibit a broadcast licensee from exercising independent discretion and responsibility in any given situation. Stations originating EBS emergency communications shall be deemed to have conferred rebroadcast authority. The concept of the management of each broadcast station to exercise discretion regarding the broadcast of EBS emergency information and instructions to the general public is provided by FCC Rules and Regulations.

AUTHORITY:

Part 73, Subpart G, Federal Communications Commission Rules and Regulations.

KEY EBS STATIONS:

The key EBS station known as the Common Program Control Station (CPCS-1), is radio station KAAY(AM) located in Little Rock. Station contact is Gary R. Fries or Bill Rawson. Phone number is 661-1090 or 661-0550. Normal station on-the-air hours are 24 hours. Communications at KAAY(AM) include KLPQ(FM).

The alternate key EBS station (CPCS-2) is radio station KARN(AM) located at Little Rock. Station contact is Don Corbet . Phone number is 661-7555/661-7514. Normal on-the-air hours are 24 hours. Communications at KARN(AM) include KKYK(FM).

A. Procedures for Designated Officials

1. In response to an emergency situation, designated officials listed in Annex A may request activation of the EBS through KAAY(AM) via phone or any communications facilities available.

NOTE 1. If KAAY(AM) cannot be contacted, the alternate key EBS station, KARN(AM) should be contacted in a similar fashion.

NOTE 2. If an emergency develops during non-normal hours, designated officals should contact the following station personnel at home.

CPCS (1) - KAAY(AM) 1090 kHz
a. Gary R. Fries - phone 227-6211
b. Bill Rawson - phone 227-6233
c. Dave Montgomery - phone 666-6836

CPCS (2) KARN(AM) 920 kHZ
a. Tim Eatman - phone 666-5567
b. Don Corbett - phone 753-9049
c. Jim Cope - phone 376-4291

2. Designated officials may use the following format when delivering the emergency information to the key station:

"THIS IS _____ OF _____.
Name/Title Organization
I REQUEST THAT THE EMERGENCY BROADCAST SYSTEM BE ACTIVATED FOR THE CENTRAL OPERATIONAL AREA BECAUSE OF _____. THE
Description of Emergency Situation
AUTHENTICATOR WORD IS "ABA".

3. Designated officials and broadcast station personnel work out broadcast details (i.e., live or recorded, immediate or delayed). Officials provide station with emergency program material:

a. Situation summary (describe the nature of the emergency).
b. Actions being taken by local governments.
c. Instructions to the public.

4. For an emergency situation not involving the entire operational area, designated officials may request EBS activation through a broadcast station serving only the affected area.

B. Procedures for Broadcast Industry

1. Upon receipt of a request to activate the local EBS from appropriate authority (verify authenticity via Authenticator Word "ABA"), the Common Program Control Station (CPCS-1), KAAY(AM), (or alternate KARN(AM) may commence operational activity to protect the life and property of the citizens within the Central Operational Area.

2. Broadcast station personnel will proceed as follows:

a. Broadcast the following announcement:

"WE INTERRUPT THIS PROGRAM BECAUSE OF A LOCAL EMERGENCY. IMPORTANT INSTRUCTIONS WILL FOLLOW."

b. Transmit the Emergency Broadcast System Two-Tone Attention Signal.

c. Broadcast the following announcement and broadcast the emergency material.

"WE INTERRUPT THIS PROGRAM TO ACTIVATE THE EMERGENCY BROADCAST SYSTEM FOR THE CENTRAL OPERATIONAL AREA BECAUSE OF A LOCAL EMERGENCY. IMPORTANT INSTRUCTIONS WILL FOLLOW."

** Follow with emergency program **

3. All other broadcast stations are monitoring the key EBS station via EBS monitor receiver/decoders and will be alerted by the two-tone attention signal. Each broadcast station upon receipt of the two-tone alert will, at the discretion of station management, perform the same procedures as outlined in Step 2 above by rebroadcasting the emergency programming received from KAAY(AM) or alternate KARN(AM).

4. Upon completion of the above transmission procedures, resume normal programming. Appropriate notations should be made on the station log of all significant events as they transpire.

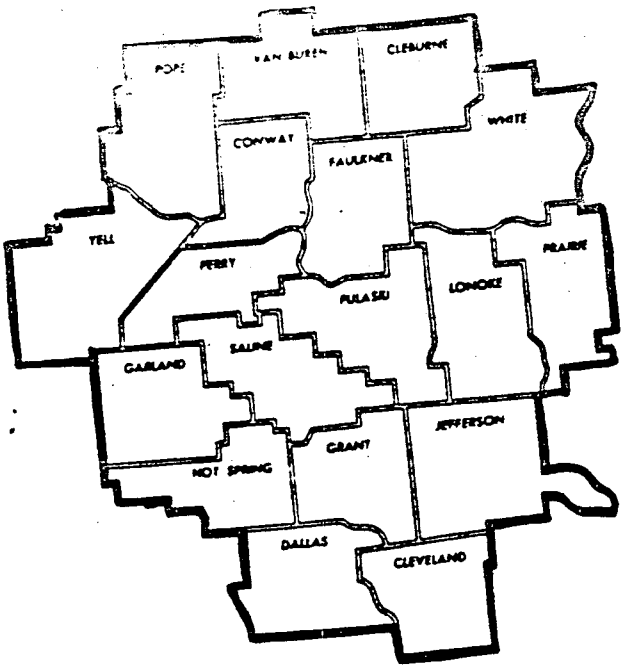
TESTS:

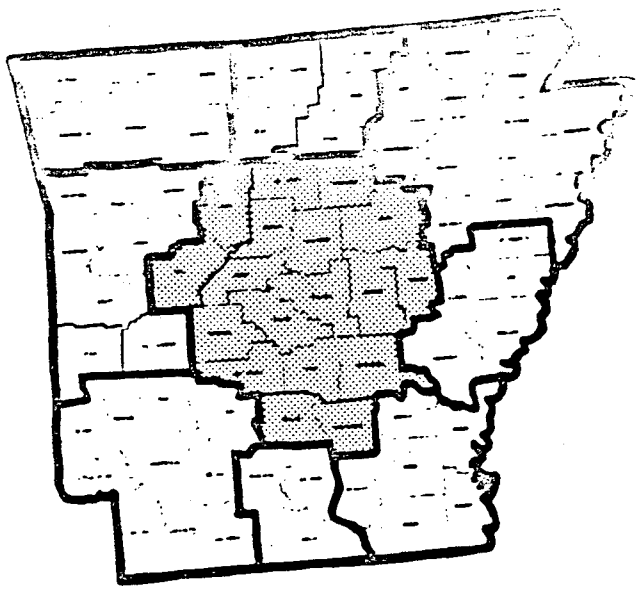
Tests of these emergency Broadcast Procedures, interconnecting systems and facilities shall be tested on a random or scheduled basis from a point which would originate the common emergency program. The date and time of each test shall be recorded in the station operating log. These tests shall be of a frequency not less than two (2) per week and no more than 50% shall be during weekday, daylight hours.

BROADCAST STATIONS IN THE CENTRAL ARKANSAS EBS OPERATIONAL AREA

BENTON	KBBA	778-2690
	KGKO	778-8257
CLINTON	KGFL	745-4474
CONWAY	KCON	327-7701
	KHDX(FM)	327-2600
	KUCA(FM)	329-2931
	KVEE/KKLF(FM)	329-3819
DARDANELLE	KCAB/KWKK(FM)	968-4949
FORDYCE	KBJT	352-2170
HEBER SPRINGS	KAWW(AM/FM)	362-5863
HOT SPRINGS	KBHS/KSPA(FM)	623-6661
	KGUS(FM)	624-5425
	KXOW(AM/FM)	525-1301
	KZNG	624-3313
JACKSONVILLE	KGMR(AM/FM)	982-5551
LITTLE ROCK	KAAY	661-1090
	KEZQ(FM)	664-6666
	KARN	661-7510
	KKYK(FM)	661-7570
	KLAZ(AM/FM)	661-0150
	KLRA	375-7319
	KLRE-FM	568-2347
	KOKY	372-0259
	KSOH	372-6064
	KARK-TV	376-2481
	KATV(TV)	372-7777
	KETS(TV)	375-2431
	KTHV(TV)	376-1111
MALVERN	KBOK	332-6981
MORRILTON	KVOM	354-2484
NORTH LITTLE ROCK	KDXE	376-7266
	KXLR	945-4501
PINE BLUFF	KADL(AM/FM)	535-1270
	KCAT	534-5001
	KCLA	535-1241
	KOTN(AM/FM)	543-8732
	KYDE	534-1523
RUSSELVILLE	KARV	968-1184
SEARCY	KWCK/KSER(FM)	268-7123

CENTRAL ARKANSAS EBS OPERATIONAL AREA





STATION FACILITIES		FREQUENCY EBS DESIGNATION
KBBA 0.25 kw D	Benton	690 PRIMARY
KGKO 1 kw D	Benton	850 PRIMARY
KGFL 0.25 kw D	Clinton	1110 PRIMARY
KCON 1/0.25 kw U	Conway	1230 PRIMARY
KHDX(FM) 10 w 25 ft	Conway	89.1 PRIMARY
KKLF(FM) 28.5 kw 320 ft	Conway	105.1 PRIMARY
KUCA(FM) 10 w 95 ft	Conway	91.5 PRIMARY
KVEE 0.5 kw D	Conway	1330 PRIMARY
KCAB 1 kw D	Dardanelle	980 PRIMARY
KWKK(FM) 3 kw 260 ft	Dardanelle	102.3 PRIMARY
KBJT 0.25 kw D	Fordyce	1570 PRIMARY
KAWW 1 kw D	Heber Springs	1370 PRIMARY
KAWW-FM 3 kw minus 140 ft	Heber Springs	96.7 PRIMARY
KBHS 5 kw D	Hot Springs	590 PRIMARY
KGUS(FM) 36 kw 480 ft	Hot Springs	97.5 PRIMARY
KSPA(FM) 2.6 kw 320 ft	Hot Springs	96.7 PRIMARY
KXOW 5 kw D	Hot Springs	1420 PRIMARY
KXOW-FM 0.31 kw 790 ft	Hot Springs	106.3 PRIMARY
KZNG 1/0.25 kw U	Hot Springs	1340 PRIMARY

KGMR 1 kw D	Jacksonville	1500 PRIMARY
KGMR-FM 25 kw 195 ft	Jacksonville	100.3 PRIMARY
KAAY 50 kw U, DA-N	Little Rock	1090 PRI CPCS-1
KARK-TV 100 kw 1650 ft	Little Rock	CH 4 PRIMARY
KARN 5 kw U, DA-N	Little Rock	920 PRI CPCS-2
KATV-TV 316 kw 1660 ft	Little Rock	CH 7 PRIMARY
KETS(TV) 100 kw 1780 ft	Little Rock	CH 2 PRIMARY
KEZQ(FM) 100 kw 770 ft	Little Rock	94.1 PRI CPCS-1
KITA 5 kw D	Little Rock	1440 PRIMARY
KKYK(FM) 95 kw 1510 ft	Little Rock	103.7 PRI CPCS-2
KLAZ(FM) 100 kw 880 ft	Little Rock	98.5 PRIMARY
KLRA 10/5 kw U, DA-N	Little Rock	1010 PRIMARY
KLRE-FM 3.6 kw 265 ft	Little Rock	90.5 PRIMARY
KOKY 1/0.5 kw U, DA-N	Little Rock	1250 PRIMARY
KSOH 1 kw D	Little Rock	1050 PRIMARY
KTHV(TV) 316 kw 1760 ft	Little Rock	CH 11 PRIMARY
KBOK 1 kw D	Malvern	1310 PRIMARY
KVOM 0.25 kw D	Morrilton	800 PRIMARY
KDXE 1 kw D	North Little Rock	1380 PRIMARY
KXLR 5/1 kw U, DA-N	North Little Rock	1150 PRIMARY
KADL 5 kw D	Pine Bluff	1270 PRIMARY
KADL-FM 25 kw 145 ft	Pine Bluff	94.9 PRIMARY
KCAT 1/0.25 kw U	Pine Bluff	1340 PRIMARY
KCLA 1/0.25 kw U	Pine Bluff	1400 PRIMARY
KOTN 1/0.25 kw U	Pine Bluff	1490 PRIMARY
KOTN-FM 27 kw 115 ft	Pine Bluff	92.3 PRIMARY
KYDE 1 kw D	Pine Bluff	1590 PRIMARY
KARV 1/0.25 kw U	Russelville	1490 PRIMARY
KSER(FM) 3 kw 170 ft	Searcy	99.3 PRIMARY
KWCK 1 kw D	Searcy	1300 PRIMARY

KNOWN VENDORS

Emergency Broacast System
Tone Alert Receivers

Time and Frequency Technology, Inc.
3000 Olcott Street
Santa Clara, CA 95051
(408) 246-6365

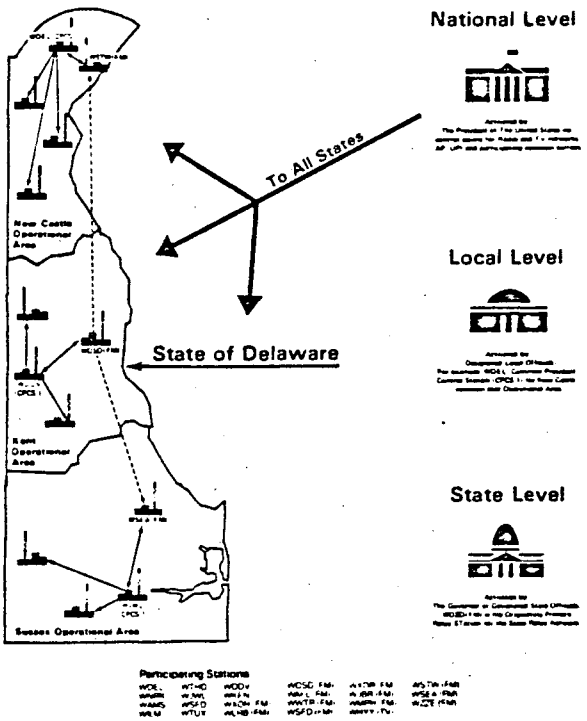
Gauthier Industries, Inc.
300 First St., N. E.
Rochester, MN 55901

Fix-Tune Electronics, Inc.
One West 30th St.
New York, NY 10001
(212) 695-4767

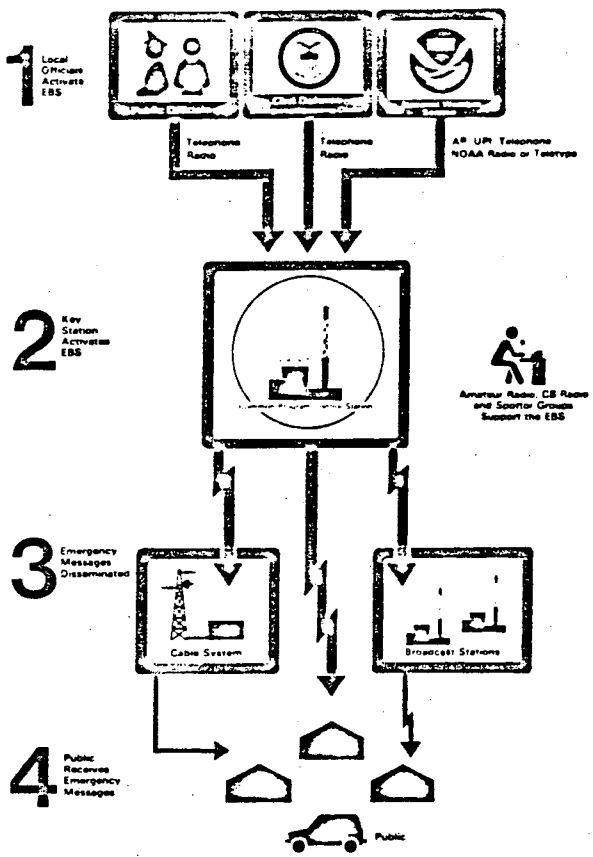
Metheney Corp.
204 Sunrise Dirve
Madison, Ind. 47250
(812) 273-4026

February 1980

Activating the EBS: National • Local • State



How A Local EBS System Works



Participating organizations

- National Industry Advisory Committee
- State Emergency Communications Committee
- Local Operational Area Emergency Communications Committee
- Federal Communications Commission
- National Weather Service
- Defense Civil Preparedness Agency
- National Association of Broadcasters
- State Associations of Broadcasters

PREPARED BY THE

DEFENSE CIVIL PREPAREDNESS AGENCY

in cooperation with

FEDERAL COMMUNICATIONS COMMISSION

NOAA NATIONAL WEATHER SERVICE

MARCH 1978

EMERGENCY BROADCAST SYSTEM (EBS)
PROCEDURES FOR THE

CENTRAL

EBS OPERATIONAL AREA

April 27, 1979

Central EBS Operational Area
includes the Following Counties:

Van Buren
Cleburne
Conway
Faulkner
White
Perry
Pulaski
Lonoke
Prairie
Yell
Garland
Saline
Hot Spring
Grant
Jefferson
Pope
Cleveland
Dallas