Ponderings on Warning Lead Times
BULLETIN - EAS ACTIVATION REQUESTED
TORNADO WARNING
NATIONAL WEATHER SERVICE OMAHA/VALLEY NEBRASKA
535 PM CDT MON MAR 23 2009

THE NATIONAL WEATHER SERVICE IN OMAHA HAS ISSUED A

* TORNADO WARNING FOR...
HARRISON COUNTY IN SOUTHWEST IOWA
NORTHWESTERN POTTAWATTAMIE COUNTY IN SOUTHWEST IOWA
DOUGLAS COUNTY IN EAST CENTRAL NEBRASKA
SOUTHEASTERN WASHINGTON COUNTY IN EAST CENTRAL NEBRASKA

* UNTIL 630 PM CDT

* AT 534 PM CDT...NATIONAL WEATHER SERVICE DOPPLER RADAR WAS TRACKING A CONFIRMED TORNADO NEAR MILLARD...OR 6 MILES WEST OF OMAHA. DOPPLER RADAR SHOWED THIS TORNADO MOVING NORTHEAST AT 45 MPH.

* LOCATIONS IMPACTED INCLUDE...
NORTH OMAHA... WILSON ISLAND STATE PARK... FORT CALHOUN... MISSOURI VALLEY... MAGNOLIA... LOGAN...

What was the lead time?
What forecasters might (do?) think?

- Warning issued at 5:35 p.m.
- Estimated touchdown at 6:03 p.m.

**Lead time = 28 minutes**
What users might (do?) think?

It seemed like they were about 10 minutes behind on the warning. *(paraphrasing)*

– Member of the public interviewed

It seemed like there was only a little bit of a warning. *(paraphrasing)*

– Emergency manager interviewed

So ... what was the lead time?
“Does anyone else in the world think about lead times the way we [NWS forecasters] do?”

– Daniel

“No.”

– Julie

(without hesitation)
What lead times might a user get in this case?

<table>
<thead>
<tr>
<th>Estimated lead time</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 minutes (best case scenario)</td>
<td>Sitting in the WFO, NWSChat</td>
</tr>
<tr>
<td>~ 27 minutes?</td>
<td>Weather Radio</td>
</tr>
<tr>
<td>~ 25-26 minutes?</td>
<td>WFO webpage</td>
</tr>
<tr>
<td>~ 23-26 minutes?</td>
<td>Crawled on TV, radio (EAS)?</td>
</tr>
<tr>
<td>~ 23-26 minutes?</td>
<td>Siren (if available)</td>
</tr>
<tr>
<td>~ 0-26 minutes?</td>
<td>Relayed by a broadcast meteorologist*, a radio DJ</td>
</tr>
<tr>
<td>~ 0-26 minutes?</td>
<td>Relayed by another person</td>
</tr>
<tr>
<td>~ 0-26 minutes?</td>
<td>Spotting the tornado</td>
</tr>
</tbody>
</table>
*Broadcasters don’t always go on-air*

- From a recent study of focus groups conducted with broadcast meteorologists

“We have different policies on tornado warnings here. If it’s in a metro area or happens to be close to one of the cities, we’ll go on it. But it could be an F3 tornado out in the middle of nowhere on the eastern plains, we’ll just do a crawl. We’re not going to get on the air with that and interrupt programming.”

— Participant #10

**Is this the policy of your broadcasters?**
The awful truth

• Communication of information is **NOT** instantaneous!
  – There are *delays* in transmission
  – There are *breakdowns* in communication
  – People may *miss* the information being communicated the 1\textsuperscript{st} time ... the 2\textsuperscript{nd} time ... the n\textsuperscript{th} time ... entirely!
Conclusion

**Official NWS lead time ≠ actual lead time**

Moreover, lead time (official or actual) ≠ perceived lead time ... but that’s another issue.

And let’s not forget the complex nature of warning response ... also another issue.
So what does it all mean?

• Do we know the tornado warning policies of our partners? Should we?

• Are there ways we can better communicate the threat of an event to our partners (NWSChat? phone calls? other?) so they can relay it accordingly?

• Should we meet with some of our partners and discuss what to do better, differently?
  – Recall that Jim advocated a post-event, IWT-like meeting (like what Donna Dubberke does)
If we (the weather community) want to save lives, it takes SO much more than a warning/radar meteorologist issuing a timely warning!

The weather community MUST tackle the tough societal impact issues if we want to continue to truly protect lives!

*(what good is longer lead time ?)*