SEPTEMBER 3rd - 4th, 2012 WEAK TORNADOES

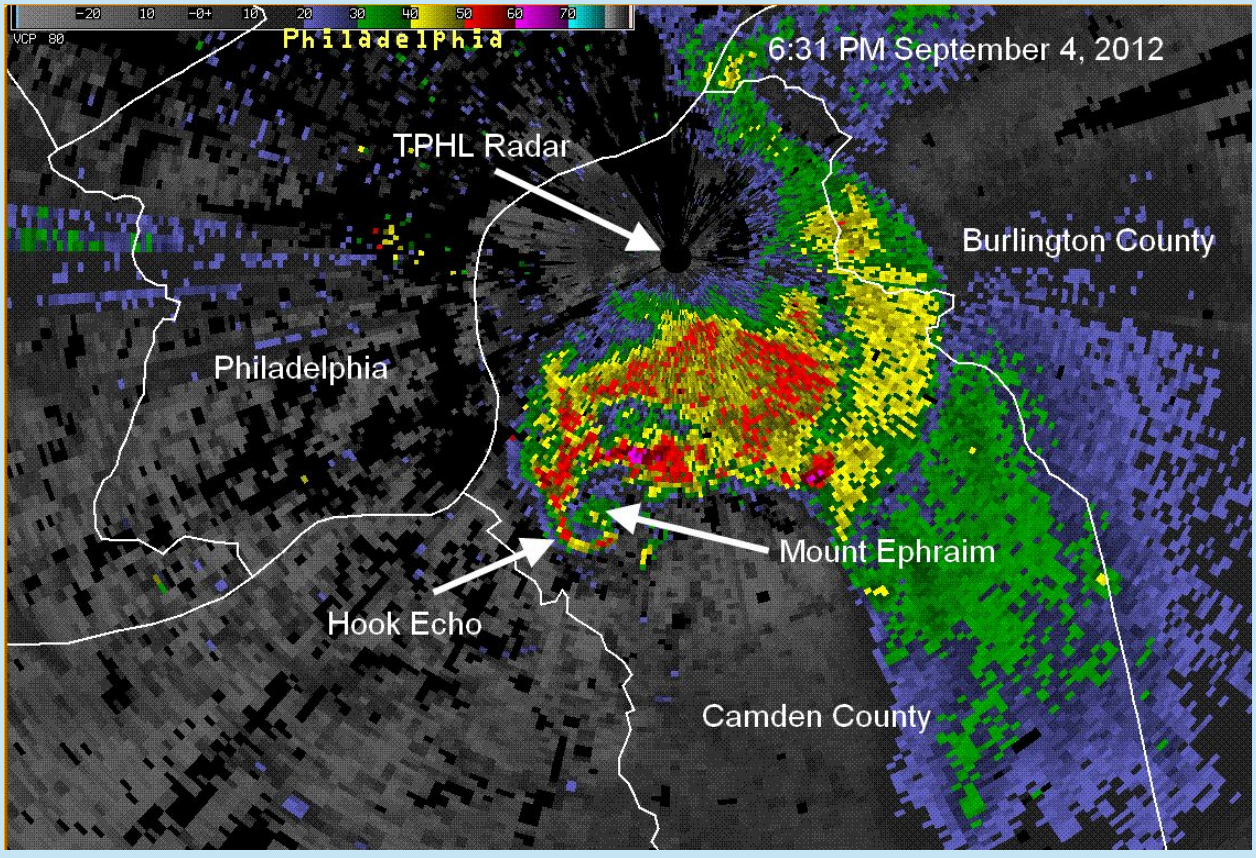
Introduction

Some remnant energy from once Hurricane Issac moved across our area during the September 3-5, 2012 time frame. In addition, this enhanced the tropical moisture across the area with surface dew points in the lower to mid 70s. The atmospheric conditions were comprised of some instability and wind shear (change in direction and speed with height). Since the instability was not exceptionally high, thunderstorms that tended to develop did not achieve tall updrafts in general. A cold front finally moved through most of our region on September 5, 2012 that knocked down the dew points some.

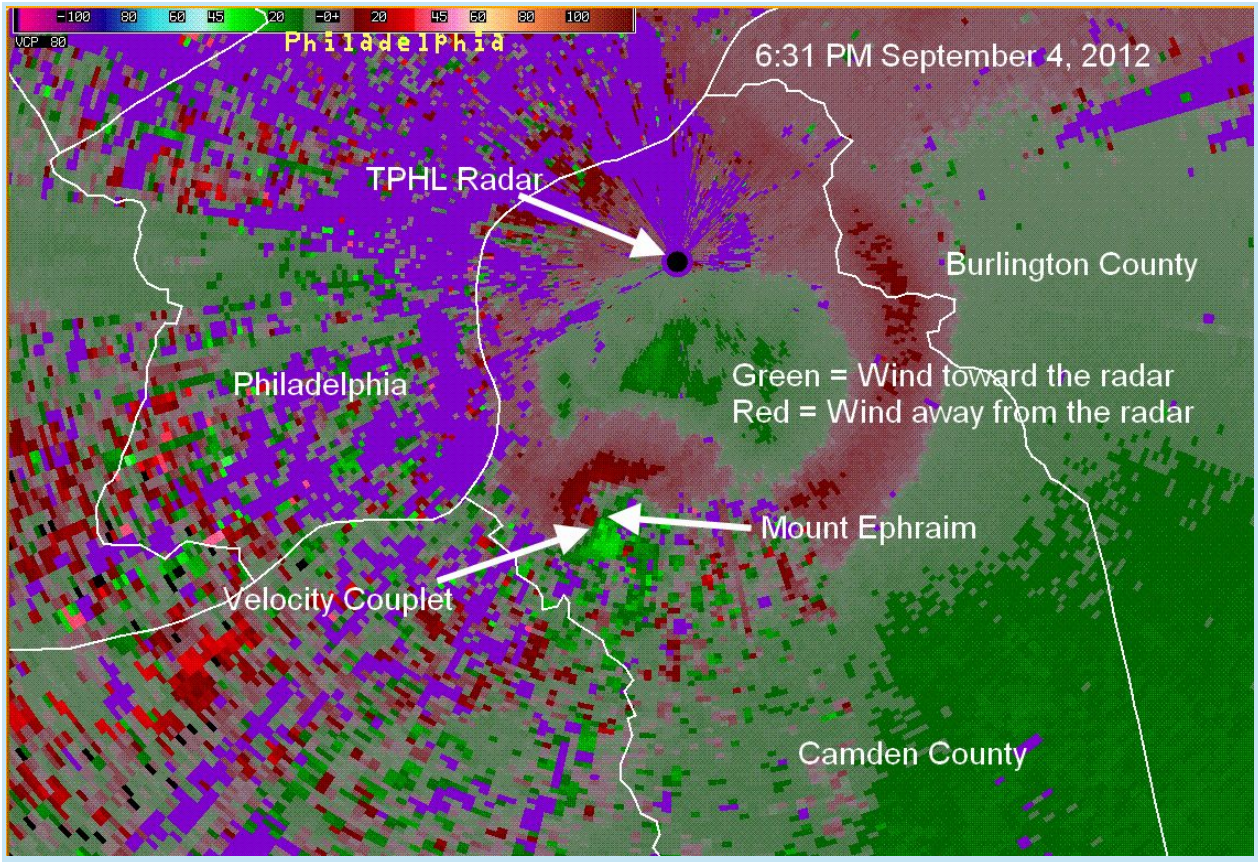
There were two events that occurred, which involved weak tornadoes. The weak tornadoes, EF0 with winds between 65-85 mph, are typical of what occurs in our part of the country. These are mainly spin-ups that develop and dissipate quickly. This was again the case on September 3rd and 4th. The thunderstorms that spawned these weak and short-lived tornadoes were in the same environment. This was characterized by deep tropical moisture and also wind shear (wind shear is a change in wind direction with height and also even speed). This creates a rolling motion in the atmosphere, and when storms develop rotation, this can then be tilted vertically by the storms updraft resulting in a tornado. Because of the tropical moisture that was in place, the local condensation level, or LCL, was rather low. The lower this is to the ground, the greater chance of a tornado occurring given other favorable parameters such as wind shear.

The focus here is with the September 4th tornado that hit the Mount Ephraim, New Jersey (Camden County) area, as it occurred not too far from the Philadelphia Terminal Doppler Radar (TDWR, TPHL). Some brief information about the September 3rd Camden, Delaware tornado is also listed. The velocity data also showed as the hook became more pronounced, the wind strengthened and the velocity data tightened up.

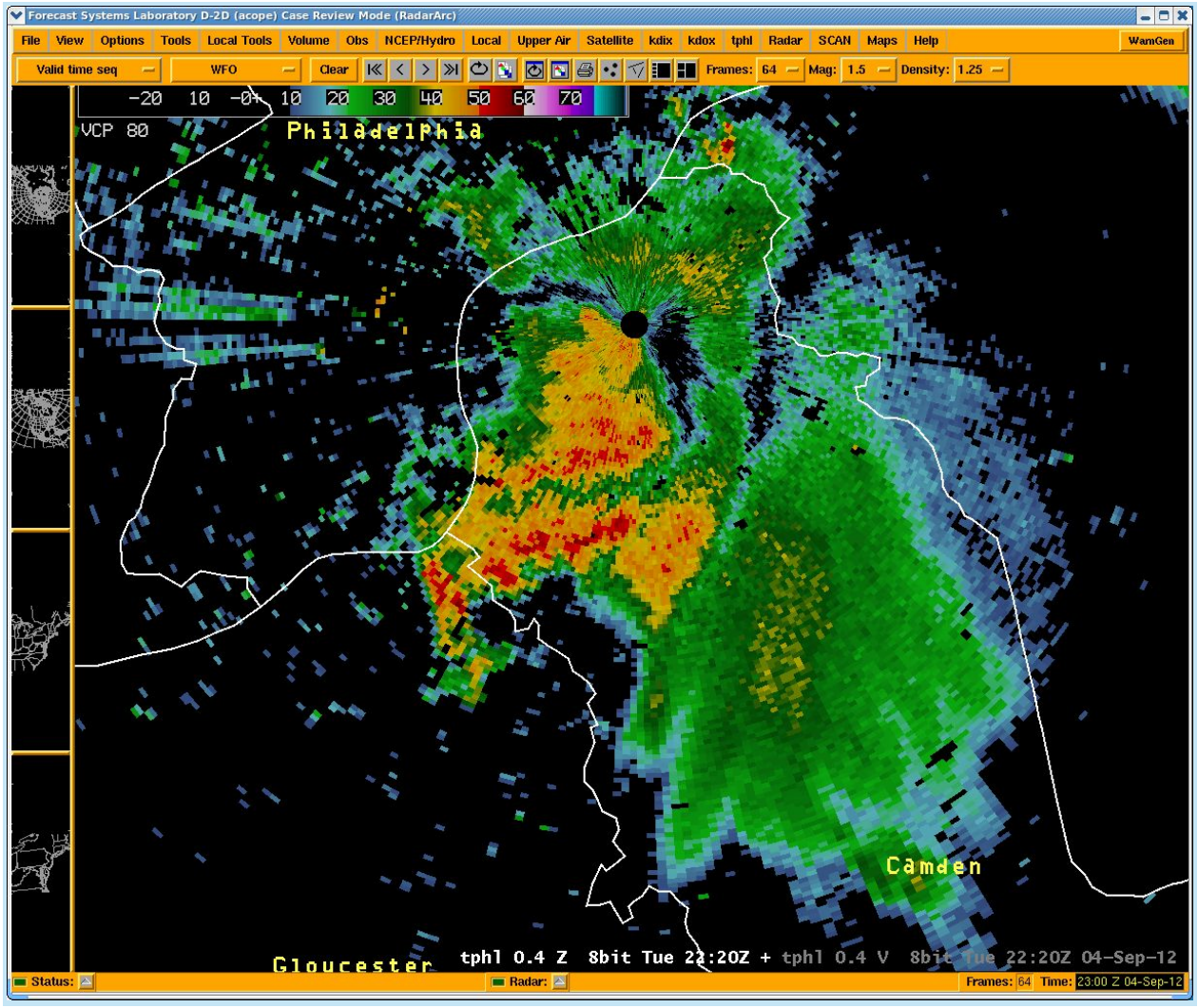
Radar Imagery



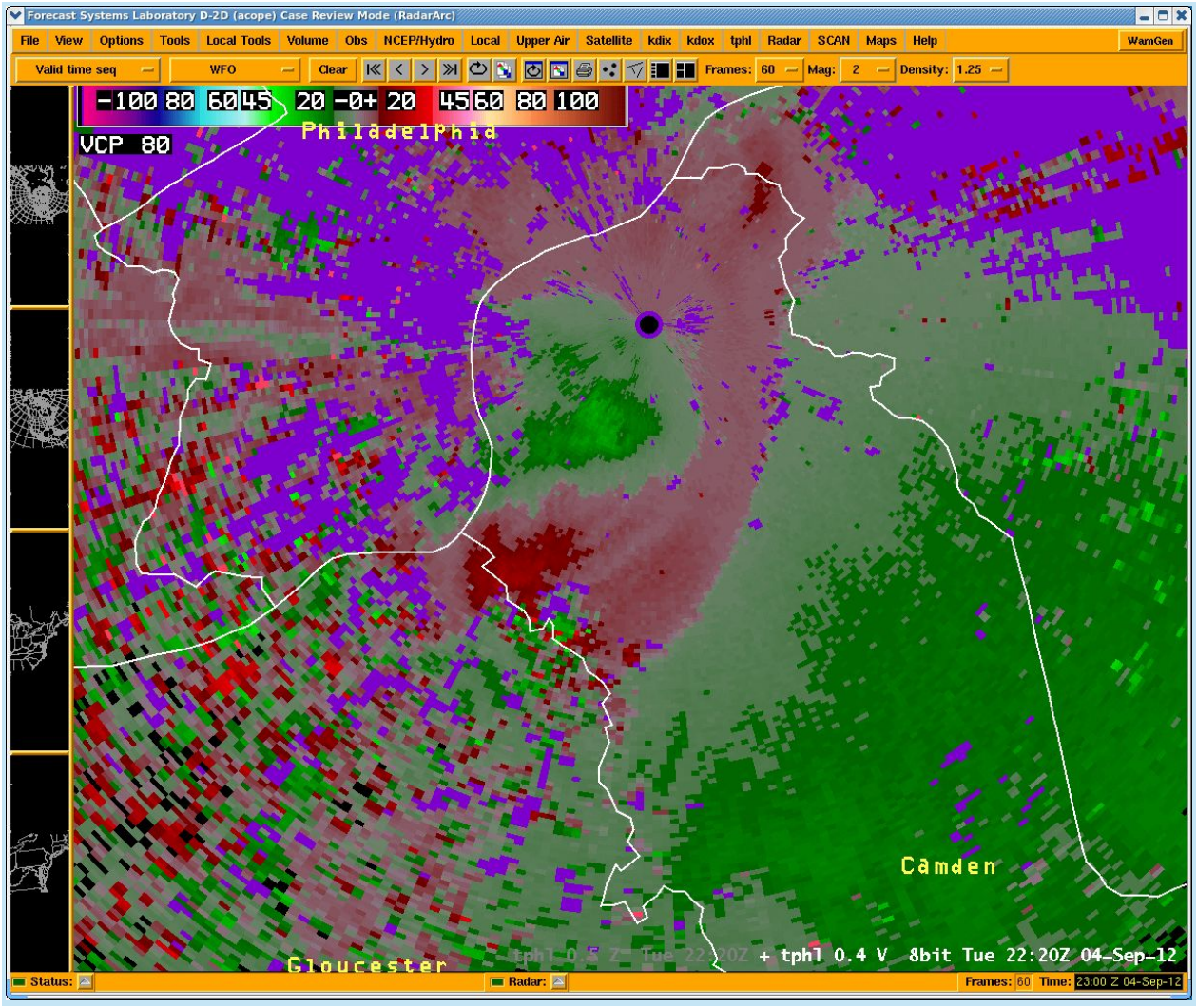
The close proximity of the Mount Ephraim tornado to the TPHL radar resulted in several impressive scans of the storm. This image shows a well-defined hook that developed.



This velocity image from the TPHL radar shows the rotation associated with the storm that produced a brief tornado in Mount Ephraim. The green color is wind blowing toward the radar and red is wind blowing away from the radar. Where this becomes aligned next to each other, indicates that the air is rotating. The tighter this is indicates where the tornado is located. In this loop, the velocity couplet tightens up and then tends to weaken.



This is a loop of the storm reflectivity from the TPHL radar of the storm that produced the weak tornado. Note the well-defined hook that developed, which then curled up on itself before weakening.



This is a loop of the velocity data from the TPHL radar. The green color is wind blowing toward the radar and red is wind blowing away from the radar. Where this becomes aligned
next to each other, indicates that the air is rotating. The tighter this is indicates where the tornado is located. In this loop, the velocity couplet tightens up and then tends to weaken.

Warnings and Storm Summary

Click here to read the Tornado Warning for Kent County Delaware on September 3rd

Click here to read the Tornado Warning for Camden County New Jersey on September 4th

The tornadoes typically in our area usually develop and then dissipate quickly. This was the case once again during these September 2012 events. In the case of the September 4, 2012 Mount Ephraim tornado, the funnel appeared to touch down for a brief time with the main rotation remaining disconnected from the ground. This would explain the limited damage despite the impressive look on the radar imagery.

Click here to read the Storm Survey Report for the September 3rd Kent County Tornado

Click here to read the Storm Survey Report for the September 4th Camden County Tornado

Storm Pictures and Damage

Courtesy of Andrew ODonnell.

Courtesy of Karen Stebbins.

Courtesy of of NWS Mount Holly storm survey.

Courtesy of of NWS Mount Holly storm survey.

Courtesy of of NWS Mount Holly storm survey.

Courtesy of of NWS Mount Holly storm survey.

PNSPHI
DEZ001>004-MDZ008-012-015-019-020-NJZ001-007>010-012>027-PAZ054-055-
060>062-067>071-050354-

PUBLIC INFORMATION STATEMENT
SPOTTER REPORTS
NATIONAL WEATHER SERVICE MOUNT HOLLY NJ
1154 AM EDT TUE SEP 04 2012

THE FOLLOWING ARE UNOFFICIAL OBSERVATIONS TAKEN DURING THE PAST 21
HOURS FOR THE STORM THAT HAS BEEN AFFECTING OUR REGION. APPRECIATION
IS EXTENDED TO HIGHWAY DEPARTMENTS...COOPERATIVE OBSERVERS...SKYWARN
SPOTTERS AND MEDIA FOR THESE REPORTS. THIS SUMMARY IS ALSO AVAILABLE
ON OUR HOME PAGE AT WEATHER.GOV/PHI

**********STORM TOTAL RAINFALL**********

LOCATION STORM TOTAL TIME/DATE COMMENTS
RAINFALL OF

/INCHES/ MEASUREMENT

NEW JERSEY

...ATLANTIC COUNTY...
MARGATE CITY 2.24 800 AM 9/04 CO-OP OBSERVER

...BURLINGTON COUNTY...
CHATSWORTH 5.19 830 AM 9/04 MESONET
INDIAN MILLS 3.15 800 AM 9/04 CO-OP OBSERVER
SHAMONG TWP 3.15 830 AM 9/04 MESONET

...CAMDEN COUNTY...
BLUE ANCHOR 2.45 800 AM 9/04 MESONET

...OCEAN COUNTY...
BAYVILLE 5.11 620 AM 9/04 TRAINED SPOTTER
POINT PLEASANT 3.77 755 AM 9/04 MESONET
BARNEGAT BAY 2.17 800 AM 9/04 MESONET
BARNEGAT LIGHT 2.16 805 AM 9/04 MESONET

PENNSYLVANIA

...BUCKS COUNTY...
SOUTHAMPTON 2.35 800 AM 9/04 CO-OP OBSERVER

...CHESTER COUNTY...
NORTHBROOK 2.55 800 AM 9/04 MESONET
DOWNINGTOWN 2.53 800 AM 9/04 MESONET

...DELAWARE COUNTY...
CHADDS FORD 2.23 800 AM 9/04 MESONET

...PHILADELPHIA COUNTY...
NORTHEAST PHILADELPH 2.57 800 AM 9/04 ASOS

**********24 HOUR RAINFALL**********

LOCATION 24 HOUR TIME/DATE COMMENTS
RAINFALL OF
/INCHES/ MEASUREMENT

DELAWARE

...NEW CASTLE COUNTY...
2 WNW NEWPORT 2.55 700 AM 9/04 COCORAHS
2 SE GLASGOW 2.18 700 AM 9/04 COCORAHS

5 S NEWARK 2.02 530 AM 9/04 COCORAHS

NEW JERSEY

...BURLINGTON COUNTY...
3 NNW TABERNACLE TWP 3.05 700 AM 9/04 COCORAHS
5 WNW TABERNACLE TWP 2.65 800 AM 9/04 COCORAHS
2 SSE MEDFORD TWP 2.31 800 AM 9/04 COCORAHS

...CAMDEN COUNTY...
4 W WINSLOW TWP 2.21 700 AM 9/04 COCORAHS

...GLOUCESTER COUNTY...
5 WNW MONROE TWP 2.66 600 AM 9/04 COCORAHS

...MONMOUTH COUNTY...
S LAKE COMO 2.67 830 AM 9/04 COCORAHS
1 WSW BELMAR 2.40 700 AM 9/04 COCORAHS

...OCEAN COUNTY...
NW PINE BEACH 6.20 800 AM 9/04 COCORAHS
3 ESE TOMS RIVER 5.94 700 AM 9/04 COCORAHS
3 ENE BERKELEY TWP 5.40 815 AM 9/04 COCORAHS
1 SSW BERKELEY TWP 4.66 900 AM 9/04 COCORAHS
2 NNE BRICK TWP 4.03 800 AM 9/04 COCORAHS
1 SW POINT PLEASANT 3.61 700 AM 9/04 COCORAHS
2 N BRICK TWP 3.51 800 AM 9/04 COCORAHS
6 E LACEY TWP 2.75 600 AM 9/04 COCORAHS
4 N BRICK TWP 2.44 945 AM 9/04 COCORAHS
5 N LITTLE EGG HARBO 2.41 500 AM 9/04 COCORAHS
2 NNE STAFFORD TWP 2.16 600 AM 9/04 COCORAHS

PENNSYLVANIA

...CHESTER COUNTY...
2 SSE WEST CHESTER 2.31 700 AM 9/04 COCORAHS
2 SE WEST CHESTER 2.25 700 AM 9/04 COCORAHS
2 NE UNIONVILLE 2.22 810 AM 9/04 COCORAHS

...MONTGOMERY COUNTY...
1 ENE WILLOW GROVE 2.22 700 AM 9/04 COCORAHS
2 S JENKINTOWN 2.12 800 AM 9/04 COCORAHS

...PHILADELPHIA COUNTY...
1 SE ROCKLEDGE 2.60 630 AM 9/04 COCORAHS
5 NE PHILADELPHIA 2.52 700 AM 9/04 COCORAHS

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PNSPHI
DEZ002-004-042330-

PUBLIC INFORMATION STATEMENT
NATIONAL WEATHER SERVICE MOUNT HOLLY NJ
319 PM EDT TUE SEP 4 2012

...TORNADO CONFIRMED NEAR CAMDEN IN KENT COUNTY DELAWARE...

LOCATION...CAMDEN IN KENT COUNTY DELAWARE
DATE...9/3/12
ESTIMATED TIME...3:20 PM EDT
MAXIMUM EF-SCALE RATING... EF-0
ESTIMATED MAXIMUM WIND SPEED...85 MPH
PATH WIDTH...35 YARDS
PATH LENGTH...215 YARDS
BEGINNINGLAT/LON...39.10/-75.56
ENDINGLAT/LON...39.10/75.56
* FATALITIES...0
* INJURIES...2

* THE INFORMATION IN THIS STATEMENT IS PRELIMINARY AND SUBJECT TO CHANGE PENDING FINAL REVIEW OF THE EVENT(S) AND PUBLICATION IN NWS STORM DATA.

...SUMMARY...
THE NATIONAL WEATHER SERVICE IN MOUNT HOLLY NJ HAS CONFIRMED A EF-0 TORNADO WITH ESTIMATED MAXIMUM WINDS OF 85 MPH NEAR CAMDEN IN KENT COUNTY DELAWARE ON 9/3/12. THE TORNADO TOUCHDOWN POINT WAS NEAR DAWSON LANE IN THE BARCLAY FARMS SUBDIVISION. THE TORNADO TRACKED PARALLEL TO NEARBY TRAIN TRACKS FROM SOUTH TO NORTH. THE TORNADO CAUSED STRUCTURAL DAMAGE TO SEVERAL HOMES IN THE SUBDIVISION FROM DALBY LANE TO CAREY LANE. ONE FIREFIGHTER WAS INJURED WHILE ATTEMPTING TO PROVIDE ASSISTANCE TO A RESIDENT OF THE AREA. ANOTHER PERSON WAS INJURED DUE TO A CUT FROM GLASS. BOTH INJURIES WERE MINOR AND THE INJURED WERE RELEASED FROM THE HOSPITAL. THE NATIONAL WEATHER SERVICE ACKNOWLEDGES HELP AND ASSISTANCE FROM THE KENT COUNTY DEPARTMENT OF PUBLIC SAFETY.

THIS INFORMATION CAN ALSO BE FOUND ON OUR WEBSITE AT
WEATHER.GOV/PHI.

FOR REFERENCE...THE ENHANCED FUJITA SCALE CLASSIFIES TORNADOES
INTO THE FOLLOWING CATEGORIES:

EF0...WIND SPEEDS 65 TO 85 MPH.
EF1...WIND SPEEDS 86 TO 110 MPH.
EF2...WIND SPEEDS 111 TO 135 MPH.
EF3...WIND SPEEDS 136 TO 165 MPH.
EF4...WIND SPEEDS 166 TO 200 MPH.
EF5...WIND SPEEDS GREATER THAN 200 MPH.

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