AWARE

SUMMER/FALL 1991

NATIONAL WEATHER SERVICE / *Warning Coordination and Hazard Awareness Report*

SEASON OF CHANGE

This has been an incredibly busy summer for the Warning and Forecast Branch of the National Weather Service (NWS). First, the Public Weather Transition Plan was awarded Change Management Approval. In essence, this means that NWS management has approved our plans for the provision of public warning and forecast services for the modernized NWS. In this and future issues of the AWARE Report, we intend to highlight what these plans are and how they will affect the entire hazards community.

We have embarked on a new initiative for coordinating the implementation of services and service changes during the transition to the modernized Weather Service. The management tool involved is called the Work Breakdown Structure (WBS). Though this effort requires a considerable amount of "up-front work," it will ensure that all NWS organizations pull together to keep the modernization moving forward.

Our new winter weather brochure entitled, "Winter Storms...The Deceptive Killers" (see cover only--attachment A) is being sent to the printer at this moment! The brochure will be multi-colored (the first in our series) and should be an excellent resource for emergency managers, the media, and local decision makers who need more in-depth information on winter weather hazards. We are targeting having this brochure in the hands of the hazards community by mid-November 1991.

The tri-agency effort between the NWS, the American Red Cross, and the Federal Emergency Management Agency (FEMA) for pooling our resources and expertise in the development of hazard materials continues to grow and flourish. As a result, the Red Cross will be introducing a new tri-fold, multi-colored pamphlet for general audiences entitled, "Are You Ready for a Winter Storm?" The NWS will receive 200,000 copies for distribution to our local offices.

Therese Pierce joined our staff during September as the Office of Meteorology's (OM) new Next Generation Weather Radar (NEXRAD) focal point. It will be her job to develop strategies for folding NEXRAD data into local office operations. This will be a big job for her and considerable added responsibility for our Branch.

Finally, you have probably noted that this issue of the AWARE Report is a combined Summer/Fall publication. Future issues will continue to be quarterly by season. Our goal is to issue the AWARE Report early enough to contain useful information for the coming season. This "bridge" issue has enabled us to retool our schedule.

U.S. DEPARTMENT OF COMMERCE • National Oceanic and Atmospheric Administration

AWARE Report is an administrative document, issued by the National Oceanic and Atmospheric Administration, for the information and use of the agency and the natural hazard community.

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PLEASE SHARE THIS COPY OF THE "AWARE" REPORT WITH OTHERS IN YOUR OFFICE

HAZARD AWARENESS PROGRAM

Tri-agency Awareness Project - *Wernly*

The tri-agency effort between FEMA, the American Red Cross, and the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service for the development of awareness materials has been a resounding success. As a result, we are all working together to ensure that a unified message is delivered and that each organization's resources can be maximized. Each agency's brochures are being reviewed for consistency and will be printed with all three agency logos. Agency stock numbers are also being added to assist in distribution and printing efforts.

Rocky Lopes from the American Red Cross has submitted an article for the November 1991 issue of the *Natural Hazards Observer* entitled "Educating the Public Through a Coalition Effort." The article reflects the thinking and comments from the coalition consisting of the American Red Cross, FEMA, and NWS. Rocky has granted permission to the NWS to include this article in this issue of the AWARE Report (see attachment B).

Winter Weather Brochure - *Sokich*

The winter weather awareness material is the first package to be produced by this tri-agency effort. The first new brochure in support of this effort is the NWS "Winter Storms...The Deceptive Killers" (NOAA PA 91002). The intent of this brochure is to provide in-depth information on winter hazards to emergency managers, the media, local decision makers, school teachers, and others who require specifics to enhance their credibility or to assist them in developing awareness programs. The brochure has been critically reviewed by FEMA and the Red Cross with the intent that these organizations will distribute the brochure to individuals and organizations who request additional information on winter weather hazards. The last page supports FEMA's Family Disaster Planning effort which is providing monetary support for printing. About 20,000 copies will be provided to the Red Cross for their distribution.

The brochure has been completed and is currently at the printer. The Red Cross and FEMA worked closely with us to produce this in-depth brochure, and we're very excited with the results. The brochure is done in four colors and contains detailed information about winter weather. Sections on the impact of winter storms, the different types of storms, preparedness, and general information help make this the most complete brochure we have ever produced. The pictures will also be in full color to further spice-up the presentation.

In concert with the in-depth brochure, we have worked with the Red Cross toward the development of their "Are You Ready for a Winter Storm?" pamphlet. This is a tri-fold, multi-color pamphlet aimed at the general population. Its intent is to highlight actions to take when caught in a winter storm and preparedness actions beforehand. It also contains questions to involve the reader and the family in family preparedness planning. The NWS will receive 200,000 copies of this pamphlet for distribution to our local NWS offices. This will become the brochure that the NWS will provide to the public for general

awareness. The in-depth NWS brochure will be reserved for those individuals who require more information or for developing preparedness plans and instructional materials. (For ordering information for both of these publications, see section "Publications and Audiovisuals," page 18, of this AWARE Report.)

This is the first weather hazard to follow this tri-agency format, and we intend to update the remaining NWS brochures using this same design. We plan to update both the tornado and flash flood packages this fiscal year. The current fiscal climate may make our goal difficult to achieve, but we're off to a good start with the winter weather brochure. We'll keep you posted.

WPM Details to Weather Service Headquarters - *Wernly*

The last issue of the AWARE Report highlighted Barbara McNaught's (WPM Weather Service Forecast Office [WSFO] Washington, DC) efforts at putting together our winter weather hazards awareness package. As a result of her enthusiasm and expertise, the "Winter Storms...The Deceptive Killers" (NOAA PA 91002) is ready for the printer. She has also made great strides toward completing the poster, slide set, and presenter's guide. We will continue to work with Barbara to put the remaining pieces of the puzzle together as soon as possible.

Though the Weather Service budget picture is bleak, the Office of Meteorology is still anticipating supporting the capability for us to bring one or two more WPMs into the Warning and Forecast Branch to develop the tornado and flash flood hazard packages. In the coming weeks, we will be going to the NWS Regions to select WPMs willing to assist us. What we have learned so far is that 4 to 6 weeks in Headquarters is not sufficient to put a package together. Those wishing to become part of this project should be prepared to do a lot of preliminary work at their home station. Then while detailed to Weather Service Headquarters (WSH), the WPMs would work exclusively with NOAA Public Affairs and graphics to put their ideas and words into viable products.

MODERNIZATION

Managing the Modernization - *Berger*

The recently approved Public Service Transition Plan outlines the service changes managed by the Warning and Forecast Branch. Since we anticipate revisions, the plan is not a "concrete" inflexible document. It will be updated annually.

As we have experienced, the transition to the modernized NWS is very complex. All services managed by various organizations throughout the NWS are interrelated with different implementation strategies and schedules. Problems in one service area can have serious problems to the entire modernization effort. For this reason, the Deputy Assistant Administrator for Modernization has directed the modernization and transition to be managed and tracked by a computerized applications procedure called the Work Breakdown Structure (WBS).

The WBS is a management program used to systematically plan and manage all the program changes in the overall modernization and restructuring. The WBS basically serves two functions: (1) it helps ensure that all the details needed to implement a program change are made, and (2) it helps ensure the many necessary connections between program areas are made. To avoid "loose ends" in planning changes, the WBS is expected to be used for planning throughout the NWS and not be confined to headquarters.

The Warning and Forecast Branch has had several long "brainstorming" sessions to document all the steps needed to implement program changes. For example, to implement the AWU, all the actions at WSH and the field offices had to be identified to implement this product issuance. This lengthy list included developing policy with the regional offices on a pre-curser product, risk reduction exercises that depend on WSR-88D commissioning, creating the necessary product identifiers, drafting guideline memoranda, writing new operational chapters, and completing evaluation reports on the risk reductions.

Many of the modernization programs within the Weather Service are interrelated. The WBS program helps track all the necessary connections between program areas and important milestones needed to implement these programs.

The Warning and Forecast Branch is responsible for twelve program areas in WBS for Stage 1 of the modernization, of which the AWU is only one. There are eleven program areas for initial Stage 2 and 5 for full Stage 2. Other branches are also tracking many program areas. The WBS takes the broad guidelines from the service transition plans and develops the concrete steps needed for implementation.

Area Weather Update Implementation Process - *Becker*

The first step in the implementation process of the Area Weather Update (AWU) was the official approval of the "Public Services Transition Plan." The Plan includes general guidelines for all aspects of the AWU. The Warning and Forecast Branch then held a teleconference with the six regional operational division chiefs and their staff and the Norman MIC and Southern Region Risk Reduction team. Discussions centered on implementation strategies for the AWU and the standardization of any current or near future Nowcasts (NOW) into an AWU-type ("pre-cursor" AWU) format. This is important as NOWs should point the way to the AWU era.

Based on decisions reached at the teleconference and draft Regional Operations Manual Letters on the Nowcast program that the Central and Eastern Regions sent us, we have written a detailed draft "Pre-cursor AWU/NOW Guidelines." These Guidelines have been sent to the regions for review and will be discussed at the Meteorological Services Division Chiefs Conference in late October here at WSH. These guidelines will eventually become an Operations Manual Letter and, depending on the results of the Norman Risk Reduction Activity, a separate Weather Service Operations Manual (WSOM) chapter on the AWU.

The draft guidelines contain the following key points.

Implementation Strategies

Pre-cursor AWU...shall be issued at any NEXRAD office at least 3 months before commissioning of the WSR-88D. This product will have the same structure as the AWU.

NOW...At regional option, offices may issue NOWs before the scheduled onset of the pre-cursor AWU. This will provide forecasters a longer time to gain experience in short-term, mesoscale forecasting. In effect, NOWs would act as pre-cursor AWUs and provide a smooth transition to the AWU era at any office.

AWU (official)...shall not begin at any NEXRAD office until the Norman Risk Reduction Activity on the AWU has been proven successful and the WSR-88D is commissioned. The exception is Norman, itself, which will issue "official" AWUs for the Risk Reduction.

Definition of AWU

The primary purpose of the AWU (and the pre-cursor AWU/NOW) is to provide users with a concise description of ongoing hydrometeorological conditions together with a short-term forecast within the office's county warning area (CWA) for the valid time of the product.

Valid Time

A sliding scale should be used for the short-term forecast, e.g., 1 to 2 hours in convective, fast-breaking or other significant situations extending, at regional discretion, up to a maximum of 6 hours.

Frequency of Issuance

Flexibility will be allowed according to the significance of the hydrometeorological conditions, workload, supporting sensing technologies and user needs.

Format (suggested)

...HEADLINES...(warnings, watches, advisories, others as appropriate)

TEXT (paragraph of most significant conditions and short-term forecast)

TEXT (paragraph of next most significant conditions and short-term forecast), etc.

Relationship to Other Products

The AWU will incorporate appropriate short-term information from, but will not eliminate, Special Weather, Severe Weather, Flood/ Flash Flood, Coastal Flood and Hurricane Local Statements. The Radar Narrative Statement from an office will be eliminated once an official AWU is issued and the old network radar is decommissioned.

NEXRAD Information Dissemination Service (NIDS) - *Read*

With the reaching of the comprehensive settlement of the NEXRAD contract with UNISYS, delivery of the first systems to the field has once again started. There has been a considerable increase in the number of inquiries to early NEXRAD field offices from emergency managers and the media about details on how they will get NEXRAD data. The questions being asked fall into several broad categories:

- How soon will I be able to get NEXRAD graphics?
- How will I get the data?
- How much will it cost?
- What kind of equipment will I need to get the data?

A meeting was held with the NEXRAD Information Dissemination Service (NIDS) providers (Alden Electronics, Kavouras, and WSI) in September 1991, primarily to inform them of the ramifications of the comprehensive settlement and begin discussions on starting of the service. The above questions were also briefly addressed. Since the providers have not yet had an opportunity to directly access a WSR-88D, many details concerning the service have not yet been worked out. All three providers would prefer any potential users to contact them directly rather than go through our offices. The names and addresses of provider contacts are listed below.

The NIDS Access Agreement calls for service by the providers at the **commissioning** of the first WSR-88D, which is expected to occur late in 1992. During the next year, the providers will have access to early radars in order to develop their capability and test the service with potential subscribers. NWS Headquarters and the Regional Headquarters will have access to provider's service for quality control and operational readiness testing purposes. During the next year we should gain considerable knowledge on NIDS and will inform you in future issues of the AWARE Report.

NIDS Provider contacts:

Michael Porreca
Alden Electronics Inc.
40 Washington Street
Westborough, MA 01581-0500
Tel: 508-366-8851

William Schlueter
Kavouras Incorporated
6301 34th Avenue South
Minneapolis, MN 55450-2979
Tel: 612-726-9515

Janis Farnham
WSI Corporation
4 Federal Street
Billerica, MA 01821-5000
Tel: 508-670-5000

No-GOES - *Sokich*

The possibility of a No-GOES scenario continues to grow more and more likely with each passing day. Development and testing of GOES I, the first satellite of the GOES Next series, continues to have problems and delays with the scheduled late 1992 launch very much in jeopardy. Secretary Mosbacher stated that DOC is firmly committed to a fully functional GOES NEXT satellite with no degradation in requirements. This suggests that a late 1993 launch for GOES I is most likely. The lone GOES 7 in orbit providing satellite imagery to the meteorological community will reach its 5-year life expectancy in March of 1992. There is every reason to believe that this instrument will far exceed that expectation and last well into 1993.

In the event that GOES I is not launched before GOES 7 fails, the NWS is developing procedures for obtaining data from sources other than the GOES. Some of the options being explored include extensive Polar Orbiting Earth Satellite (POES) data, additional buoys, increased aircraft reconnaissance, and increased numerical guidance support.

On September 16, Secretary Mosbacher announced that the United States has reached an agreement with the European community to use Meteosat 3. It will take one year to install ground equipment at Wallops Island, Virginia, to receive direct information from the European satellite. Meteosat 3 will be moved westward from the current position at 50°W to provide better coverage of the United States. The use of Meteosat 3 will give the United States two geostationary satellite coverage for the first time in many years. The NWS and the National Environmental Satellite, Data, and Information Service are exploring ways to make the best use of the dual satellite coverage provided by Meteosat 3 and GOES 7, given the life expectancy of the satellites.

The failure of GOES 7 will greatly impact the NWS watch and warning program. We all hope that GOES coverage will be uninterrupted, but the NWS is making contingency plans just in case.

WARNING AND FORECAST BRANCH INITIATIVES

Hurricane Bob - *Sokich*

Hurricane Bob formed north of the Bahamas as a tropical depression at 0000 UTC, August 16, 1991. It rapidly intensified into a tropical storm on Friday and became a hurricane on Saturday, August 17. After meandering slowly northward for the next day, Bob began accelerating north-northeastward on August 18 just brushing by Cape Hatteras Sunday night. Bob made Landfall on the mainland of the U.S. near Newport, Rhode Island, at 1800 UTC on August 19. Bob reached its maximum intensity at 0600 UTC on August 19 with a central pressure of 950 millibars and winds of 100 kts (115 mph).

Damage associated with Bob is estimated near $1.5 billion, and related deaths stand at 16. The National Hurricane Center provided excellent forecast guidance enabling the emergency management community to set their preparedness plans in motion. The

preparedness efforts along the New England coast were exemplary. Evacuations were smooth, and precautions taken by local government agencies mitigated the impact from the storm. The SLOSH model forecasts provided accurate information on the storm surge associated with Bob.

The combined effort of NWS offices all along the affected coast from South Carolina to Maine was excellent, and the public was well informed of the path of the storm and the appropriate safety and preparedness information. The integrated warning program worked well with all facets of the hazards community from the NWS to local civil agencies keeping the public informed. A job well done by all.

Wichita/Andover Disaster Survey Update - *Sokich*

The NOAA Wichita/Andover Disaster Survey Report is completed and at the printer. Copies of the survey should be available by mid-November, depending on the printer. The team did an excellent job completing this report so quickly.

The major findings of this survey point to an integrated warning program that worked very well.

- Forecasts guidance from National Severe Storms Forecast Center (NSSFC), WSFO Topeka, and Weather Service Office (WSO) Wichita provided long-fuse information about the potential for severe weather to the public and emergency managers (EM) alike.

- Preparedness efforts by the emergency management community, including NWS, EMs, local media (television, radio, and print), educated the public to the dangers of severe weather and tornadoes.

- Everyone interviewed by the survey team knew the appropriate safety actions to take to survive the storm.

Even though the tornado caused 17 deaths in the Wichita/Andover area, without such stellar efforts to communicate the danger to the public, the devastation from this tornado would have been even more catastrophic.

NOAA Weather Radio (NWR) Frequencies in Car Radios - *Becker*

The Panasonic Company will be selling an "after-market" car radio in early 1992 incorporating the NWR frequencies. After-market means the radio is not offered for sale as original equipment in new cars but must be installed separately after purchase from Panasonic or other after-market car radio dealers selling this unit. An NWR brochure will be included with each radio. Panasonic intends to include this new feature in some of its advertising. In addition, Panasonic will print several thousand NWR brochures free of charge for NWS use.

New NWR Service - *Becker*

We are announcing the inception of an exciting new private service that will provide "live," unedited, site-specific NWR broadcasts from selected NWR offices to users nationwide.

The service will be provided via a proprietary commercial telephone network with the user being charged a very competitive fee by the private Company. The system for creating and providing network access to NWR broadcasts nationwide is considered so innovative by the Company's founder, that he has filed for a U.S. Patent covering the system.

The system will begin implementation in stages in 1992, beginning with selected coastal NWS facilities. If the initial system proves sound, it will be expanded to include about 100 NWR consoles in those areas to have the highest potential of remote user interest. The Company hopes to have the system in full operation by the end of 1993.

The idea and concept for the new system originated with a private individual and small businessman from Nashville, Tennessee. He brought his ideas to the attention of the NWS through the usual channels and has worked very closely with the concerned departments and individuals within the NWS (both headquarters and field) to incorporate NWS system goals and policies into this exciting new outlet for the NWR audio product. This new Weather Radio "network" will expand the utility and availability of NWS existing efforts to a much broader segment of the American public. The Company is convinced that users such as travelers, fishermen, boaters, commercial photographers and anyone else whose successful activities or personal safety depend on comprehensive and immediate foreknowledge of the conditions in a remote area before arriving there, will be steady customers.

Dr. Friday recently signed the first system-wide Access Agreement with the Company. This non-exclusive Agreement effectively establishes the first commercial access communications network for public distribution of NWR broadcasts. The Agreement is simply a modification of existing, single-station "Bridge-tap" (and similar) agreements that are currently used to allow individual NWS offices to cooperate with requests from private users of the NWR audio product. While the "Bridge-tap" agreements typically serve users within the same coverage area of the existing VHF broadcasts, this new Agreement allows customers of the Company to listen to the live NWR broadcasts of their choice in a locale remote from their own.

The Agreement, among many other technical points, stipulates the following.

- o No cost to the NWS (except for minimal electrical power).
- o NWR broadcasts are unaltered.
- o Full attribution to the NWS.
- o No commercial messages are placed before or after broadcasts.

- The design of any device used by the Company to connect to the NWS control consoles, as well as its final construction and location, must be first inspected and approved by the NWS before the connection is made.

- Company connections to the NWR control consoles shall be under the direction and approval of the site NWS Electronics Technician or his/her appointed agent technician and in accordance with the best modern practice.

- The Company provides the Regions at least 30 days notice before either installing or removing equipment at any NWS facility.

Procedures for installation of the Company's interface devices essentially will be the same as current procedures for providing users with access to NWR signals for rebroadcast. The Office of Systems Operations (Telecommunications and Dissemination Branch - W/OSO15) will provide advance notice to regional Systems Operations Divisions and Engineering Program Managers well before implementation at any office.

NWR Specific Area Message Encoder (WRSAME) and the Emergency Broadcast System (EBS) - *Becker*

When a primary (CPCS-1) EBS station receives warnings from the NWS or messages from other sources, the CPCS-1 station typically has to further distribute this information to other stations (CPCS-2s) in its fan-out coverage area. This internal EBS equipment for accessing and redistributing messages is becoming obsolete and needs upgrading.

The Federal Communications Commission (FCC), therefore, has sent a Notice of Inquiry to the broadcast industry describing several competing systems. Prominent among them is a detailed description of WRSAME, which not only can be used to receive NWS warnings at the EBS station but can be used internally to further redistribute messages. Moreover, the FCC has granted radio stations KCMO in Kansas City and WBAP in Dallas authority to conduct just such tests using WRSAME as an EBS enhancement.

The test is to decide how well the WRSAME code can be used to provide information on the type of hazard and area affected to operational area EBS stations. The goal is to speed up the dissemination process through WRSAME automation by eliminating the need for operational personnel at secondary EBS stations to listen to the primary EBS station and decide if the warning message applies to their listening coverage area.

WRSAME is currently used in several NWR stations across the country to provide specific warnings (and potentially other messages) to users (typically radio, TV and cable TV) equipped with matching WRSAME decoders. The Spring 1991 issue of the AWARE Report describes WRSAME more fully.

Update on WSOM Chapters - *Becker/Berger/Sokich*

WSOM CHAPTERS	STATUS
C-10, State and Extended Forecasts	A revised draft will be sent out for review by late fall or early winter.
C-11, Zone and Local Forecasts	Appendix A, Zone Forecast Area Maps, to C-11, has been printed and distributed as of August 1, 1991. An errata sheet to Appendix A, replacing pages A-31 and A-32, was also sent out at the same time with a clearer version of the Arkansas map.
C-20, National Public Weather Products	A draft was sent out for review on July 18 with comments back by August 30. These comments are being incorporated at present time.
C-21, Local and Regional Statements, Summaries, and Tables	A draft was sent out for review on July 26 with comments back by September 10. At present time, the comments are being incorporated.
C-41, Hurricane Warnings	1991 page changes were sent to NWS offices during the first week in June (quick printing!). Rewrite is expected following the 1991 season to include any policy changes and updated examples.
C-42, Winter Weather Warnings	A second draft was sent to the MSD Chiefs for a 4-week review.
C-44, Non-Precipitation Weather Hazards	A second draft was sent to the MSD Chiefs for a 4-week review.
C-49, Warning Coordination and Hazard Awareness Program	This chapter was completed and distributed to the field offices on August 7, 1991.
C-64, NOAA Weather Radio Program	This chapter was completed and distributed to the field offices on September 9, 1991.

HAZARD COMMUNITY FORUM

Activities of the Houston Area WSO WPM - *Ron Stagno, WPM, WSO Galveston*

-- In order to bring the message of hurricane preparedness to the upper Texas coastal community during these austere financial times in the NWS, I knew I must utilize every aspect of creative financing at my disposal. I sought and secured the sponsorship of the Houston/Galveston Hurricane Workshop by the AMOCO Corporation. They wanted to make this year's Workshop the best ever presented in this area. The AMOCO Corporation and I, working together, did just that. The Hurricane Workshop was held at a beautiful resort hotel, and AMOCO's sponsorship included not only the cost of that facility, but the printing of the program book, the transportation and complete accommodations for out of town guest speakers, refreshments, and a luncheon for those on the program. Their gift to the citizens of this community, through this Weather Service Office, produced tremendous results. Over 700 people representing industries, businesses, all levels of government, and the general citizenry of this area attended. Guest speakers included Fred Ostby, Director, NSSFC; Harry Hassel, Director, NWS Southern Region; and Jerry D. Jarrell, Deputy Director, National Hurricane Center.

-- I am developing another source of severe weather reporting to assist the forecasters of this office and all the people we serve. This source consists of people who are volunteer firemen, radio station disk jockeys, amateur radio people not associated with an amateur radio club, and concerned citizens. They, too, can be trained as severe weather spotters and equipped with rain gauges. They are asked to phone their report when possible to a responsible person in their own county who will serve as a collection point. He/She, in turn, will relay the messages to this NWS office and to emergency response officials in his/her own community. In the future, perhaps an amateur radio operator in many of our counties who has a packet system will serve as that collection point. In addition, I hope to be successful in having an unmanned packet radio system installed at this NWS office. Our office will be able to receive reports sent to us by packet at any time. When amateur radio operators are at the office, we will have send capability also.

Corporate Support from the Montana Power Company - *Lynn Valtinson, WPM, WSFO Great Falls*

I have been working with the Montana Power Company to publish and distribute brochures containing information on severe weather and preparedness in their monthly billing. Attachment C is a copy of the June and July brochures which was dedicated to thunderstorms and lightning and tornadoes, respectively. Approximately 270,000 of these brochures will be distributed to households in the western two-thirds of the state which comprises the majority of the population of the Treasure State.

Rip Current Research - *Jim Lushine, FIC, WSFO Miami, Florida*

I recently completed a 2-year long study of rip currents detailing the deadly result of this phenomenon. Nationally, an estimated 150 people a year drown in rip currents. In Florida, 32 persons drowned in rip currents in 1989, 24 in 1990, and 20 through mid-August of 1991. Preliminary data indicate an average of ten rip current drownings each year in North Carolina and three Alabama. But what do rip currents have to do with hazardous weather? My study shows a direct correlation between rip currents, and both wind and swells. In fact, a scale which rates the potential rip current danger, based on wind and swell conditions, has been experimentally tested in southeast Florida with very accurate results.

Beach patrol personnel are very enthusiastic about the study which confirms their own observations. I have participated in several educational ventures with the United States Lifesaving Association. These include an 8-minute videotape on rip currents (available from Southern Region), a 30-second public service announcement, and a rip current symposium that was held in Fort Lauderdale in April 1991.

WSFO Miami has been operationally monitoring the rip current danger in southeast Florida since July 1989, and a great deal of local media publicity has been generated by the issuance of marine weather statements when dangerous rip current conditions are forecast. Both emergency management officials and beach patrol authorities have credited this publicity with reducing the death toll from rip currents in southeast Florida.

Weather Woodle Update - *Carolyn Gurney, Meteorological Technician, WSO Colorado Springs*

After the article appeared in the Spring 1991 issue of the AWARE Report about the "Weather Woodles" slide presentation I had created for grade school children, I received many inquiries from all over the United States. Many people agreed that there was not enough material for grade school children and wanted to know how to borrow the "Weather Woodles" for their presentations.

I am happy to report that I have finished the revision of the slide sets, taking out such things as teletypes, and adding new equipment, such as Doppler radar. I have retitled the presentation, and it is now called "How the National Weather Service Works, A Story with the Weather Woodles." It consists of a script and a carousel containing 41 slides. I have been informed by WSH that the set sent to them will be duplicated and forwarded by the end of October to each Regional Headquarters for use in their field offices. I have granted the NWS a copyright release giving them permission to duplicate the sets in each region if more are needed. Furthermore, I am still working with local colleges to try to get the "Woodles" transferred to videotape.

If you are an NWS employee and would like to borrow a "Weather Woodles" slide set, please contact your Regional Headquarters after the first of November. If anyone outside

the NWS wishes to borrow the slide set, please contact me and I will arrange for you to borrow one of my sets. Please write to: Carolyn Gurney, National Weather Service, 1599 Aviation Way, Colorado Springs, Colorado, 80916. It has been a lot of fun working on this project, and I would like to thank everyone who contributed to this effort.

SKYWARN Training - *Rainer Dombrowsky, WPM Focal Point, WSFO Minneapolis*

How does one reach the greatest number of prospective skywarn spotters during a period of reduced staffing, limited funding, and part-time WPM positions? In Minnesota, we have addressed these problems seeking greater involvement from the state's Division of Emergency Management (DEM). In the mid-80's, the Minnesota Skywarn Program needed change. Staffing at the WSFO and at some WSOs placed a greater demand on offices in all areas of operation. The problems as we saw them focused on a lack of available staff hours and how to support a growing program with less available funding.

We knew that some approach toward creative financing was needed and that the support from the Minnesota DEM was essential to maintaining the integrity of our skywarn program. Several meetings were conducted with key WSFO staff members and DEM stall members. These brainstorm sessions did produce viable options for consideration. The least expensive, yet workable option, was to adopt a portion of a program then used by Minnesota's DEM. This program called for volunteers to conduct training within a county on behalf of the NWS. Any expenses would be minimal and, more importantly, extra flexibility in class scheduling was now possible. This approach also allowed for smaller class sessions which provided for better student/instructor interaction.

Restrictions needed to be placed on who would be accepted as an instructor and who would not be eligible. James Campbell, AM, and John Miller, WPM, coordinated with the Minneapolis DEM in establishing the necessary requirements for becoming skywarn spotter instructors. It was determined that each candidate would be required to complete a background questionnaire. Prior to even receiving a questionnaire, these individuals had to receive endorsement from either a county emergency manager or from one of the seven regional emergency management coordinators. Once these requirements were met, a selection panel was established and each of the questionnaires was reviewed. Final approval to attend the NWS conducted instructor course was given to those individuals who had documented experience as instructors, who had more than a passing knowledge in the skywarn program, and desired but not required some prior experience in meteorology. Meteorology experience within our group of instructors varies from past military experience to those who have taken some basic meteorology classes. In the extreme, we had instructors who are not employees of the Weather Service who hold degrees in meteorology.

The funding for this training became the next obstacle to overcome. The Minnesota DEM knew of Federal funds that were available to the states through FEMA. These funds were available for training programs within the state. The only stipulation placed on the state

for using funds for our program was that we needed to show that this training had some applicability to the national program. To get this accomplished, we had to develop a plan of instruction (POI) and have it endorsed by the state of Minnesota and finally approved by FEMA before we could divert federal funds into our program. In addition to providing the funds for training, additional funding was needed for reproduction of training materials. This would be the greatest expense to the program.

This past February, we conducted several class sessions for both new instructors and recertification of instructors from the 1988 classes. Including NWS staff we have 72 individuals certified by the state of Minnesota DEM to conduct skywarn spotter sessions. Each instructor receives a certificate of course completion from the state of Minnesota. Skywarn spotters also receive class completion certificates from the state upon completion of their training session. We have found that this form of student volunteer recognition has generated pride within our spotter network. We also honor our best spotter networks and present annually the Joe Strube Memorial award to the outstanding emergency manager in the state of Minnesota.

Through this program and other lateral state programs, we continually reach thousands of volunteer spotters annually. This is something we could never do under the constraints of available man-hours and funding. Within the nine-county metropolitan area of the Twin Cities, our local ham operators have developed a skywarn newsletter that we hope to expand to a statewide level once NWS modernization begins. This newsletter provides information on the what's new in skywarn literature or training materials. It also highlights spotter response to events during the storm season and acknowledges successes of individuals and networks. Periodically, the NWS provides articles for this publication and we hope to eventually expand its dissemination statewide.

The ability of NWS offices to become less dependent on their own staff support and funding continues to grow. All WPMs, either full time or part-time, need to have available to them many of the courses that are available to me. Exercise Design and Creative Financing are just two that have proven beneficial. Not all state emergency management divisions have reached the level that Minnesota has in being able to provide these types of training opportunities. The ability of a WSO to access these types of programs becomes more critical as we advance into a modernized NWS. In the case of WSFO Minneapolis, modernization brings a large expansion to our county warning area (CWA) responsibility. Prior to these programs, we had difficulty maintaining support to our 26-county warning area. Under modernization, we expand to 53-county warning area. Without current programs in place, how could we manage such a large program even with a full-time WPM.

We are proud of our statewide spotter network. This approach works for Minnesota and it may work for you. We promise no quick fixes, but we can guarantee that no matter the outcome, at worst you will likely establish a better rapport with your state's emergency management officials.

SEVERE WEATHER AWARENESS WEEKS

State	Campaign	Date	Drill
Central Region			
Wyoming	Winter	Oct. 21-25, 1991	
Colorado	Winter	Oct. 20-26	
North Dakota	Winter	Nov. 10-16	
South Dakota	Winter	Nov. 11-15	
Nebraska	Winter	Nov. 6	
Kansas	Winter	Nov. 17-23	
Missouri	Winter	Nov. 13	
Michigan	Winter	Nov. 17-23	
Indiana	Winter	Nov. 18-22	
Michigan	Flood	Nov. 23-29	
Michigan	Tornado	Mar. 29-Apr. 4, 1992	Apr. 1
Eastern Region			
Ohio	Winter	Nov. 17-23, 1991	
New York State	Winter	Dec. 1-7	
South Carolina	Severe Weather	Feb. 24-29, 1992	
Ohio	Tornado	Mar. 22-28	
Ohio	Flood	May 3-9	
Southern Region			
New Mexico	Winter	Nov. 18-22, 1991	
West Texas	Winter	Dec. 1-7	
Arkansas	Winter	Dec. 4 (1-day)	
Alabama	Winter	Dec. 9-13	
Mississippi	Winter	Dec. 9-13	
Georgia	Severe Weather	Feb. 24-29, 1992	
Florida	Severe Weather	Feb. 24-29	
Alabama	Severe Weather	Feb. 10-14	
Mississippi	Severe Weather	Feb. 10-14	
Louisiana	Severe Weather	Feb. 10-14	
Arkansas	Severe Weather	Mar. 1-7	
Tennessee	Severe Weather	Mar. 1-7	
Oklahoma	Severe Weather	Mar. 1-7	
South Texas	Severe Weather	Mar. 8-14	
North Texas	Severe Weather	Mar. 8-14	
West Texas	Severe Weather	Apr. 5-11 (tentative)	
Alabama	Hurricane	May 18-22	
Florida	Hurricane	May 18-22	
Western Region			
Sacramento, CA	Media Workshop	Oct. 17	
Eureka, CA, for Northern CA	Media Workshop	Oct. 22	
San Francisco Bay			
Northern Bay area	Media Workshop	Nov. 4	
Southern Bay area	Media Workshop	Nov. 19	
Seattle, WA, for Western WA	Media Workshop	Nov. 5	

PUBLICATIONS AND AUDIOVISUALS - *Kremkau*

New Winter Storm Publications

For those interested in acquiring a copy of the new brochure "Winter Storms...The Deceptive Killers" (NOAA PA 91002) or "Are You Ready for a Winter Storm?" (NOAA PA 91003), contact your local NWS office or local American Red Cross chapter. For NWS field offices, please fill out a NOAA Form 24-12, "Publications Requisition;" list the name of the brochure, NOAA PA number, and the quantity; and send to the National Logistics Supply Center (NLSC) in Kansas City, Missouri. Please limit the requests to 300 copies for each brochure. Requests for over 300 must be handled by WSH. Only 50,000 copies of the in-depth brochure will be printed at this time, but more will be printed at a later date.

FEMA's Hurricane Videotape

FEMA is sending WSH 22 copies of a new 20-minute videotape entitled ***"Hurricane: It's* Not *just Another Storm!"*** Copies will be sent to the Eastern and Southern Regions for distribution to their coastal WSFOs. This videotape is designed to be used by emergency managers and others to promote preparedness and public awareness. The video focuses on Hurricane Hugo and describes how to assess personal risk and plan for hurricanes as well as how to avoid the hazards that emerge following a storm.

The Weather Channel's (TWC) "Danger's Edge"

TWC has produced a 22-minute videotape on coastal hurricane preparedness entitled "Danger's Edge" which was shown on their program on September 8. TWC has graciously granted the NWS permission to reproduce this videotape which comes with a guide. WSH will make additional copies of the videotape as well as the guide for both the Eastern and Southern Regions for distribution to their coastal offices. This tape would be ideal for use by the Warning and Preparedness Meteorologist in their hurricane preparedness activities.

Children's Television Workshop's (CTW) *"BIG BIRD Get Ready for Floods"* Kit

Attachment D is an order form for obtaining individual or multiple copies of the *"BIG BIRD Get Ready for Floods"* kit from CTW. Each flood kit contains a booklet, a "match the message" card game for 8- to 12-year-old children, and an audio cassette story with a skit and song that reinforce the messages of understanding what floods and flash floods are and how to prepare for them. This is the third kit in a series of natural hazard materials for children and their families. CTW also has kits on hurricanes and earthquakes.

Updated Survival Messages

Many of our hazard awareness handouts contain information that has changed over the years. Two of these concern opening windows and using candles. Studies of hurricane and tornado fatalities indicate we can increase chances of survival by improving a few guidelines.

DON'T GO NEAR WINDOWS - Old literature suggests opening windows to allow pressures to adjust to the approaching tornado or hurricane. This has been proven to be in error. Those who go near windows risk serious injury and death from flying debris and broken glass.

DON'T USE CANDLES - Old literature may suggest using candles for light after a power failure. Statistics show that many storm-related fatalities are caused by fires started by candles. Using battery-operated flashlights for light after a power failure is the up to date recommendation.

Other NWS Hazard Awareness Materials

-- Please note we have been notified that the "Storm Surge and Hurricane Safety" (NOAA PA 78019) has been misprinted. The two drawings, on the second page under section "Storm Surge" which depicts a house along the shoreline, have been reversed. Public Affairs has contacted the printing plant and they have agreed to reprint it at no cost to us. In the meantime, please make this correction to the copies stored at your offices before they are distributed to the population.

-- The following brochures are currently at the printer, and copies should be available from NLSC by mid-October.

Hurricane Tracking Chart (NOAA PA 77020)	20,000
Spotter's Guide (NOAA PA 81011)	25,000
Tornado Safety (NOAA PA 82001)	75,000
Watch Out, Storms Ahead (NOAA PA 82004)	50,000
Thunderstorms and Lightning (NOAA PA 83001)	100,000

-- The English/Spanish translation of the Natural Hazard Watch/Warning Poster (NOAA PA 86001) is still at the printer. NOAA Public Affairs reported having problems with the final proofs. We'll continue to keep you informed of the progress of this poster.

-- Concerning the wallet cards, please remember that once these cards are depleted, they will not be reprinted. Currently, "Tips for Tornado Safety" (NOAA PA 76016) and "Riding Out Winter Storms" (NOAA PA 80003) are the only ones out of stock and no longer available. The rest listed below can still be ordered from the Kansas City Warehouse, but the maximum number of copies still remains at 300 copies of each brochure.

Survival in a Hurricane (NOAA PA 70027)
Flash Flood (NOAA PA 77014)
Inundaciones Repentinas (NOAA PA 77015) Spanish version of Flash Flood (NOAA PA 77014)
Como Protegerse En Caso De Tornado (NOAA PA 85005) Spanish version of Tips for Tornado Safety (NOAA PA 76016)
Como Sobrevivir en un Huracan (NOAA PA 85006) Spanish version of Survival in a Hurricane (NOAA PA 70027)

As a footnote, the negatives for these wallet cards can still be obtained from the Warning and Forecast Branch and loaned out to the private sector for printing. Our intent is to urge the private sector to assist us by printing the publications our budget cannot support. This way, we continue to accomplish the goal of getting the hazard awareness and safety message to the public. These wallet cards are still current, but because of limited resources, we have to focus our funds on the NWS in-depth brochures.

The "SKYWARN Spotter" ID Card (NOAA PA 84001) will be reprinted when stock becomes low. The wallet card "Dust Storm Driving Safety" (NOAA PA 82002) is out of stock at this time, but plans are to have a small quantity printed soon.

Please direct any questions concerning the wallet cards or any of NWS brochures to me at FTS 427-8090.

AWARE Report Roster

Attachment E is the AWARE Report Roster. Please notify me at FTS 427-8090 of any changes to the telephone numbers or new WPMs or focal points. Also, if you know of someone who would like to be on the AWARE Report distribution list, please have him or her contact the Warning and Forecast Branch.

STATISTICS - *Kremkau*

Annual Flood Damage Report for FY 90

The National Weather Service/Corps of Engineers Annual Flood Damage Report, transmitted to Congress, lists 125 lives and $1.6 billion lost to flooding in 1990. However, timely warnings and forecasts provided by the NWS saved $100 million in further losses during the year. The state of Texas suffered the most damage, with losses exceeding $387 million, much of which came as a result of major floods in May 1990. Ohio had the most flood-related fatalities, 32, with the Shadyside disaster accounting for the loss of 26 lives.

winter storms...

the Deceptive Killers

A GUIDE TO SURVIVAL

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

American Red Cross

Attachment B

Educating the Public Through a Coalition Effort
(Provided by the American Red Cross)

For many years, representatives of the American Red Cross, Federal Emergency Management Agency, National Weather Service, and various other Federal, state, and local emergency management, law enforcement, fire department, and voluntary agencies have been making presentations to the public on how to prevent, prepare for, and respond to emergencies that could happen where people live and travel. However, we have found through research that our efforts at educating the public could be improved. We must ensure that agency's messages to the public are *consistent* and *support one another*. We should *tell people what they should do*; not what they shouldn't do. We must *repeat the message more often*. We must let past differences in approach or philosophy *not* come between efforts to work together in our local communities on these issues.

One of the most important "lessons learnable" from this research shows that we must think about how the public perceives the threat of disaster and devise strategies to attack public misperceptions, myths, and misconceptions. It's not a lesson learned until put what we learned into use.

Past practice of showing slides of damage to get the audience's attention is not sufficient. Issuing meaningless messages, such as "don't panic" just doesn't work. We must learn to target our audiences on a more fundamental and basic level: How will they react? What can we do to cause them to respond appropriately? Showing slides of disaster damage or giving negative messages only accentuates denial attitudes. We must grow beyond that.

Recently, the American Red Cross reviewed a vast amount of research on public response to disasters and found out some information which illustrates why we need to focus on public perception in order to make our public education efforts effective. A summary of these research findings is in box 1.

With even more limited budgets and additional demands on our time, we realize we can't do things like we used to anymore. We no longer have a lot of money to design, develop, and issue public education materials and programs of the quality that can compete in today's consumer-oriented society independently. Coalitions are cost-effective, and now more than ever, we must work together to achieve positive results.

Within the last year, the Disaster Services Division at the national headquarters of the American Red Cross, the Federal Emergency Management Agency's Family Protection Program, and the Warning and Forecast Branch of the National Weather Service have been rekindling their working relationship to review individually produced education materials and bring them together so that they will have a unified educational strategy.

New materials produced jointly by FEMA and the Red Cross include *Your Family Disaster Supplies Kit,* and soon-to-be-released brochures on a family disaster plan and emergency food and water supplies, will carry both organization's logos and joint messages. New materials forthcoming from the FEMA-NWS-ARC national coalition will include updated brochures and information on winter storms, tornadoes, and other natural disasters. Research has shown that the public reacts much better to joint efforts. They see products carrying joint logos as more authoritative and more credible.

Continuing coalitions of private and public sector agencies--the Red Cross, The Weather Channel, and the National Weather Service nationally, and in response to the Loma Prieta Earthquake, the Red Cross, U.S. Geological Survey, and the California Office of Emergency Services--have proven that coalitions work. Messages are consistent, and best yet, evidence shows the public is responding appropriately.

But only so much can happen on the national level. It's up to local agencies, groups, and organizers to bring coalitions together in their communities and work with one another to achieve success. It was once said that, "if we don't hang together, we'll all hang separately." This is quite true when it comes to talking to the public about disasters. We must put past differences aside, make the "lessons learnable" described above a reality for all of us, and forge a new agenda for success through coalition efforts.

Research about how the public perceives the threat to disasters shows that:

- There is public "denial" of the reasons to get prepared for disasters. People believe that,
  - "A disaster will not happen."
  - "A disaster will not happen to me."
  - "If a disaster does happen and it happens to me, it won't be that bad."
  - "If a disaster does happen to me and it is that bad, I can't do anything about it anyway."

- People don't know how to accurately interpret warnings and how to protect themselves.

- People can learn to be prepared. Often they are not prepared simply because they don't know what to do.

- People will respond to warnings, especially if there are multiple warnings, that include specific information and are consistent.

- There is evidence that people who are prepared for a disaster know what to do and are better able to cope with it.

- People engage in rational behavior when faced with a disaster. There is no widespread panic. Emotional upset or fear is not panic.

- Certain segments of the population face a greater risk from hazards either because their neighborhood or geographic location is more vulnerable, or because they may not receive or understand important communications.

- Children look to the adults around them for clues on how to deal with a disaster.

- The public gets confused by the messages they receive. Disaster education messages must be simple, to-the-point, and consistent, and they must tell people what to do. The research clearly shows that if people are told to do <u>one thing</u> consistently, over and over again, they will do it when a disaster happens.

- Disaster educators feel there is a need to help people "unlearn" information. But it has been found that unlearning does not necessarily help people know what to do.

- The public responds more accurately and better to subject-specific messages.

Box 1

Montana's wild weather

With many long-time Montanans, I remember well the flood of 1964. In Choteau, the Teton River worked out a merger with Spring Creek and filled the entire valley with knee-deep or deeper water. A veritable mess it was, yet we had it easy. People got killed up north on the reservation. And raging water did millions and millions of dollars worth of damage on both sides of the Continental Divide. It was the flood of a century.

But generally, in Montana, we tend to be spoiled. We seem not to be as subject to the weather extremes that ravage other states. We don't have hurricanes. Tornadoes happen, but they are not thick in populated areas. We get some crackerjack lightning storms and even an occasional flood or flash flood. And, yes, our winters can be a bit brisk — though the low humidity mitigates the impact of a few days of winter cold each year. As for heat, our hot is dry and modest.

But not even we can take bad weather for granted. We need to know the dangers of radical weather and we need to teach them to our offspring. Here's the first in a series of articles on weather extremes. This month we take a close look at thunderstorms, because we're right in the middle of the season in June and July. Let's define some terms used by the National Weather Service:

SEVERE THUNDERSTORM Winds of more than 57 miles an hour or hail 3/4-inch or more in diameter.

SEVERE THUNDERSTORM WATCH Severe thunderstorms are possible.

SEVERE THUNDERSTORM WARNING Severe thunderstorms have been sighted or indicated by radar.

Thunderstorms may be accompanied by heavy rains, hail, strong winds or even tornadoes. But the consistent danger is lightning. During a fairly recent 25-year period, lightning killed 18 people in Montana. Lightning strikes also did untold damage to property. It's no surprise when you think about the incredible power lightning packs. Here are some rules for keeping person and property whole while lightning is crackling in the vicinity:

- **First, it's best to know the current weather** forecast. Then you can be on the alert for a thunderstorm. Radio and television stations are good sources as forecasts change.
- **If a thunderstorm threatens, the safest** place is inside a home, a large building or an all-metal(not a convertible) auto.
- **To protect life and property, don't use the** telephone during a thunderstorm; unplug computers, TV sets, microwave ovens — anything that has electronic parts. That's the only thing that will protect them from a lightning strike on the building or nearby power lines.
- **If you're caught outdoors, don't hide under** a tree or next to a power pole. Don't stand out in a field. In fact, don't let your body project above the surrounding ground. If you're in a level field and your hair stands on end, lightning may be about to strike you. Drop to your knees and bend forward, placing your hands on your knees. **Do not lie flat.** Usually, your hair is not standing on end and you'll have time to seek low ground, in a ravine or valley and away from tall trees.
- **If you're boating, get off the water. If** you're near open water, get away from it.
- **Get off of tractors and other metal farm** equipment. Abandon motorcycles, bicycles and rec vehicles until the storm is over. If you're riding horseback, get down and away from the critter.
- **Golfers: put your clubs down, take off your** cleated shoes and stay off golf carts. You're a prime potential lightning target. Leave your umbrella behind and seek a safe location.
- **In general, stay away from metal things** — such as fences, clothes lines, metal pipes, railroad tracks and power lines. If several people are caught in the open, they should spread out.

Lightning storms are part of our weather. We should know how to cope with them and we should teach our young people the same lessons.

Bob Amick

Montana Energy

Published regularly for Montana Power customers to communicate important information between customers and their utility. Your questions and comments are invited.

Bob Amick, Editor
40 East Broadway
Butte, MT 59701

Volume 11 June 1991 No. 06

In this issue:

Montana Energy

In this issue:

Montana Energy

Tornadoes in Montana?

But of course. They really do happen — though not frequently. Montana tornadoes are most likely to pop up in June and July, with fewer instances in August or May. We're not a big tornado state — perhaps four sightings a year — but the experts generally concede we get considerably more that aren't seen or reported. As this was written in early June, I'd heard of two tornadoes in Montana this year, one near Wisdom and another in the eastern part of the state.

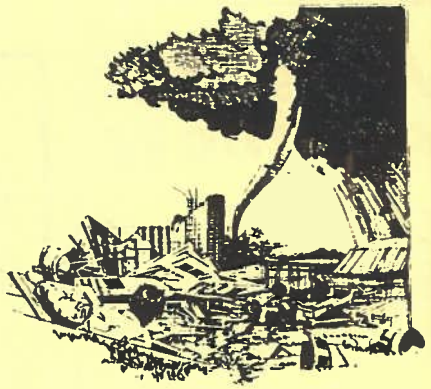
Most often, tornadoes come with severe thunderstorms. But in dry climates like ours, they sometimes start out almost like dust devils and then link up visibly with a storm. They tend to occur from mid-afternoon to early evening, but can happen anytime. They usually follow a southwest to northeast path, but you can't count on that, either. They're contrary. Very often they occur in the vicinity of a hail storm; they may produce a loud roar and they average 30 miles an hour, but may spin in place or move across the countryside at 70 miles an hour.

Those are important things to know about such storms, but here's what you need to know to survive a tornado:

- **Have a household plan so that** everyone knows where to go should a tornado visit your area. In a private dwelling, basements are best, followed by interior spaces, such as bathrooms, closets or hallways.

- **In a tall building, seek the lowest** floors possible. Again, interior rooms without windows or stairwells are the best places to hide out.

- **If you're driving and a tornado** approaches, don't try to outrun it.



That's what the folks at the National Weather Service tell us. In open country, you may have a better chance to drive away than in the city, but it's still probably better to seek shelter in a building or even to lie down in a ditch or coulee.

- **In the aftermath of a tornado,** exercise extreme caution around downed electrical wires, as well as inside where water and wires together could be dangerous. If you can do it safely, it's a good idea to turn off the power inside a storm-damaged home. Be mindful, as well, that storm damage may break natural gas lines. A strong gas odor is a signal to evacuate and inform the utility or other emergency officials.

Tornadoes are not a major part of our lives in Montana, but we need to be conscious of them. When the Weather Service lets us know conditions are right for tornadoes — or that tornadoes have been sighted in our area — we should take the messages seriously for our own safety and for the safety of our loved ones.

Attachment D

CHILDREN'S TELEVISION WORKSHOP

Community Education Services
One Lincoln Plaza, New York, New York 10025

ORDER FORM

CTW has created a family kit that can help you teach your children how to prepare for a flood long before it occurs.

The *BIG BIRD Get Ready for Floods* kit provides you with safety information and flood facts that are important to know. The kit will help you teach children, teens and adults how to plan ahead to stay safe during and after a flood.

The *BIG BIRD Get Ready for Floods* kit includes:

A Booklet
A "Match the message" card game -- *You're All Wet!*
An audio cassette story: *The Great Flood on Sesame Street* featuring: Big Bird, Elmo, Oscar the Grouch, Hoots the Owl and Willard Scott as the weather person, and a song *Get Away From The Water*, performed by Hoots the Owl.

ORDERING INFORMATION

Individual Copy:	$2.25
100 - 500 Copies:	$2.00
600 and up:	$1.75

Please send me _____ kit(s). Enclosed is $_____

Name: _____

Address: _____

City, State & Zip: _____

Phone: _____

Make Check payable to:

Children's Television Workshop
Dept. NH
One Lincoln Plaza
New York, New York 10023

Allow 10-14 days for delivery.

Attachment E
AWARE Report Roster

SUMMER/FALL 1991

NWS Headquarters Staff, W/OM11	FTS 427-8090
Donald Wernly	Chief, Warning & Forecast Branch
Linda Kremkau	Editor
John Sokich	Synoptic Scale Meteorologist
William Read	Mesoscale Meteorologist
Therese Pierce	OM NEXRAD Radar Focal Point
Rodney Becker	Public Weather & Dissem. & Program Leader
Ron Berger	Public Weather & Dissem. Met.
Estella Speaks/LaShone Darden	Secretary/Clerk Typist

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Solomon Summer	(Acting) Regional Hydrologist	649-5113
Mike Eckert	Cleveland (WPM)	942-4949
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Martin Ross	Philadelphia (WPM)	597-3696
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Barbara McNaught	Washington (Focal)	920-0202
Anthony Gigi	New York City (Focal)	662-5340
Stanley Levine	Albany (WPM)	562-6586
Walter Drag	Boston (Focal)	835-4662
Tom Dunham/Rich Webber	Buffalo (Focal)	437-4800
Roger Stairs	Pittsburgh (Focal)	722-2882
Fred Ronco/John Rimkunas	Portland, ME (Focal)	833-3552
Jerry Orchanian	Charleston, WV (Focal)	930-5201

Southern Region		
Bill Alexander	Regional (WPM)	334-2812
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Patricia Brown	Atlanta (WPM)	246-7886
Charles Terrell	Birmingham (WPM)	229-0838
Mike Mach	Fort Worth (WPM)	334-3884
Ron Stagno	Houston (WPM)	COMM 713-534-2157
James Butch	Jackson (WPM)	490-4639
James Kramper	Little Rock (WPM)	740-5331
Gary Woodall	Lubbock (WPM)	738-7361
Dennis Decker	Melbourne (WCM)	COMM 407-254-6083
Andrew Sniezak	Memphis (WPM)	222-2964
Jim Purpura	Norman (WCM)	736-6583
Mario Valverde	San Antonio (WPM)	730-5026
Ada Monzon	San Juan (WPM)	498-4586
Mike McLaughlin	Albuquerque (Focal)	474-2170
Mike Koziara	New Orleans (Focal)	682-2808
Wayne Colin/Cliff Brock	Miami (Focal)	350-4303
Jose Garcia	Amarillo (WCM)	335-1360
Vacant	Tulsa (WCM)	745-7748

Central Region		FTS
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Lee Larson	Regional Hydrologist	867-3220
Jim Allsopp	Chicago (WCM)	353-4680
David Runyan	Ann Arbor (Focal)	378-2220
Joe Sullivan	Des Moines (Focal)	862-4496
Shawn Harley	Indianapolis (Focal)	331-4035
Norman Reitmeyer	Louisville (Focal)	352-5210
Guy Tucker	St. Louis (Focal)	751-1876
Mike Dircksen	Sioux Falls (Focal)	782-4244
Vacant	Topeka (Focal)	752-2630
Todd Heitkamp	Denver (Focal)	564-0661
Mike Weiland	Cheyenne (Focal)	328-2376
Rainer Dombrowsky	Minneapolis (Focal)	725-3741
John Haase	Milwaukee (Focal)	362-3243
Richard May	Bismarck (Focal)	783-4224
Gary Wiese	Omaha (Focal)	864-4207

Western Region		
Richard Douglas	Regional (WPM)	588-4000
Bob Tibi	Regional Hydrologist	588-5137
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Constantine Pashos	Los Angeles (Focal)	793-7215
John Lovegrove	Phoenix (Focal)	261-4607
Tom Ainsworth	Portland (Focal)	423-2340
Roger Lamoni	Reno (Focal)	470-5794
Mike Lewis	Salt Lake City (Focal)	588-5133
John Quadros	San Francisco (Focal)	466-7767
Robert Doherty	Seattle (Focal)	392-6087
Lynn Valtinson	Great Falls (Focal)	COMM 406-453-9957

Alaska Region		
Jim Kemper	Regional (WPM)	8-868-5130

Pacific Region		
Saul Price	Regional (WPM)	8-551-1671
Karl K. Turner	Honolulu (Focal)	8-551-1698

NCDC - Storm Data		
Roger Tanner		8-672-0458
Vince Miller		H 404-977-7603
		W 404-433-5134/5