CENTRAL REGION 1992 TECHNICAL ATTACHMENTS

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[2]Current duty station: National Weather Service Office, Grand Island, Nebraska.

[3]Current duty station: WSO Sacramento, California.

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CENTRAL REGION TECHNICAL ATTACHMENT 92-01

THE TOPEKA 'QUICK WARN' NOAA WEATHER RADIO METHOD

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1. Introduction

Issuing severe weather warnings is the highest priority of the National Weather Service (NWS). Preparedness experts tell us that warnings issued in a timely manner save lives and property. NOAA Weather Radio (NWR) is one of the fastest ways to disseminate warnings, and also has the highest priority of issuance in the NWS. The warning alarm tone serves as a notice that important and possibly life saving information is about to be broadcast. The sooner the public receives the critical message and understands the weather threat, the sooner action can be taken to protect property and life.

2. The Problem

There is normally a period of minutes between the time the warning decision is made and the time the warning is broadcast to the public by NWR. Decisions are made concerning counties affected and expiration time of the warning. Forms are laboriously filled out with specific details concerning the event. Although SRWARN (Southern Region Computer Program, 1989) has decreased the amount of time it takes to put a warning on the NOAA Weather Wire, this process normally takes minutes from warning decision to warning transmission. In other instances, the warning has been delayed until more information is received, or until a formal warning and countdown have been completed. THE CHALLENGE FOR ALL NWS OFFICES IS TO SYSTEMATICALLY DIMINISH THE TIME IT TAKES FROM WARNING DECISION TO WARNING BROADCAST OVER NWR.

3. The Topeka Solution

The Weather Service Forecast Office (WSFO) at Topeka has found a way to minimize the time between warning decision and warning broadcast. By using a simplified and brief "quick warn" script, the initial and most basic information concerning the dangerous event is broadcast live as soon as it is available.

This means that as soon as the warning decision is made, the following steps are followed:

(1) Write down the event and location;
(2) hit the NWR alarm; and,
(3) broadcast the information contained in (1) until a more "formal" warning has been prepared.

The formal warning contains information such as counties affected, expiration time, spotter observations, storm location, storm speed, areas to be affected, call-to-action statements, and safety rules.

The quick warn method saves valuable time and gets vital information out to the listener as soon as possible. Once the "go" decision has been made to warn, especially for a tornado, the quick warn process allows the NWR operator to be "live" with life saving information within 30 to 40 seconds.

At least two people are needed for the quick warn process: one on the weather radio with the initial quick warn information, and a second person to obtain additional information and/or write up the formal and more specific warning message. Quick warn forms (Figures 1 and 2) were created for both tornado and severe thunderstorm warnings with "event specific" call-to-action and informational statements pertaining to each warning type.

4. The Procedure

All that is needed to issue a quick warn is a fast breaking hazardous event (i.e., tornado), and the event location (i.e., five miles southwest of Holton). The NWR operator jots down this information on the quick warn form, and if the decision to warn is made, the warning alarm button is hit and the information is broadcast live over NWR.

An operator experienced in the quick warn method can jot down these facts as the warning alarm tone is sounding, thereby decreasing the decision-to-broadcast interval to literally seconds! The form also contains room for the source of the report, movement, and locations likely to be immediately affected. However, movement and locations to be affected can usually be broadcast "on the fly" based on geographic knowledge (a map in the NWR room is essential) and knowledge of storm movement. Sometimes sufficient information (such as counties affected and expiration time) can be determined quickly so a complete warning message can be aired without waiting for the formal warning text.

QUICK WARN - TORNADO

JANUARY 1992

a) Check which *MAPS* unit is operating
b) If a *RED* county is involved, push the *RED* alarm button in the operating MAPS
c) Flip the *LIVE* switch up. When the VU meter drops to zero . . . read the following script

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THE NATIONAL WEATHER SERVICE IS ISSUING A T o r n a d o WARNING IN NORTHEAST KANSAS. WHILE THE FORMAL WARNING IS BEING PREPARED WE HAVE THE FOLLOWING INFORMATION . . .

THE T o r n a d o

WAS REPORTED BY _____

_____

It was LOCATED _____

_____

and was MOVING _____

PEOPLE IN _____

_____

_____

SHOULD GO INDOORS TO A SAFE PLACE IMMEDIATELY ! A BASEMENT OFFERS THE BEST PROTECTION. IF A BASEMENT IS NOT AVAILABLE, GO TO AN INTERIOR CLOSET OR HALLWAY ON THE LOWEST LEVEL. STAY AWAY FROM WINDOWS AND DOORS.

IF CAUGHT OUTSIDE AND NO SHELTER IS AVAILABLE, GO TO A LOW AREA SUCH AS A DITCH OR RAVINE. CROUCH DOWN AND COVER YOUR HEAD.

THE COUNTDOWN FOR BROADCASTERS WILL BE MADE AS SOON AS THE FORMAL WARNING IS READY.

AGAIN . . . (repeat starting from . . . "THE NATIONAL WEATHER SERVICE . . .)

Figure 1

* * * TORNADO * * *
* * * WARNING SCRIPT * * *

*** * * * R E A D the following after the *QUICK WARN* script has been read * * * ***

DETAILS OF THE T o r n a d o WARNING WILL FOLLOW IN . . .

10 seconds 9 8 7 6 5 ... (silent count until 0)

THIS IS YOUR NATIONAL WEATHER SERVICE FORECAST OFFICE IN TOPEKA, KANSAS.

A T o r n a d o WARNING IS IN EFFECT UNTIL _____ am / pm FOR

_____

(counties and cities affected by the warning)

At _____ am / pm a T o r n a d o

was reported in _____.

It was moving _____ at _____ mph and will move toward _____.

_____

REPEATING . . . (repeat the warning)

IF THREATENING WEATHER APPROACHES, GO INDOORS TO A SAFE PLACE IMMEDIATELY! A BASEMENT OFFERS THE BEST PROTECTION. IF A BASEMENT IS NOT AVAILABLE, GO TO AN INTERIOR CLOSET OR HALLWAY ON THE LOWEST LEVEL. STAY AWAY FROM WINDOWS AND DOORS.

THIS HAS BEEN _____ FOR THE NATIONAL WEATHER SERVICE IN TOPEKA, KANSAS.

** 5 second dead air time before switching back to the taped program **

** return to severe weather warning checklist **

* * * SEVERE THUNDERSTORM * * *
* * * WARNING SCRIPT * * *

* * * * R E A D the following after the *QUICK WARN* script has been read * * * *

DETAILS OF THE Severe Thunderstorm WARNING WILL FOLLOW IN . . .

10 seconds 9 8 7 6 5 ... (silent count until 0)

THIS IS YOUR NATIONAL WEATHER SERVICE FORECAST OFFICE IN TOPEKA, KANSAS.

A Severe Thunderstorm WARNING IS IN EFFECT UNTIL _____ am / pm FOR

_____

(counties and cities affected by the warning)

At _____ am / pm

a Severe Thunderstorm with
_____ inch hail
_____ MPH winds

was reported in _____ .

It was moving _____ at _____ mph and will move toward _____ .

_____

REPEATING . . . (repeat the warning)

THIS IS A DANGEROUS STORM. IF YOU ARE IN ITS PATH YOU SHOULD PREPARE FOR DAMAGING WIND IN EXCESS OF 55 MPH . . . LARGE HAIL . . . AND DEADLY LIGHTNING. PEOPLE OUTSIDE SHOULD MOVE TO A SHELTER . . . PREFERABLY INSIDE A STRONG BUILDING BUT STAY AWAY FROM WINDOWS.

☐ A TORNADO WATCH IS ALSO IN EFFECT FOR THE WARNED AREA. REMEMBER SEVERE THUNDERSTORMS CAN AND OCCASIONALLY DO PRODUCE TORNADOES WITH LITTLE OR NO ADVANCE WARNING.

THIS HAS BEEN _____ FOR THE NATIONAL WEATHER SERVICE IN TOPEKA, KANSAS.

** 5 second dead air time before switching back to the taped program **

** return to severe weather warning checklist **

Figure 2

a) Check which *MAPS* unit is operating
b) If a *RED* county is involved, push the *RED* alarm button in the operating MAPS
c) Flip the *LIVE* switch up. When the VU meter drops to zero . . . read the following script

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THE NATIONAL WEATHER SERVICE IS ISSUING A Severe Thunderstorm WARNING IN NORTHEAST KANSAS. WHILE THE FORMAL WARNING IS BEING PREPARED WE HAVE THE FOLLOWING INFORMATION . . .

THE Severe Thunderstorm

WAS REPORTED BY _____

_____

It was LOCATED _____

_____

and was MOVING _____

PEOPLE IN _____

_____

SHOULD FIND SHELTER IMMEDIATELY.

THIS IS A DANGEROUS STORM. IF YOU ARE IN ITS PATH YOU SHOULD PREPARE FOR DAMAGING WIND IN EXCESS OF 55 MPH . . . LARGE HAIL . . . AND DEADLY LIGHTNING. PEOPLE OUTSIDE SHOULD MOVE TO A SHELTER . . . PREFERABLY INSIDE A STRONG BUILDING BUT STAY AWAY FROM WINDOWS.

☐ A TORNADO WATCH IS ALSO IN EFFECT FOR THE WARNED AREA. REMEMBER SEVERE THUNDERSTORMS CAN AND OCCASIONALLY DO PRODUCE TORNADOES WITH LITTLE OR NO ADVANCE WARNING.

THE COUNTDOWN FOR BROADCASTERS WILL BE MADE AS SOON AS THE FORMAL WARNING IS READY.

AGAIN . . . (repeat starting from . . . "THE NATIONAL WEATHER SERVICE . . .)

Each situation, NWR operator, and warning is unique in this respect.

5. Typical Scenario

Once the alarm tone has sounded, the quick warn broadcast is begun by saying "The National Weather Service is issuing a tornado warning in Northeast Kansas. While the formal warning is being prepared we have the following information...."

> "The tornado was reported by...(if known), it was located (city, county section, etc.), and was moving (direction).... People in (location: city, county section, etc.) should go indoors to a safe place immediately"! (More call to action, etc., and repeat message from start... see attachment).

Broadcasters who relay the NWR warning directly on their frequency, have previously been advised that a countdown will be made as soon as the formal warning is ready.

The initial information is continuously repeated (plus newer information that becomes available), including safety rules and call-to-action statements until the formal warning is ready for broadcast. After a 10 second countdown, the warning is broadcast live for media outlets. Normally the formal warning is then recorded in the standard manner for continuous airing. Occasionally, the Topeka office has done some continuous live tornado broadcasts for 10 or 20 minutes at a time when direct contact with the spotters through amateur radio or law enforcement radio provide valuable storm information.

As mentioned earlier, occasionally sufficient information is available so a complete warning can be aired almost immediately without waiting for the formal message. This "ad-libbing" or live improvising can only be accomplished by experience and confidence on the NWR system. Frequent drills (as described below), however, increase the number of NWS personnel who can perform this task well.

6. Helpful Tools

Although the preparation of the formal warning by another person may only take a couple of minutes, it seems like an eternity to the NWR operator who is broadcasting (and rebroadcasting) the 'quick' warning live until the formal warning is ready. Broadcasting live and improvising with little information is difficult, thus aids and prompts are available to assist the

NWR operator. Posted next to the NWR console are detailed maps of our county warning area and specifically of Topeka's NWR broadcast area. Detailed maps of Topeka, and Shawnee County (where Topeka is located) are also available. The maps have range markers for distance from Topeka, and another separate and moveable scale of mile markers. Attached to the maps are a series of call-to-action statements and safety rules. A Kavouras remote radar monitor is located above the NWR console to keep track of echoes and assist in the live broadcast and ad-libbing. Finally, Topeka's severe weather operations area is located adjacent to the NWR room so information can be passed on quickly and easily to the "live" broadcaster.

Although sometimes the quick warn broadcast is not (what some might consider) smooth and professional, its live nature certainly lends credibility to the fast-breaking event. Professional broadcasters have these problems too! For example, when news was first broadcast about the beginning of the air war or ground air over Iraq, even delivery by the pros was not very polished. That's because it was a live broadcast of a developing significant event. However, the impact on and service to the public was tremendous. This certainly describes a tornado warning.

7. Drills

Probably the best way to prepare for the quick warn broadcast is by simulated drills and on air experience. This past spring many practice sessions and unannounced drills were held to acquaint and familiarize the entire staff with the quick warn process. All personnel were individually taken through frequent and numerous "dry runs" on all aspects of the quick warn procedure. Simulated severe weather reports were used to make practice broadcasts, recordings, and warning texts. At a later date, unannounced drills simulating an event (i.e. tornado sighting) were held. On duty personnel reacted as if it were the real event as directed by the warning coordinator -- usually the lead forecaster.

The fact that the drills were timed added the necessary urgency to the drill. For example, a person holding a stopwatch in full view of the participants provided the realistic anxiety that accompanies severe weather events. Comments from participants about 'cold sweat' and 'hearts pumping' were common. The drills were critiqued and compared from one team to another and evaluated for improvement. Since each drill simulated a real event, a simulated tornado track was developed and drawn for each drill. Based on the original tornado location, direction of

movement and speed, drill participants noted the tornado positions when (1) the tornado was first reported, (2) the NWR warning alarm was sounded, (3) the "formal broadcast" began, and (4) the transmission of the warning over the NOAA Weather Wire began. The importance of an efficient information dissemination system becomes apparent when the team can see the area covered (and houses destroyed) between the time the tornado is reported to the NWS and the time the NWR alarm is sounded.

As more drills took place, improved quality and speed in the entire process was noted. Staff members also became more comfortable, confident, and proficient at making live quick warn broadcasts. An extremely active spring severe weather season put the quick warn process to an exhaustive test. It helped hone staff skills, understanding, and appreciation of the quick warn forms.

Also, media response has been positive as broadcasters feel they are getting information quicker and are able to warn the public more efficiently.

It is important to emphasize that the quick warn method is used after the warning decision is made. The quick warn method and drills do not test the warning decision process. They test the system for issuing warnings.

8. Other NWS Offices

The quick warn form is not an entirely new idea or concept, and is probably used in one way or another at other NWS offices. These observations are offered as one example of what can be done to speed the warning process, and it is hoped that other locations find it useful. It is recognized that each office and situation is unique. Also, as the Weather Radio Specific Area Message Encoder (WRSAME) program is implemented, minor modifications to the Quick Warn procedures will be needed.

Finally, since all NWS offices should be striving to minimize the amount of time it takes inform the public of danger once the decision to warn has been made, comments or suggestions concerning the attached form and the proposed procedures are certainly welcome. If someone has a better way, please share it!

9. Credit and Acknowledgement

Many people must share in the creation and use of the WSFO Topeka "Quick Warn" method. Former Kansas Area Manager, Jack May, conceived the original method and sketched the initial quick

warn form. Robert Wavrin, Weather Radio program leader, shaped and developed the sketch into a workable form and entered it into the word processor for the many adjustments and changes that resulted from numerous practice and actual warning sessions. All WSFO staff members tirelessly participated in practice sessions and drills, and openly shared their positive and negative comments concerning the procedure.

Special thanks to Robert Wavrin, John Feldt (Deputy Meteorologist in Charge), Bill Fortune (Warning Preparedness Meteorologist), and Ken Labas (Science and Operation Officer), all of WSFO Topeka; and Jack May, current Central Region Deputy Director, who provided critical review and helpful comments on this paper.

10. Reference

National Weather Service, 1989: SRWarn User's Manual. Available from National Weather Service Southern Region, Systems Operations Division, Fort Worth, TX, 58 pp.