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# *VALID TIME EVENT CODE (VTEC)*

**NOTICE:** This publication is available at: http://www.nws.noaa.gov/directives/.

**OPR:** W/DIS (R. Bunge) **Certified by:** W/DIS (M. Mainelli)
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***SUMMARY OF REVISIONS:*** This directive supersedes NWSI 10-1703, "Valid Time Event Code," effective December 29, 2008. Changes made to reflect the NWS Headquarters reorganization effective April 1, 2015.
Changes include:

1) Throughout the document, updated titles and sections for referenced NWS Instructions.
2) Throughout the document, updated examples to indicate a year of 2011, 2012, or 2013.
3) Throughout the document, deleted references to Tropical Storm Wind and Hurricane Wind products.
4) Section 1.3 (page 5). Changed advance notification for a Service Change Notice from 120 days to 75 days.
5) Section 2.1.2 (page 12). Spelled out acronyms for first time use.
6) Section 5.1 (page A-3). Added new hazard types and deleted hazard types no longer issued.
7) Section 5.2 (page A-4). Added new hazard types and deleted hazard types no longer issued.
8) Appendix D (page D-4). Added new examples for Beach Hazard and Rip Current statements.
9) Appendix D (page D-11). Changed example for downgrading a Hurricane Warning to a Tropical Storm Warning.
10) Appendix D (page D-23), Section 7.1. Changed Tropical examples.

signed April 21, 2017
Michelle Mainelli Date
Director, Office of Dissemination

# Valid Time Event Code (VTEC)

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## 1. Introduction

The Valid Time Event Code (VTEC) is always used in conjunction with, and provides supplementary information to, the Universal Geographic Code (UGC) to further aid in the automated delivery of the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) text products to users. The VTEC is included in many event-driven or non-routine products. The VTEC provides information on the event, while the UGC (see Section 1.1) describes the affected geographic area. See important definitions in Sections 1.4, 1.5, 1.6 and 1.7.

There are two forms of the VTEC: (1) the "primary" or **P**-VTEC, and (2) in certain hydrologic products, a supplementary hydrologic or **H**-VTEC that is always used in conjunction with, and occurs on the line immediately after, the P-VTEC string(s). The P-VTEC rules and format are described in Sections 2 and 3; the H-VTEC rules and format, providing flood information for certain products, are described in Sections 4 and 5.

NWS text product generation software applications automatically include the P-VTEC and H-VTEC string(s) in the appropriate products.

Appendices A and B provide the listing of the P-VTEC elements and H-VTEC elements, respectively. Appendix C provides links to websites which list valid VTEC events (see Section 1.4 below for the definition of a VTEC event).

Examples of the VTEC with detailed interpretation illustrating how it is utilized in products are found in Appendix D.

### 1.1 References

Being a text product code, the VTEC builds on the rules and formats described in the following NWS Instructions (NWSI):

> NWSI 10-1701, *Text Product Formats and Codes*. This instruction provides the overall formatting structure for all text products.
>
> NWSI 10-1702, *Universal Geographic Code (UGC)*. This instruction provides the rules and formatting for the UGC.

The relevant product specification NWSI documents for NWS product classes which contain the VTEC are listed throughout this document, and are part of the following NWSI series:

NWSI 10-3 series. *Marine and Coastal Weather Services*
NWSI 10-4 series. *Products and Services to Support Fire and Other Incidents*
NWSI 10-5 series. *Public Weather Services*
NWSI 10-6 series. *Tropical Cyclone Weather Services Program*
NWSI 10-9 series. *Water Resources Services Program*

All NWSIs and associated Regional supplements may be found on the Internet at http://www.nws.noaa.gov/directives.

## 1.2 Mission Connection

The NWS mission to protect life and property and enhance the national economy is carried out by timely delivery of warnings, watches, forecasts, and other relevant weather, flood, climate, and critical non-weather-related information through a variety of dissemination systems under the "all hazards" concept (see definition in NWS Policy Directive 10-17, *Dissemination*, which provides the overall dissemination policy). Correct use of product formats and codes is essential to ensure this delivery and allow users to select, process, and redistribute the information regardless of the dissemination method of receipt.

## 1.3 Implementation

On February 8, 2005, the NWS operationally implemented the P-VTEC in five short duration warning products produced at Weather Forecast Offices (WFOs) and in some national Convective Watch products produced by the Storm Prediction Center (SPC). Since then, the VTEC has been added to additional Watch/Warning/Advisory (W/W/A) products and a few other non-routine products. With the implementation of the Marine Weather Message (MWW) in 2008, the VTEC no longer appears in any routine products. Further implementation of the VTEC will depend in part on the availability of NWS text product generation software applications and will be announced in a Service Change Notice at least 75 days in advance of the implementation date(s). Before any new operational implementations of the VTEC in additional NWS products, VTEC tests will be announced and conducted. During any testing, select WFOs will issue products with experimental or test VTEC string(s). The current VTEC-enabled NWS product suite, along with other information regarding implementation of the VTEC, is available on the Internet at http://www.nws.noaa.gov/os/vtec/
Most event-driven products that include the UGC will include the P-VTEC and, in some hydrologic products, also the H-VTEC. To meet future requirements, additional codes will be added, as needed, to the VTEC element tables in Appendices A and B, and events will be added to the lists in Appendix C.

## 1.4 Definitions

a. The **P-VTEC** identifies characteristics of the event(s), including (1) its status, type, and tracking number; and (2) the event(s) beginning and ending times.

b. The **H-VTEC** string is "triggered by" and is always present when the phenomenon
code in the P-VTEC is FL for Flood, FA for Areal Flood, FF for Flash Flood, or HY for Hydrologic. The H-VTEC provides a summary of the flood event including the immediate cause; and for point-based products, the NWS location identifier, flood severity, timing of flood beginning, crest, and end; and whether the flood will be at or near a record. The H-VTEC string occurs on the line immediately after the associated triggering P-VTEC string(s).

c. **Event**: A specific combination of phenomenon (e.g., type of weather, flood) and level of significance (e.g., Watch, Warning, Advisory, Statement, or Outlook). See Appendix A for the lists of valid phenomenon and significance level codes (which are discussed in Sections 2.1.4 and 2.1.5, respectively), and Appendix C for the list of valid events. Common examples of events include Tornado Warning, Winter Storm Watch, Wind Advisory, Hurricane Statement, and Air Stagnation Outlook.

d. **Event Beginning Time**: This is the first date-time group of the P-VTEC string. An event typically begins in a particular area either when issuance criteria are forecast to be initially met or exceeded, or when public safety, transportation and/or commerce are adversely affected as a direct result of the expected or occurring hydrometeorological conditions. Specific implementations of the Event Beginning Time in NWS products may be found in the relevant Product Specifications documents. This time also may be found in plain language in the narrative text of the product/segment. For any actions taken after the event has begun in a particular area, the P-VTEC Event Beginning Time will be coded as zeros.

e. **Flood Beginning Time**: This is the first date-time group of the H-VTEC string and is the time when the forecast point is expected to (or actually did) exceed flood stage. This time also may be found in plain language in the narrative text of the product/segment. For certain hydrologic events (see Section 4.1.4), the H-VTEC Flood Beginning Time will be coded as zeros.

f. **Flood Crest Time**: This is the second date-time group of the H-VTEC string and is the time when the forecast point is expected to (or actually did) reach its flood crest. This time also may be found in plain language in the narrative text of the product/segment. For certain hydrologic events (see Section 4.1.4), the H-VTEC Flood Crest Time will be coded as zeros.

g. **Event Ending Time**: This is the last date-time group of the P-VTEC string (second of the two) and is the time when the event is no longer valid for a given area (i.e., when the W/W/A conditions are no longer expected to occur). The event ending time normally is found in plain language in the narrative text of the product/segment and in the product/segment headline. For events valid "Until Further Notice", either where the ending time cannot yet be specified (as with very long duration flooding) or is defined as open-ended (as with tropical cyclones), the P-VTEC Event Ending Time will be coded as zeros.

h. **Flood Ending Time**: This is the last date-time group of the H-VTEC string (third of the three) and is the time when the forecast point is expected to (or actually did) fall below flood stage. This time also may be found in plain language in the narrative text of the product/segment. For certain hydrologic

events, including those valid "Until Further Notice," the H-VTEC Flood Ending Time will be coded as zeros.

i. **Segment**: Each segment (of a segmented product) consists of event-driven weather, water resources, marine, or other information that uniquely applies to a geographic area (as coded in the UGC string[s]).

* The area includes one or more counties or NWS land or marine zones. The segment format includes the UGC grouping; the VTEC; and as may be appropriate, any UGC-associated plain language geographic names, and a repeat of the Date/Time line (see NWSI 10-1701 and respective product specifications documents for complete format rules).

* Exception: Certain water resources products may have multiple segments describing individual point-based flood-related events within the same county or zone, with each segment corresponding to an individual forecast point. See NWSI 10-922, *Weather Forecast Office Water Resources Products Specification* for more information.

j. **Product**: The entire segmented or non-segmented message issued to the public under a single Mass News Disseminator (MND) header (see NWSI 10-1701, Section 4.2) that may include information on one or more events.

k. **Product Issuance Time**: This is the actual time when a message is entered into the Advanced Weather Interactive Processing System (AWIPS) or equivalent system for dissemination outside the issuing office (i.e., when the message is "sent"). It is found in the abbreviated World Meteorological Organization (WMO) header and included in the MND.

l. **Product Expiration Time**: Found at the end of the UGC string for an event, it is the time the product or product segment should no longer be used. In long duration W/W/A products, when the event(s) is ongoing, the product expiration time is the time by which users can expect to receive an updated product.

### 1.5 Event versus Segment versus Product

To use the P-VTEC and H-VTEC properly, it is important to understand the distinction between an "event," a "segment", and a "product" (as defined in Section 1.4).

The product for a short duration event (typically non-segmented) has the same title as the name of the event itself, e.g., Tornado Warning. Many long duration W/W/A products, however, include several different events (not necessarily all contained within any one product issuance) and therefore have a different title than the event names. Here are a few examples:

- **If "heat" is the phenomenon and "advisory" is the significance level, then a "Heat Advisory" is the event and the public receives the information in a Non-Precipitation Warning, Watch and Advisory (NPW) product.**

- **Winter Weather Warning, Watch and Advisory (WSW) products can include a variety of events, such as a Blizzard Warning, a Freezing Rain Advisory, and a Winter Storm Watch, all in a single product issuance. If each event were for a different geographic area, then the WSW product would be issued in multiple segments, each describing a specific event for a specific area.**

There may, however, be multiple segments within a single product which cover the same event, each for a different area. The reason for the multiple segments might be different timing or accumulations in the different areas. The multiple segments all may share the same Event Tracking Number (see Section 2.1.6).

### 1.6 Product Issuance Time versus Event Beginning Time

While the Event Beginning Time may be the same as or later than the Product Issuance Time, it should never be earlier. A special rule governs the coding of the Event Beginning Time after an event has begun. See Section 2.1.7 for more details.

### 1.7 Product Expiration Time versus Event Ending Time

For many short duration events (e.g., Severe Thunderstorm Warning), the Product Expiration Time in the UGC string will be the same as the Event Ending Time in the P-VTEC string. For most longer duration events (i.e., those which last more than 12 hours), the Product Expiration Time will normally be earlier than the Event Ending Time. In some very long duration events (e.g., a Winter Storm Watch expected to start 36 hours in the future), the product may expire before the Event Beginning Time. The only time a Product Expiration Time will be later than the Event Ending Time is for final or follow-up products issued after an event has expired or been cancelled.

One of the primary purposes of the VTEC is to provide NWS partners and other users with a means to track W/W/A events from their initial issuance to their final cancellation or expiration. NWS forecasters will ensure that follow-up products for ongoing (primarily longer duration) events are issued before the current product expires (i.e., before the UGC product expiration time is reached). This will prevent VTEC events from becoming "orphaned", where a VTEC event is still valid but the associated product has expired without being updated. In the unlikely event that this happens, forecasters will issue the appropriate follow-up product as soon as possible.

## 2 Primary VTEC (P-VTEC) Format

The P-VTEC string(s) (and any H-VTEC string[s] - see Section 4) occur immediately after the UGC string(s) and, depending on whether the product is segmented or not, will occur in different places in the product.

In non-segmented products, the UGC and VTEC strings (but without any plain language geographic listing) occur immediately after the NWS Communications Identifier and before the MND. See Figure 1 below.

**Figure 1**. Generic Format of the VTEC in Non-Segmented Text Products.[1] Refer to NWSI 10-1701 for further information on the coded elements. UGC is discussed more fully in NWSI 10-1702. Underscores represent required spaces in the coded elements.

| | |
|---|---|
| # # | Communications header codes |
| TTAAnn_xxxx_DDHHMM_BBB | WMO header with optional BBB field |
| NNNXXX | AWIPS identifier |
| SSFNNN>NNN-NNN-DDHHMM- | UGC string |
| /k.aaa.cccc.pp.s.####.yymmddThhnnZ$_B$-yymmddThhnnZ$_E$/[2] | **P-VTEC** |
| /nwsli.s.ic.yymmddThhnnZ$_B$.yymmddThhnnZ$_C$.yymmddThhnnZ$_E$.fr/ | **H-VTEC (when included)** |
| | Blank line |
| <*broadcast instruction*> | Optional broadcast instruction line |
| <*product name*>...<*additional term*> | MND Product type line with optional additional term |
| NATIONAL WEATHER SERVICE <*city*> <*st*> | MND Originating office line |
| hhmm_xM_<*tz*>_day_mon_dt_year | MND Issuance date/time line |
| | Blank line |
| <*reason for update*>[3] | Optional reason for update line |
| | Optional blank line, if reason for update included |
| ...<*headline*>... | Optional headline |
| | Optional blank line, if headline included |
| <*text*>[4] | Typically multiple lines |
| | Blank line |
| $$ | End-of-text code |
| | Blank line |
| ABC | Optional Forecaster ID |
| ** | Communications trailer codes |

**Notes**:
1) Refer to individual NWS Product Specification documents for specific formatting details.
2) If there are multiple VTEC events included in the product, the additional P-VTEC string(s) would appear on subsequent lines.
3) An ellipsis is not used before and after the "reason-for-update" line, since it is not a headline alerting the public about important weather or flooding issues.
4) Although <*text*> is shown on one line of the example, it implies multiple lines, as is the case in most products.

In segmented products, the UGC and any VTEC strings occur at the beginning of each segment, immediately followed by any UGC-associated plain language listing of zones or counties affected (or other words identifying the affected area). All segments of a product occur after the MND header block. See Figure 2 below.

**Figure 2**. Generic Format of the VTEC in Segmented Text Products.[1] Additional segments would follow the same format. Refer to NWSI 10-1701 for further information on the coded elements. The UGC is discussed more fully in NWSI 10-1702. Underscores represent required spaces in the coded elements.

| | |
|---|---|
| ## | Communications header codes |
| TTAAnn_xxxx_DDHHMM_BBB | WMO header with optional BBB field |
| NNNXXX | AWIPS identifier |
| | Blank line |
| <*broadcast instruction*> | Optional broadcast instruction line |
| <*product name*>...<*additional term*> | MND Product type line with optional additional term |
| NATIONAL WEATHER SERVICE_<*city*>_<*st*> | MND Originating office line |
| | Blank line |
| | Optional overview/synopsis headline |
| hhmm_xM_<*tz*>_day_mon_dt_year | MND Issuance date/time line |
| ...<*headline*>...[2] | Optional overview/synopsis text |
| <*text*>[2 3] | Optional blank line if overview/synopsis included |
| SSFNNN>NNN-DDHHMM-[4] **---Segment 1---** | UGC string[5] |
| **/k.aaa.cccc.pp.s.####.yymmddThhnnZ$_B$-yymmddThhnnZ$_E$**[6] | **P-VTEC** |
| **/nwsli.s.ic.yymmddThhnnZ$_B$.yymmddThhnnZ$_C$.yymmddThhnnZ$_E$.fr/** | **H-VTEC** (when included) |
| <*county/zone*>_<*st*>-<*county/zone*>_<*st*>- | Optional UGC associated plain language names |
| hhmm_xM_<*tz*>_day_mon_dt_year | Segment header block issuance date/time line |
| | Blank line |
| <*reason for update*>[7] | Optional reason for update line |
| | Optional blank line, if reason for update included |
| ...<*headline*>...[8] | Optional headline |
| | Optional blank line, if headline included |
| <*text*>[3] | Typically multiple lines |
| | Blank line |
| $$ | End-of-segment code |
| | Blank line |
| SSFNNN>NNN-DDHHMM-[4] **Segment 2** | UGC string[5] |
| **/k.aaa.cccc.pp.s.####.yymmddThhnnZ$_B$-yymmddThhnnZ$_E$**[6] | **P-VTEC** |
| **/nwsli.s.ic.yymmddThhnnZ$_B$.yymmddThhnnZ$_C$.yymmddThhnnZ$_E$.fr/** | **H-VTEC** (when included) |
| <*county/zone*>_<*st*>-<*county/zone*>_<*st*>- | Optional UGC associated plain language names |
| hhmm_xM_<*tz*>_day_mon_dt_year | Segment header block issuance date/time line |
| | Blank line |
| <*reason for update*>[7] | Optional reason for update line |
| | Optional blank line, if reason for update included |
| ...<*headline*>…[8] | Optional headline |
| <*text*>[3] | Optional blank line, if headline included |
| | Typically multiple lines |
| | Blank line |
| $$ | End-of-segment code |
| | Blank line |
| ABC | Optional Forecaster ID |

**Notes**:
1) Refer to individual NWS Product Specification documents for specific formatting details.
2) In long duration products, such as a winter weather message (WSW), an optional overview headline and optional overview synopsis meant to apply to all segments would occur before the first segment. A dot occurs

before the text after the <*headline*> for this type of product.

3) Although <*text*> is shown on one line of the example, it implies multiple lines, as is the case in most products.

4) A UGC for a particular county or NWS zone can apply only to one segment of a multi-segmented product, i.e., a particular UGC cannot occur in two or more segments. There is an exception for certain water resources products (see NWSI 10-922 and 10-1702).

5) When a segmented product (e.g., WSW) is issued with a single product segment, the placement of the UGC within the content block does not change, i.e., once defined as a segmented product, always a segmented product. Therefore, the UGC is NOT placed after the Communications Identifier block (see NWSI 10-1701).

6) If there are multiple VTEC events included in the product, the additional P-VTEC string(s) would appear on subsequent lines.

7) When one (or more) segment(s) needs to be resent because of updating/amending or correcting, the entire product is resent. An ellipsis is not used before and after the <*reason-for-update*> line, since it is not a headline alerting the public about important weather or flooding issues. See NWS Product Specification documents for instructions on specific products.

8) Any event headline applying to a particular segment occurs after the segment header block and before the text for that segment.

See Figure 3 below for the generic structure of the P-VTEC elements. The "aaa.cccc.pp.s.####" group depicts the characteristics of the event, and the "yymmddThhnn$Z_B$-yymmddThhnn$Z_E$" group depicts the event beginning and ending date/time in Universal Coordinated Time (UTC).

**Figure 3**. Generic Structure of P-VTEC Elements. Refer to the section number (*in parenthesis*) for more information on each element or group.

**/k.aaa.cccc.pp.s.####.yymmddThhnn$Z_B$-yymmddThhnn$Z_E$/**

**Product/VTEC String Type Identifier**

**k** - Fixed identifier of product/VTEC string type (O, T, E, or X) (*2.1.1*)

**Event Group**

**aaa** - Action (*2.1.2*)
**cccc** - Office ID (*2.1.3*)
**pp** - Phenomenon (*2.1.4*)
**s** - Significance (*2.1.5*)
#### - Event Tracking Number (*2.1.6*)

**Date/Time Groups** (*2.1.7*)

**yy** - Year
**mm** - Month
**dd** - Date
**T** - Fixed Time Indicator
**hh** - Hour in UTC
**nn** - Minute in UTC
**$Z_B$** - Fixed UTC Beginning Date/Time Indicator
**$Z_E$** - Fixed UTC Ending Date/Time Indicator

Notes:
• The "T" in the Date/Time Groups is a fixed Time Indicator, with the following "hh" and "nn" being the hours and minutes in UTC, respectively.
• The $Z_B$ and $Z_E$ are the fixed UTC indicators for the beginning and ending date/time groups, respectively. The subscripts B and E are only shown in the generic format; they are not included in the VTEC strings in actual products, but the letter Z will appear. See the examples located throughout Appendix D.
• The forward slash ('/'), period ('.'), and dash ('-') in the format are delimiters that separate fields for ease in decoding. The date/time format follows the Federal Information Processing Standards (FIPS)/American National Standards Institute (ANSI)/International Organization for Standardization (ISO) standard (FIPS 4-2:1998/ANSI x3.30-1997/ISO 8601:2000).

See NWSI 10-1701 and 10-1702 for important overall product format information.

## 2.1 P-VTEC Element Definitions/Explanations

**2.1.1 k (Fixed Identifier):** Identifies the following product and VTEC code string types. Below are k Code Definitions:

**O** (Operational Product) - Product defined in NWS policy and produced on a reliable and continuous basis, whose content has been validated and reflects real-time environmental conditions or events.

**T** (Test Product) - Product generated for the purpose of evaluation, the conduct of a communications test, or the conduct of a weather drill or test. Test products may be modeled after operational products or experimental products, but content does not reflect real-time environmental conditions or events. The word TEST will also be included in the product type line of the MND and the product text as described in NWSI 10-1701.

**E** (Experimental Product) - Product available for evaluation for a specified, limited time for the explicit purpose of obtaining user feedback. Content has not been validated but generally reflects real-time environmental conditions or events. The word EXPERIMENTAL will also be included in the product type line of the MND and the product text as described in NWSI 10-1701.

**X** (Experimental VTEC in an Operational Product) - A non-operational VTEC string(s) is inserted into an otherwise operational product which is available for evaluation for a specified, limited time for the explicit purpose of obtaining user feedback. The experimental VTEC content has not been validated but reflects real time environmental events.

Note: In multi-segmented products, "T" or "E" product type VTEC segments should never be mixed with "O" or "X" product type VTEC segments.

**2.1.2 aaa (Action):** Identifies the action in the product issuance. Table 1 (on page 13) summaries the use of the ten P-VTEC action codes in different classes of products.

Action Code Definitions: Note that the following P-VTEC action codes generally apply to the entire area defined in the UGC string for that segment, except for:

- Certain Expanded in Area (EXA), Expanded in Area and Changed in Time (EXB) and Upgraded (UPG) actions when the entire valid area is coded in a single segment (see definitions below), and
- Events which are defined for specific portions of the area specified in the UGC string for that segment. At the present time, there is no method to encode sub-UGC areas in the VTEC. The segment headline and/or text will have to be used in conjunction with the P-VTEC string(s) to determine where in the area the event is valid.

**Table 1.** Use of VTEC Action Codes in different product classes. [1]

| | NEW | CON | EXA | EXT | EXB | UPG | CAN | EXP | COR | ROU |
|---|---|---|---|---|---|---|---|---|---|---|
| **Convective Non-Hydrologic Watches** | | | | | | | | | | |
| National Products (WOU) | • | • | • | • | • | | • | • | • | |
| WFO Products (WCN) | • | • | • | • | • | | • | • | • | |
| **Convective Non-Hydrologic Warnings** | | | | | | | | | | |
| Initial issuances (SVR, TOR, EWW, SMW) | • | | | | | | | | • | |
| Follow-up messages (SVS, MWS) | | • | | | | | • | • | • | |
| **Flood Watches** (FFA) | | | | | | | | | | |
| Areal | • | • | • | • | • | | • | • | • | |
| For Forecast Points | • | • | | • | | | • | • | • | |
| **Flood Warnings** (FLW) | | | | | | | | | | |
| Areal | • | | | • | | | | | • | |
| For Forecast Points | • | •[2] | | •[2] | | | | | • | • |
| **Follow-ups to Flood Warnings** (FLS) | | | | | | | | | | |
| Areal | | • | | | | | • | • | • | |
| For Forecast Points | | • | | • | | | • | • | • | • |
| **Flash Flood Warnings** (FFW) | • | | | • | | | | | • | |
| **Flash Flood Statements** (FFS) | | • | | | | | • | • | • | |
| **Flood Advisories** (FLS) | • | • | | • | | | • | • | • | |
| **Winter Weather Products** (WSW) | • | • | • | • | • | • | • | • | • | |
| **Non-Precipitation Products** (NPW) | • | • | • | • | • | • | • | • | • | |
| **Fire Weather Products** (RFW) | • | • | • | • | • | • | • | • | • | |
| **Coastal/Lakeshore Hazard Products** (CFW) | • | • | • | • | • | • | • | • | • | |
| **National Tropical Products** (TCV) | • | • | • | | | • | • | | | |
| **Marine Weather Message** (MWW) | • | • | • | •[3] | •[3] | • | • | •[3] | • | |
| **WFO Hurricane Local Watch/Warning Product (TCV) (Atlantic Basin and HFO) or Hurricane Local Statement (HLS)** (CA WFOs and GUM) [3] | • | • | | | | • | • | | | |

**Notes**:
1) Every VTEC event associated with each product class may not use all of the action codes listed in this table. See the appropriate Product Specifications for more details.
2) CON and EXT are used only in Flood Warning for Forecast Points (FLW) products for flood category increases (see NWSI 10-922, section 7.2.2).
3) The EXT, EXB, and EXP codes will not occur for tropical hazards contained in the MWW. Those hazards will follow the rules as outlined in 10-315.

**NEW** (New) - Used for the initial issuance of an event. This includes the initial issuance of an event that has upgraded, downgraded, or replaced another event. Upgrades to, downgrades to, expansions of, and replacements by an event already defined will use the EXA or EXB action code (see the definitions of UPG and CAN below).

If the new event is being started in multiple product segments at the same time, the NEW action code will appear in all the segments. Whenever the NEW action code is used, the Event Tracking Number (ETN - see Section 2.1.6) increments from the last one used for that particular event by the issuing office, with the exception of convective watches or tropical cyclone hazards. The NEW event may have different beginning times in the different product segments and have the same ETN, so long as the event valid times overlap. See Section 2.1.6.

**CON** (Continued) - Used when providing updates to an existing event, where no changes were made to the area or the valid time period (even if the event beginning time has been reached since the last statement and is now coded as zeros [see Sections 1.4.d and 2.1.7]).

Note that the CON action code applies only to the area (as defined in the UGC) being continued from an earlier product issuance. This CON area may now only be part of the overall area of the updated event due to other segment(s) with an action code such as EXA or EXB which act to expand the original area.

**EXA** (Extended in Area) - Used when the valid area of an existing event has been expanded from its previous issuance, with no changes to the valid time. This includes upgrades to, downgrades to, or replacements by events that already exist.

Two segments will normally be used: one segment will use the EXA action code (for the newly added area), while the other segment will use the CON action code (for the area being continued); both with the same ETN. This will make it easily apparent which area(s) is new to the event. If the expansion in area is due to an upgrade, downgrade, or replacement, the P-VTEC string with the EXA will be preceded by a P-VTEC string with a UPG (for upgrades) or CAN (for downgrades or replacements) action code. If later follow-up products are issued with no additional changes to the event, both areas could then be included in one segment with the CON action code.

If the valid area of an event has been contracted, EXA is not used. Instead, two segments are required, one to cancel the event in the area no longer included in the event (using the CAN action code, see below) and the other to continue the event in the remaining area (using the CON or other appropriate action code).

EXA is not used in short duration warnings (Severe Thunderstorm Warning [SVR], Tornado Warning [TOR], Extreme Wind Warning [EWW], Special Marine Warning [SMW], Flash Flood Warning [FFW]), Flood Warning [FLW], Flood Advisory [FLS]) and associated follow-up messages (Severe Weather Statement [SVS], Marine Weather Statement [MWS], Flash Flood Statement [FFS], and Flood Statement [FLS]). Instead, a new warning is issued.

**EXT** (Extended in Time) - Used when the valid time period of an existing event (for the entire area or a portion thereof) has been made longer or shorter by changing the Event Beginning, Event Ending Date/Time Group, or both with no changes to the area. Since an EXT code extends in time an already existing event, a separate segment with the CON code is not required when the EXT applies to the entire area of an event. If the extension in time is for only a portion of the area, at least two product segments are required (each with the original ETN); one with the appropriate action code for the area not being extended in time (e.g., CON, CAN, EXP) and one (or more) with the EXT action code(s) for the portion(s) being extended in time.

EXT is not used to change the Event Beginning or Ending Time once that time has been reached.

EXT is not used in SVR, TOR, EWW, or SMW products, and their associated follow-up statements. Instead, a new warning is issued. EXT may be used in the FFW, FLW and FLS - see NWSI 10-922, Section 5 for more information.

EXT is not used for tropical hazards since they are in effect upon issuance and are in effect until cancelled. Thus no change in valid time is possible.

**EXB** (Extended in Area and Changed in Time) - Used when the valid time period of an existing event has been changed (made longer or shorter) **and** the valid area has been expanded. This includes upgrades to, downgrades to, or replacements by events that already exist.

Two segments will normally be used: one segment will use the EXB action code (for the newly added area), and the other segment will use either the EXT action code (if the area being continued has an updated valid time) or the CON action code (if the area being continued is keeping its original valid time). Both segments will use the same ETN. If the expansion in area is due to an upgrade, downgrade, or replacement, the P-VTEC string with the EXB will be preceded by a P-VTEC string with a UPG (for upgrades) or CAN (for downgrades or replacements) action code. If later follow-up products are issued with no additional changes to the event, both areas could then be included in one segment with the CON action code.

If the valid area of an event has been contracted, EXB is not used. Instead, two segments are required, one to cancel the event in the area no longer included in the event

(using the CAN action code, see below) and the other to continue the event in the remaining area (using the CON or other appropriate action code).

EXB is not used to change the Event Beginning or Ending Time once that time has been reached.

EXB is not used in short duration warning products. Instead, a new warning is issued.

EXB is also not used for tropical hazards since they are in effect upon issuance and are in effect until cancelled. Thus no change in valid time is possible.

**UPG** (Upgraded) - Used when an existing event is upgraded for the same area to either:

- A higher significance level (with either the same phenomenon or an environmentally related phenomenon), e.g., from a watch to an advisory or warning, or from an advisory to a warning. Specifically, a Freezing Rain Advisory changed to an Ice Storm Warning, a Winter Storm Watch changed to a Blizzard Warning, and a Small Craft Advisory changed to a Gale Warning are all considered upgrades because the changes in phenomena are considered meteorologically related, or

- An event at the same significance level but with higher discrete criteria without overlap, primarily in marine products (e.g., a Gale Watch to a Storm Watch, or a Storm Warning to a Hurricane Force Wind Warning).

In both cases, two P-VTEC strings are used: UPG is used in the first P-VTEC string to show the event being upgraded from (e.g., an advisory) and either NEW, EXA, or EXB is used in the second P-VTEC string to show the event upgraded to (e.g., a warning). If the event being upgraded to is not already valid for that time period from that WFO, the NEW action code is used. If the event being upgraded to already exists in a different product segment, the EXA action code is used if the event in the new area has the same valid time as the already existing event, while the EXB action code is used if the event in the new area has a different valid time than the existing event. The UPG/CON action code may appear when the upgrading event already exists in that product segment but the portion of the segment covered by the continuing hazard has expanded. (See Table 2 on page 25.) The NEW, EXA, or EXB event may have a different valid time than the event being upgraded, but another P-VTEC string using the EXT is not required.

There are a few exceptions to the normal UPG usage:

- There may be more than two P-VTEC strings associated with the same upgrade action, if two or more related events are being upgraded to a single event at the same time. For instance, a Tropical Storm Warning and Hurricane Watch can both be in effect for the same area at the same time, and they can be upgraded to a Hurricane Warning for that area. In such a case, the P-VTEC strings for both the Tropical Storm Warning and Hurricane Watch would use the UPG action code, while the

single P-VTEC string for the Hurricane Warning would use the NEW or EXA action code.

- UPG is not used in convective or water resources events. In those cases, a watch can remain in effect even after local warnings are issued. For instance, a Flash Flood Watch (FFA) can cover a large area of several zones, while individual Flash Flood Warnings may be issued for single counties or zones (or portions thereof) within the watch area. The first issuance of these warnings will have a single P-VTEC string with a NEW action code.
- UPG is also not used in the Tropical Cyclone Product for VTEC (TCV) the Central Pacific Hurricane Center (CPHC). Instead, the CAN action code (see below) is used for both upgrades and downgrades of events.

**CAN** (Canceled) - Used in one of three ways:

- Cancel a still-active event before its scheduled event ending time immediately upon product issuance, using a single P-VTEC string with the CAN action code.

- Identify when a non-convective and non-water resources event has been either:

    - Downgraded to a lower significance level (e.g., from a warning to an advisory), or
    - Replaced by another event at the same significance level with similar or lower discrete criteria (e.g., from an Ice Storm Warning to a Winter Storm Warning, or from a Storm Watch to a Gale Watch).

  In this case, two P-VTEC strings are used: CAN is used in the first P-VTEC string to show the event being replaced or downgraded <u>from</u> (e.g., a warning) and either NEW, EXA or EXB is used in the second P-VTEC string to show the event downgraded <u>to</u> (e.g., an advisory) or replaced <u>by</u> (e.g., a related warning). If the event being downgraded to or replaced by is not already valid for that time period from that WFO, the NEW action code is used. If the event being downgraded to or replaced by already exists in a different product segment, the EXA action code is used if the event in the new area has the same valid time as the already existing event, while the EXB action code is used if the event in the new area has a different valid time than the existing event. (See Table 2 on page 25.) The NEW, EXA, or EXB event may have a different valid time than the event being downgraded or replaced, but another P-VTEC string using the EXT is not required.

- In the TCV from the National Hurricane Center (NHC) and the Central Pacific Hurricane Center (CPHC), CAN is used when a Watch or Warning is either cancelled, downgraded, or upgraded. The latter two options will result in a second P-VTEC string with the NEW action code.

In all cases, once the CAN action code is used for an event, that event is cancelled for the area included in the product segment. The event ending date/time in the P-VTEC string with the CAN action code remains the same as in the previous product issuance of that event. If an entire event is cancelled in error, it must be restarted using the NEW action code and a new ETN. (See Section 2.1.6.1 for more information on the way the ETN is used in the TCV.)

For non-TCV and non-short duration warning (as defined in EXA above) uses, if just a portion of an event is cancelled in error and the ETN for that event remains in effect in another area, the event may be restarted in the cancelled area by using the EXA or EXB action code with the still-valid ETN. . For short-duration warnings a new warning product with a new ETN is issued.

**EXP** (Expired) - Used in one of two ways:

- While an event is still active (i.e., hasn't reached its scheduled event ending time), the EXP is used in a concluding message to notify users that the event will be allowed to expire at the scheduled time.

- After an event has expired (i.e., after the scheduled event ending time), a final or follow-up message may be issued referring back to the expired event.

A concluding product with the EXP action code may be issued either just before or just after a VTEC event expires. Refer to the appropriate NWS Product Specification Document for more details. In both cases, a single P-VTEC string is used with the EXP action code, and the event ending date/time remains the same as in the previous product issuance of that event.

For short duration warning products (see list in EXA definition above), the EXP action code may be used in a product issued from 10 minutes before the event ending time to 10 minutes after the event ending time. Corrections (using the COR action code) to a product or product segment with the EXP action code may be issued up to 20 minutes after the event ending time.

For all other non-routine, non-tropical products, the EXP action code may be used in a product issued from 30 minutes before the event ending time to 30 minutes after the event ending time. Corrections (using the COR action code) to a product or product segment with the EXP action code may be issued up to 60 minutes after the event ending time.

**ROU** (Routine) - Used as a VTEC placeholder for segments of VTEC-enabled products in which no other ongoing or future VTEC event is included. This is done to aid parsing of product segments by NWS Partners and other users. With the removal of the VTEC from Routine Marine Forecasts, ROU only appears in Flood Warnings for Forecast

Points products (including follow-up statements) when the forecast point in the segment is not currently expected to reach flood stage but is included to provide a complete set of forecast and warning information for a series of points along a river reach. See Section 5.2 for more details.

**COR** (Correction) - Used when correcting any non-VTEC or non-UGC error or omission in the previous product, i.e., for a typographical or grammatical error or omission not related to the VTEC or UGC coded elements. P-VTEC string(s) with a COR action code will be used in each corrected product segment. The MND header and product text indicate the corrections. Corrections for errors or omissions in VTEC or UGC coding will be made through the issuance of products with the appropriate P-VTEC action codes.

For corrections to upgrade actions (via UPG), or downgrade or replacement actions (via CAN) where two P-VTEC strings are used in a product segment (see UPG and CAN definitions above), the COR action code will appear only in the second P-VTEC string which had contained the NEW, EXA, EXB, or EXT action code. The first P-VTEC string will continue to be an UPG (for upgrade) or CAN (for downgrade or replacement). If the need is to correct the upgrade, downgrade, or replacement action itself, the only "correction" method is to cancel (by using the CAN action code) the event started as a result of the erroneous upgrade, downgrade, or replacement action, followed by an action to restart the original event in that area using the NEW, EXA or EXB action code and the appropriate ETN.

### 2.1.3 cccc (Office ID)

The standard four-letter identifier indicating the NWS office with the primary responsibility for the affected area. The office ID is the same as that included in the WMO abbreviated header. The actual name of the office is given in the plain language MND header. Any NWS office providing backup service will use the primary office's cccc.

### 2.1.4 pp (Phenomenon)

Identifies the type of weather, flood, marine, fire weather, etc., occurrence (e.g., freezing rain, river flood, gale, fire weather), or non-weather occurrence (e.g., ashfall). See Appendix A for the complete list of phenomena codes and Appendix C for the link to the complete list of VTEC events in use in NWS products.

### 2.1.5 s (Significance)

Identifies the level of importance (e.g., watch, warning, advisory, etc.) of the weather or non-weather occurrence. When a follow-up statement is issued to update, cancel, or announce expiration of a previously issued event, the event significance code used in the updated, cancelled, or expired P-VTEC string will be the same as the corresponding significance code used in the original product, even if the product was issued under a different communications identifier. For example, the P-VTEC string in a Severe Weather Statement issued to follow-up a Tornado Warning would use the same W (for warning) significance level of the initial warning

product. See Appendix A for the complete list of Significance codes and Appendix C for the link to the complete list of VTEC events in use in NWS products.

### 2.1.6 #### (Event Tracking Number - ETN)

The ETN is a four-digit number assigned to keep track of how an event (as defined in Section 1.4) is addressed by various VTEC actions and/or products issued over the lifetime of the event. The ETN is assigned automatically by NWS applications software for each type of event issued by each office, sequentially starting with 0001 for the first new event of its type for the calendar year starting at 0000 UTC on January 1. Events that are first issued in one year and carry over into the next year will maintain the same ETN (from the old year) for the duration of the event, even if the Event Beginning Time is in the new year. For example, the ETN for a NEW Winter Storm Watch issued at 2100 UTC on December 31, 2011 would increment one number from the previous Winter Storm Watch issued in 2011, even if the Watch Event Beginning Time (see Section 2.1.7) was on January 2, 2012.

There is one ETN list for each specific event (combination of phenomenon and significance level), and it is used for all products or product segments containing that event, whether they be operational, test, or experimental. Because ETNs are incremented for issuances of test W/W/As (as with a Severe Weather Awareness Week), they may not represent the number of actual occurrences of a particular event type during a calendar year.

A new ETN is assigned when the event is first issued, and the same ETN is carried when the event is continued or extended (in area, time, or both). Note that when an event is, however, cancelled, expired, or upgraded or downgraded to (or replaced by) another event, the original event is ended in that area. The event that upgrades, downgrades, or replaces the original event will use the ETN for that particular event. If the upgrading, downgrading, or replacing event already exists in another portion in the issuing WFO's forecast area at the same time period, the current ETN will normally be used. If the upgrading, downgrading, or replacing event does not already exist, or is in effect for a completely different time period or non-adjacent area, the ETN is incremented from the last time that event was issued.

Here is an example sequence of ETNs for a generic WFO's severe thunderstorm warnings at the beginning of a year:

| ETN | Date | Product Issued |
|---|---|---|
| 0001 | 2/12 | Operational Severe Thunderstorm Warning for Alpha County |
| 0002 | 3/17 | Test Severe Thunderstorm Warning (for Severe Weather Awareness Week) |
| 0003 | 3/23 | Operational Severe Thunderstorm Warning for Charlie and Baker Counties |
| 0004 | 3/23 | Operational Severe Thunderstorm Warning for Alpha and Delta Counties |
| 0005 | 4/14 | Test Severe Thunderstorm Warning for Baker County (for new proposed warning format) |
| 0006 | 4/14 | Test Severe Thunderstorm Warning for Charlie County (for new proposed |

warning format)
0007 4/24 Operational Severe Thunderstorm Warning for Delta County

If backup service is required from another office(s), the primary office's ETN(s) are used throughout the event.

For products (e.g., WSW, NPW) that may include more than one event, each specific event within the product (e.g., Blizzard Warning, Winter Storm Warning) will have its own ETN. For example, an office issues a NEW WSW product early in the calendar year with the following segments (each describing a specific event for a specific geographic area) and corresponding ETNs:

| **Segment/Event** | **pp** | **s** | **ETN** | |
|---|---|---|---|---|
| (1) Blizzard Warning | BZ | W | 0003 | (3rd Blizzard Warning of the year) |
| (2) Winter Storm Warning | WS | W | 0006 | (6th Winter Storm Warning of the year) |
| (3) Freezing Rain Advisory | FZ | Y | 0008 | (8th Freezing Rain Advisory of the year) |
| (4) Freezing Rain Advisory | FZ | Y | 0008 | (8th Freezing Rain Advisory of the year) |

Two weeks later, another weather system causes the same office to issue another NEW WSW with the same order of segments, with the following corresponding ETNs:

| **Segment/Event** | **pp** | **s** | **ETN** | |
|---|---|---|---|---|
| (1) Blizzard Warning | BZ | W | 0004 | (4th Blizzard Warning of the year) |
| (2) Winter Storm Warning | WS | W | 0007 | (7th Winter Storm Warning of the year) |
| (3) Winter Storm Warning | WS | W | 0007 | (7th Winter Storm Warning of the year) |
| (4) Freezing Rain Advisory | FZ | Y | 0009 | (9th Freezing Rain Advisory of the year) |

As shown here, the same event (phenomenon and significance) may appear in multiple segments of the same product with the same ETN, as long as the valid times of the event in the segments overlap or affect adjacent areas.

A broad weather system may cause several offices to issue the same event for their area of responsibility, such as a Winter Storm Watch within a WSW product. The ETN used by each office may not be the same, depending on how many prior events of that type (in this case Winter Storm Watches) each office issued so far that year.

#### 2.1.6.1 ETNs in Nationally-originated Events

There are special ETN rules for events which originate from an NWS National Center rather than a WFO.

Tornado and Severe Thunderstorm Watches. The SPC's Tornado and Severe Thunderstorm Watches will draw from the same list of sequential ETNs. For example, in a given year, there will only be one Watch 0047 from SPC. Depending on the circumstances, it could either be a Severe Thunderstorm Watch (SV.A.0047) or a Tornado Watch (TO.A.0047). Locally derived watch products issued by WFOs will use the same sequential ETNs as the original SPC watches. Since the SPC watches are national in scope, watch products from an individual WFO will not use every ETN in sequence, but the ETNs used by each WFO will be the same as in the corresponding SPC products for their local forecast and warning area. The SPC will use the ETNs 9000 to 9999 for test watches.

Tropical Cyclone Watches and Warnings. The NHC issues all tropical cyclone watches and warnings for the Contiguous United States, Puerto Rico and U.S. Virgin Islands. The CPHC issues all tropical cyclone watches and warnings for the Hawaiian Islands. The first digit of any Tropical Storm or Hurricane ETN will represent the originating storm basin, with the Atlantic basin being 1, the Eastern Pacific basin being 2, the Central Pacific basin being 3, and Western Pacific basin being 4. The second through fourth digits will represent the storm identifier, and count the number of tropical, sub-tropical, or pre-genesis systems (depressions, storms, and hurricanes) which originated in that basin that year. The ETN will not change if the system is upgraded or downgraded, if the system changes basin within an ocean (e.g., moves from the Eastern Pacific to Central Pacific), or if watches or warnings are completely ended and then resumed for the same area or a different area. For example, the first Tropical Depression of the year in the Atlantic will be assigned an ETN of 1001. If it becomes Tropical Storm A___ or Hurricane A___, the ETN remains 1001. Since not all numbered/named systems will generate Watches and Warnings for the United States, some ETNs may be skipped in Watch and Warning products in a given year. See Section 3.6.1 for more on ETN usage in Hurricane Local Watch/Warning and National product .

### 2.1.7 yymmddThhnn$Z_B$ and yymmddThhnn$Z_E$ (Event Beginning and Ending Date/Time Groups).

These groups identify the valid time span of the event (from Event Beginning Time to Event Ending Time) in UTC. See definitions in Section 1.4 and comparisons of Product and Event times in Sections 1.6 and 1.7.

The Event Beginning Date/Time group for a particular event may only be changed prior to the scheduled start of the event (i.e., before the Event Beginning Time) and only through the use of the EXT or EXB action code. After an event has begun, the Event Beginning Date/Time group is coded as ten zeros (000000T0000Z). This prevents an accidental invalidation of an ongoing event and indicates that the event is ongoing.

The Event Ending Date/Time group for a particular event may only be changed prior to the scheduled expiration or ending of the event (i.e., before the Event Ending Time), and only through the use of the EXT or EXB action code. If an entire event is inadvertently allowed to

reach its Event Ending Time before being extended, the event will be reissued with the NEW action code and a new ETN. If just a portion of an event is inadvertently allowed to reach its Event Ending Time before being extended, that portion may be reissued with an EXA or EXB action code and the same ETN.

For very long duration or open-ended events which are in effect "Until Further Notice," rather than giving a specific ending time for the event, the Event Ending Date/Time group is coded as ten zeros (000000T0000Z). When and if the end of the event is able to be specified, the zeros will be replaced with an actual date and time in the P-VTEC string using the EXT action code (and reflected in the flood timing of any associated H-VTEC string). Tropical hazards will always have Until Further Notice end times and are in effect until cancelled. The coding of ten zeros for the Event Ending Date/Time group will only be used when the appropriate NWS Product Specification Directives specifically permits.

Here are examples of P-VTEC strings for the different P-VTEC action codes, all (with the exception of ROU) associated with a Winter Weather Advisory event from WFO Marquette MI, to illustrate date/time group coding when the product or product segment is issued before or after the event beginning time. Unless noted, assume that all the subsequent action codes follow after the NEW.

New (NEW)

| | |
|---|---|
| Before Event Beginning Time | /O.NEW.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/ |
| After Event Beginning Time | Not applicable |

*Note*: NEW events will always contain an explicit Event Beginning Time, even if the event begins with product issuance.

Continued (CON)

| | |
|---|---|
| Before Event Beginning Time | /O.CON.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/ |
| After Event Beginning Time | /O.CON.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/ |

*Note*: CON implies that the event times (and the event itself) haven't changed from the previous product issuance. However, if the Event Beginning Time has passed since the previous issuance, it will be coded as zeros (as shown in the *After Event Beginning Time* line).

Changed in Time (EXT)

| | |
|---|---|
| Before Event Beginning Time | /O.EXT.KMQT.WW.Y.0003.120108T1500Z-120108T2100Z/ |
| After Event Beginning Time | /O.EXT.KMQT.WW.Y.0003.000000T0000Z-120108T2100Z/ |

*Note*: EXT implies that the Event Beginning Time and/or Event Ending Time are changed from the previous product issuance. Once the Event Beginning Time has been reached, it cannot be changed with EXT.

Expanded in Area (EXA)

Before Event Beginning Time /O.EXA.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/

After Event Beginning Time /O.EXA.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/

*Note*: EXA implies that the area of the event included with this segment has been expanded or is new to the event, while the Event Beginning and Ending Times are unchanged from the previous product issuance. If the time(s) change, the EXB action code will be used instead. The expanded area is contained in the UGC string.

### Changed in Time and Expanded in Area (EXB)

Before Event Beginning Time /O.EXB.KMQT.WW.Y.0004.120108T1500Z-120108T2100Z/

After Event Beginning Time /O.EXB.KMQT.WW.Y.0004.000000T0000Z-120108T2100Z/

*Note*: EXB implies both a change in time and an expansion in area from the previous product issuance. Either or both the Event Beginning Time and Event Ending Time are changed. The expanded area is contained in the UGC string.

### Upgraded (UPG - appears always in conjunction with a NEW, EXA, or EXB action code)

Before Event Beginning Time /O.UPG.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/

/O.NEW.KMQT.WS.W.0005.120108T1400Z-120108T2200Z/

After Event Beginning Time /O.UPG.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/

/O.NEW.KMQT.WS.W.0005.120108T1600Z-120108T2200Z/

*Note*: UPG implies that the Winter Weather Advisory event is being cancelled in the area covered by the segment. The times of the related NEW, EXA, or EXB event (in this case a Winter Storm Warning) may be different than the old event.

### Cancelled (CAN)

Before Event Beginning Time /O.CAN.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/

After Event Beginning Time /O.CAN.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/

*Note*: CAN means that the Winter Weather Advisory event is cancelled immediately for this area upon product issuance. The Event Ending Time remains unchanged from the previous product issuance.

### Replaced [same as for Downgraded] (CAN - used in conjunction with a NEW, EXA, or EXB action code)

Before Event Beginning Time /O.CAN.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/

/O.EXA.KMQT.ZR.Y.0002.120108T1400Z-120108T2200Z/

After Event Beginning Time /O.CAN.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/

/O.EXA.KMQT.ZR.Y.0002.120108T1600Z-120108T2200Z/

*Note*: As with UPG, the times of the NEW, EXA, or EXB event (in this case a Freezing Rain Advisory) may be different than the old event.

Expired (EXP)

| | |
|---|---|
| Before Event Beginning Time | Not applicable |
| After Event Beginning Time | /O.EXP.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/ |

*Note*: EXP is defined only for events that have ended, or are about to end at their scheduled Event Ending Time. To prematurely end an event, the CAN action code will be used.

Correction to a NEW (COR)

| | |
|---|---|
| Before Event Beginning Time | /O.COR.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/ |
| After Event Beginning Time | Not applicable |

Correction to a UPG (COR)

| | |
|---|---|
| Before Event Beginning Time | /O.UPG.KMQT.WW.Y.0003.120108T1400Z-120108T2300Z/ |
| | /O.COR.KMQT.WS.W.0005.120108T1400Z-120108T2200Z/ |
| After Event Beginning Time | /O.UPG.KMQT.WW.Y.0003.000000T0000Z-120108T2300Z/ |
| | /O.COR.KMQT.WS.W.0005.120108T1600Z-120108T2200Z/ |

*Note*: COR implies that a correction has been issued for a non-VTEC and non-UGC error or omission. All the elements in the corrected segment will be the same as in the original issuance, except for the use of the COR. When correcting an upgrade, downgrade, or replacement action, COR will appear only in what had been the NEW, EXA, or EXB P-VTEC string.

Routine (ROU) - appears only in Flood Warnings for Forecast Points

| | |
|---|---|
| Default Flood Warning usage | /O.ROU.KMQT.HY.S.0000.000000T0000Z-000000T0000Z/ |

*Note*: ROU will only appear in segments of Flood Warnings for Forecast Points or their follow-up Flood Statements, when it is desired to include points not currently expected to experience flood conditions . All the ROU strings will use the same default values for phenomenon code (*HY*), significance level (*S*), ETN (*0000*), and Event Beginning and Ending Times (both *000000T0000Z*). The associated H-VTEC strings in these Flood segments (see Section 4 for more information on the H-VTEC) will contain default values for all elements except the site identifier and the immediate cause.

## 2.2 Example of a Full P-VTEC String (with Associated UGC String)

For more information on the format of examples used in this directive, see Appendix D, Section 1.

*Scenario: Initial issuance of a TOR product*
Issuing Office: WFO Dodge City KS (KDDC)
Current time: 0219 UTC on May 7, 2011
Event (Product being issued): Tornado Warning (TOR)
Product valid for: Kansas County 97
Product expiration time: 0300 UTC on May 7, 2011
Event Tracking Number: 25th Tornado Warning of the year issued by KDDC
Expected (*or actual*) Event Beginning and Ending times: *0219 UTC* and 0300 UTC on May 7, 2011

KSC097-070300- (UGC)

/O.NEW.KDDC.TO.W.0025.110507T0219Z-110507T0300Z/ (P-VTEC)

*Explanation*: WFO Dodge City KS (*KDDC* - in the P-VTEC) issues a new (*NEW* - in the P-VTEC) operational (*O* - in the P-VTEC) TOR product for Kansas County 97 (*KSC097* - in the UGC), for its 25th (*0025* - in the P-VTEC) Tornado Warning (*TO.W* - in the P-VTEC) of the calendar year. The Tornado Warning is in effect immediately upon the product issuance at 0219 UTC on May 7, 2011 (*110507T0219Z* - in the P-VTEC) and is expected to end at 0300 UTC on May 7, 2011 (*110507T0300Z* - in the P-VTEC), which in this case corresponds with the product expiration time (*070300* - in the UGC).

## 3 Special P-VTEC Rules, Applications and Interpretations

This section explains unique applications of the P-VTEC in specific products and/or situations.

### 3.1 Event Significance Level Change or Replacement in Products

Two P-VTEC strings are required in the following products: WSW and NPW, Fire Weather Watch/Warning, convective watches, and certain marine products when an event for the same area is (1) upgraded/downgraded to a different significance level, e.g., a watch is being upgraded to a warning or advisory, an advisory is being upgraded to a warning, a warning is being downgraded to an advisory, or (2) replaced by a different but environmentally similar event, e.g., a Winter Storm Warning is being replaced by an Ice Storm Warning, or a Tornado or Severe Thunderstorm Watch is being replaced by a different convective watch with a different ETN.

**Table 2**. P-VTEC Action Code Pairs Used for Different Upgrade, Downgrade, and Replacement Situations. The first action code generally refers to the event being upgraded, downgraded, or replaced. The second action code generally refers to the event which is upgrading, downgrading, or replacing that event.

| **Significance Level Change to or Replacement by:** | **Upgrade** | **Downgrade or Replacement** |
|---|---|---|
| a new event | UPG / NEW | CAN / NEW |
| an already existing event in a different product segment, with the same event times | UPG / EXA | CAN / EXA |
| an already existing event in a different product segment, but with different event times | UPG / EXB | CAN / EXB |
| an already existing event in the same product segment | UPG / CON | CAN / CON |
| any event when a correction is required | UPG / COR | CAN / COR |

In the first P-VTEC string, the action code UPG or CAN is used to show the old W/W/A event being upgraded or downgraded/replaced, respectively. In the second P-VTEC string, the action code NEW is used to start a brand new W/W/A event, or the action code EXA or EXB is used to add to an already existing W/W/A event. If a correction is required for an upgrade, downgrade,

or replacement, the COR action code will replace just the NEW, EXA, EXB, or CON, not the CAN or UPG action code. See Table 2.

See Appendix C for the link to the complete VTEC Upgrade/Downgrade/Replace list.

### 3.2 Multiple P-VTEC Events Contained in a Single Unsegmented Product or Segment

Most event-driven products or product segments will contain either one or two P-VTEC strings (one P-VTEC string if there is a single event described in the particular product or segment, or two P-VTEC strings for upgrade, downgrade or replacement actions of an event). However, for some mainly long duration event-driven W/W/A products and for the MWW (as outlined in Section 3.4.1), there will be times when more than one P-VTEC event is contained in a single product or product segment.

In all products containing the VTEC, the P-VTEC strings will be sorted by the following criteria:

a. First, by P-VTEC action code in the following order: CAN, EXP, UPG, NEW, EXB, EXA, EXT, CON. (The ROU action code appears only in Flood Warnings for Forecast Points, and when it does, it will be by itself.) An exception is made for upgrade and downgrade/replacement situations (see Section 3.1) where the P-VTEC strings containing the UPG and either NEW, EXA, EXB, or EXT (for upgrade) or CAN and either NEW, EXA, EXB, or EXT (for downgrade or replacement) action codes will appear together, regardless of any other P-VTEC strings which appear in that segment.

b. If two or more P-VTEC strings contain the same action code, then by significance level (in the order W, Y, A, S, O).

c. If two or more P-VTEC strings contain the same action code and significance level, then in chronological order by Event Beginning Time.

d. If two or more P-VTEC strings contain the same action code, significance level, and Event Beginning Time, then by phenomenon code (in alphabetical order).

Any required H-VTEC string(s) will appear immediately after the corresponding P-VTEC string(s).

### 3.3 Short Duration Watch and Warning Products

P-VTEC coding will appear in all Severe Thunderstorm and Tornado Warning-related products including follow-up statements, and in two Severe Thunderstorm/Tornado Watch Products: the national Watch Outline Update Message (WOU) issued by the SPC; and the local Watch County Notification (WCN) issued by WFOs with forecast/warning area of responsibility included in the WOU product. The P-VTEC string used in a WOU and all WCNs in one convective watch will share the same ETN, phenomenon and significance level, and beginning and ending event times (except that once the watch begins, any follow-up WOUs and WCNs would encode their

beginning event time as all zeros). The WOU will use the SPC's ID (KWNS), while each WCN will use the station ID of the issuing WFO.

Outside the contiguous United States, WFOs will issue WCNs without a WOU from SPC. These WCNs will use sequential ETNs for that WFO.

See NWSI 10-512, *National Severe Weather Products Specification*, and NWSI 10-511, *WFO Severe Weather Products Specification*, for comprehensive details on the WOU and WCN, respectively.

### 3.3.1 Watch County Notification (WCN) Product

The WCN product issued by affected WFOs will handle all aspects (issuance, clearing counties, continuing counties, extending, cancelling, expiration) of Severe Thunderstorm Watch or Tornado Watch issuances by the SPC for their respective forecast/warning area of responsibility.

In WCN products from offices in the contiguous United States, the SPC WOU watch number will be used as the ETN. This allows WCN products from adjacent WFOs to have the same ETN for the same watch. WCN products from offices outside of the contiguous United States will use sequential ETNs for that WFO.

For information on variations of the WCN product, such as "Clearing Counties - One Watch in Effect," "Second Watch Issued While First Watch Remains in Effect," "Extending a Watch's Expiration Time for Selected Counties," see NWSI 10-511.

If the initial WCN product from a WFO is issued after the corresponding WOU event beginning time, the WCN event beginning time will match the WCN issuance time and not the WOU event beginning time (which would be in the past).

An example of a WOU from the SPC and an associated WCN from a WFO is given in Appendix D, Section 7.2.

### 3.3.2 Follow-up Warning Products, including the Severe Weather Statement (SVS) and Marine Weather Statement (MWS)

The SVS product is used to provide follow-up information to a TOR, SVR, or EWW (see NWSI 10-601, *Tropical Cyclone Products*). One use of the MWS product is to provide follow-up information to a Special Marine Warning (see also Section 3.4.2). The SVS and MWS use the phenomenon, significance, ETN, and event ending time from the original warning.

## 3.4 Marine and Coastal Weather Products

The following subsections provide illustration and interpretation for various marine products. Several marine and coastal examples are included in Appendix D, including one event sequence. This sequence shows the flow of VTEC events within a particular coastal flooding situation, e.g., from watches to warnings/advisories to eventual cancellation/expiration.

### 3.4.1 Routine Marine Forecast Products

The MWW is discussed in NWSI 10-315, *Marine Weather Message*. Refer to Section 3.6 for more information on the HLS.

### 3.4.2 Event-Driven Marine and Coastal Products

The event-driven marine and coastal products which contain W/W/A information and P-VTEC coding (Coastal/Lakeshore Hazard Message [CFW], MWW, SMW, and any MWS issued as a follow-up to an SMW) follow the same rules as other event-driven products which contain VTEC coding. Some examples are given in Appendix D. See NWSI 10-313, *Special Marine Warnings*; 10-314, *Marine Weather Statements*; 10-315, *Marine Weather Message*; and 10-320, *Coastal/Lakeshore Hazard Services,* for additional information on event-driven marine products.

## 3.5 Pacific Basin National Tropical Cyclone Product for VTEC (TCV)

The TCV provides VTEC strings for tropical storm and hurricane watch/warnings for the Central and Eastern Pacific basins (including Hawaii). The TCV will include the UGC for the appropriate coastal public zones and the respective latitudes and longitudes for the break points that bracket the watches/warnings.

As listed in Table 1, the Pacific basin national TCV only uses three VTEC action codes: NEW, CON, and CAN. See Section 2.1.6.1 for the special form of ETN used in the TCV. Additional information on the TCV may be found in NWSI 10-601, *Tropical Cyclone Products*.

## 3.6 Atlantic Basin National Tropical Cyclone Watch Warning Product (TCV)

The National TCV provides VTEC strings for tropical storm, hurricane, and storm surge watch/warnings for U.S. states and territories in the Atlantic basin (including the Caribbean and Gulf of Mexico). The TCV will include the UGC for the appropriate coastal and inland public zones for tropical cyclone events with watches/warnings for the following conditions: tropical cyclone wind only, storm surge only, or both tropical cyclone wind and storm surge.

See Section 2.1.6.1 for the special form of ETN used in the TCV. Additional information on the TCV may be found in NWSI 10-601, *Tropical Cyclone Products*.

## 3.7 Atlantic Basin and WFO Honolulu WFO Hurricane Local Watch/Warning Product (TCV)

The segmented WFO TCV product will contain tropical cyclone wind and storm surge watches and warnings for the coastal land and inland zones. This product may include the following VTEC phenomenon codes: Tropical Storm (TR), Hurricane (HU), and Storm Surge (SS).

As listed in Table 1, the WFO TCV can use all the relevant VTEC action codes with the exception of EXT, EXB, EXP, and ROU. Additional information on the WFO TCV may be found in NWSI 10-601.

### 3.7.1 ETNs

Atlantic Basin. The ETNs for all zones use the ETN determined by the storm number issued by the NHC and follow the guidelines in Section 2.1.6.1. These ETNs will be used by all WFOs affected by the same tropical cyclone.

Central Pacific Basin: The ETNs for all land and marine zones use the ETN determined by the storm number issued by the CPHC TCV and follow the guidelines in Section 2.1.6.1.

### 3.7.2 Event Beginning and Ending Times

All Storm Surge, Hurricane and Tropical Storm Watches and Warnings included in the TCV products (the events HU.W, HU.A. TR.W, TR.A, SS.W, SS.A) become effective immediately upon issuance (i.e., have event beginning time the same as the initial product issuance time) and are valid until further notice (i.e., have event ending times of 000000T0000Z).

## 3.8 Pacific Basin (except WFO Honolulu) WFO Hurricane Local Statement (HLS)

The segmented WFO HLS product will contain tropical cyclone wind watches, warnings, and statements for the coastal land and inland zones. This product may include the following VTEC phenomenon codes: Tropical Storm (TR), Hurricane (HU), and Typhoon (TY).

As listed in Table 1, the WFO HLS can use all the relevant VTEC action codes with the exception of EXT, EXB, EXP, and ROU. Additional information on the WFO HLS may be found in NWSI 10-601.

### 3.8.1 ETNs

Eastern Pacific Basin: The ETNs for all zones use the ETN determined by the storm number issued by the NHC and follow the guidelines in Section 2.1.6.1. These ETNs will be used by all WFOs affected by the same tropical cyclone.

Western Pacific Basin: The ETNs for all zones use the ETN determined by the storm number issued by the JTWC and follow the guidelines in Section 2.1.6.1.

### 3.8.2 Event Beginning and Ending Times

All Typhoon, Hurricane and Tropical Storm Watches, Warnings, and Statements included in the HLS products (the events HU.W, HU.A. TR.W, TR.A, TY.W, TY.A, and HU.S) become effective immediately upon issuance (i.e., have event beginning time the same as the initial product issuance time) and are valid until further notice (i.e., have event ending times of 000000T0000Z).

## 4 Hydrologic VTEC (H-VTEC) Format

The specialized H-VTEC string in water resources products occurs only in conjunction with, and immediately after, the P-VTEC string (see Figures 1 and 2). The H-VTEC only follows a P-VTEC string that has a phenomenon code of FL for Flood, FA for Areal Flood, FF for Flash Flood, or HY for Hydrologic. For Flood Warnings (FLW) and follow-up Flood Statements (FLS) at specific river forecast points, the H-VTEC specifies the flood severity; immediate cause; timing of flood beginning, crest, and end; and how the flood compares to the flood of record. For Flood/Flash Flood Watches (FFA), Areal Flood Warnings (FLW), Flash Flood Warnings (FFW) and follow-up Flash Flood Statements (FFS), and Areal Flood Advisories issued under the Flood Statement identifier (FLS), the H-VTEC string will have an entry for immediate cause (IC) but default entries of zeros or capital letter Os (fr – Flood Record Status) for the remaining elements. For more information on the various Flood W/W/A products and their uses, refer to NWSI 10-922, *Weather Forecast Office Hydrologic Products Specification*.

In all hydrologic products, the coding of the P-VTEC string(s) will follow the rules in Sections 2 and 3.

The generic structure of the H-VTEC elements is given in Figure 4.
The "nwsli", "s," "ic," and "fr" describe properties of the flood event and the "yymmddThhnn$Z_B$.yymmddThhmm$Z_C$.yymmddThhmm$Z_E$" group provides the timing in UTC.

**Figure 4.** Generic Structure of H-VTEC Elements. Refer to the section number (*in parenthesis*) for more information on each element or group.

**/nwsli.s.ic.yymmddThhnnZ$_B$.yymmddThhnnZ$_C$.yymmddThhnnZ$_E$.fr/**

| Event Group | | Date/Time Groups (*4.1.4*) | |
|---|---|---|---|
| nwsli - | NWS Location Identifier (*4.1.1*) | yy - | Year |
| s - | Flood Severity (*4.1.2*) | mm - | Month |
| ic - | Immediate Cause (*4.1.3*) | dd - | Day |
| fr - | Flood Record (*4.1.5*) | T - | Fixed Time Indicator |
| | | hh - | Hour in UTC |
| | | nn - | Minute in UTC |
| | | Z$_B$ - | Fixed UTC Flood Beginning Date/Time Indicator |
| | | Z$_C$ - | Fixed UTC Flood Crest Date/Time Indicator |
| | | Z$_E$ - | Fixed UTC Flood Ending Date/Time Indicator |

Notes:
• The "T" in the Date/Time Groups is a fixed Time Indicator, with the following "hh" and "nn" being the hours and minutes in UTC, respectively.
• The $Z_B$, $Z_C$, and $Z_E$ are the generic fixed UTC indicators for the flood beginning, crest, and ending times. Note that the subscripts are not included in the VTEC strings in actual products, but the letter Z will appear. See the examples located throughout Appendix D.
• The forward slash ('/') and period ('.') in the format are delimiters that separate fields for ease in decoding.

## 4.1 H-VTEC Element Definitions/Explanations

### 4.1.1 nwsli (NWS Location Identifier)

Identifies the specific location for which the H-VTEC string applies. Every H-VTEC "nwsli" will contain five alphanumeric characters. For areal flood and flash flood products, this element is coded as five zeros (00000). NWSI 30-1204, *Site Identifiers*, has more information about the NWS Location Identifier program.

### 4.1.2 s (Flood Severity)

Identifies the severity of the flooding on rivers and streams where point-specific flood warning products are issued. For Flood/Flash Flood Watches, Areal Flood Warnings, and Flash Flood Warnings, this element is coded as zero (0). There is one exception: if a Flash Flood Warning provides information on flash flooding which is not the direct result of heavy precipitation (e.g., a dam failure) and the flood severity is unknown, the flood severity code is set to "U." For Flood Advisories, where flood stage is not expected to be met, this element is coded as "N." See Appendix B for flood severity codes.

### 4.1.3 ic (Immediate Cause)

Identifies the immediate cause of the flood. See Appendix B for immediate cause codes.

### 4.1.4 yymmddThhnnZ$_B$.yymmddThhnnZ$_C$.yymmddThhnnZ$_E$ (Flood Timing)

These groups, respectively, identify the actual (or forecast) beginning, crest, and ending times of the flooding at the forecast point by year, month, day, hour, and minute in UTC. For Flood/Flash Flood Watches, Areal Flood Advisories, Areal Flood Warnings, and Flash Flood Warnings, these groups are coded as zeros (000000T0000Z).

#### 4.1.4.1 H-VTEC Flood Beginning Time vs P-VTEC Event Beginning Time

In Flood Warnings for Forecast Points, the H-VTEC Flood Beginning Time reflects the time that the forecast point is expected to reach (or actually did reach) flood stage while the P-VTEC Event Beginning Time reflects the time when the Flood Warning event begins. These two times, when not coded as zeros, are generally the same, except when flooding begins before an initial Flood Warning is issued. In that case, the H-VTEC Flood Beginning Time will be coded with the time flooding began (in the past) and the P-VTEC Event Beginning Time will be coded with the time the warning is issued (the present time).

#### 4.1.4.2 H-VTEC Flood Ending Time vs P-VTEC Event Ending Time

In Flood Warnings for Forecast Points, the H-VTEC Flood Ending Time reflects the time that the forecast point is expected to fall below (or actually fell below) flood stage, while the P-VTEC Event Ending Time reflects the time when the Flood Warning event is expected to end.

These times will not necessarily be the same. During the flood event, the P-VTEC Event Ending Time may be set later than the H-VTEC Flood Ending Time to reflect the extra time for flooding to end in the area around the forecast point or gauge (which is reflected in the H-VTEC time). See NWSI 10-922 Sections 7.2.4 and 8.2.4 for more details. Another case is when a flood warning is cancelled before the most recently forecast ending time. The H-VTEC Flood Ending Time will be coded with the time the flooding actually ended (i.e., the time that the forecast point fell below flood stage), while the P-VTEC Event Ending Time will retain the time it had in the most recent product issuance.

### 4.1.5 fr (Flood Record Status)

Identifies how the flood compares to the flood of record. For Flood/Flash Flood Watches, Areal Flood Warnings, Flash Flood Warnings, and Areal Flood Advisories, this element is coded as two letter Os (OO). See Appendix B for the flood record status codes.

## 4.2 Example of a Full H-VTEC String with associated UGC and P-VTEC Strings

For more information on the format of examples used in this directive, see Appendix D, Section 1.

*Scenario: Initial issuance of a Point Flood Warning*
Issuing Office: WFO Mount Holly NJ (KPHI)
Current time: 1510 UTC on April 15, 2011

Event (Product): Flood Warning (FLW)
Immediate Cause: Excessive Rainfall
Product valid for: New Jersey County 35, Millstone River at Blackwells Mills (BKWN4)
Product expiration time: 2110 UTC on April 15, 2011
Event Tracking Number: 35th Flood Warning for Forecast Points of the year issued by KPHI
Expected Flood Severity: Moderate
Record Flood Expected: No
Expected Event Beginning, Crest, and Ending times: 2000 UTC on April 15, 1800 UTC on April 16 2011, and Until Further Notice

NJC035-152110- (UGC)

/X.NEW.KPHI.FL.W.0035.110415T2000Z-000000T0000Z/ (P-VTEC)

/BKWN4.2.ER.110415T2000Z.110416T1800Z.000000T0000Z.NO/ (H-VTEC)

*Explanation:* WFO Mount Holly NJ (*KPHI* - in the P-VTEC) issues a new (*NEW* - in the P-VTEC) operational (*O* - in the P-VTEC) FLW product for the Millstone River at Blackwells Mills (*BKWN4* - in the H-VTEC) in New Jersey County 35 (*NJC035* - in the UGC), for its 35th (*0035* - in the P-VTEC) Flood Warning for Forecast Points (*FL.W* - in the P-VTEC) of the calendar year. The flooding is expected to begin at 2000 UTC on April 15, 2011 (*110415T2000Z* - in the P-VTEC and H-VTEC) and continue until further notice (*000000T0000Z* - in the P-VTEC and H-VTEC), with a crest at 1800 UTC on April 16, 2011 (*110416T1800Z* - in the H-VTEC). The flooding is a result of excessive rainfall (*ER* - in the H-VTEC), is expected to be moderate (*2* - in the H-VTEC), and should not approach a record flood (*NO* - in the H-VTEC). This Flood Warning product will expire at 2100 UTC on April 15 (*152110* - in the UGC). Note that the event beginning and ending times in the P-VTEC string are the same as the respective flood beginning and ending times in the H-VTEC string. However, had the event already begun in an earlier product issuance, the P-VTEC event beginning time would have been coded as zeros. Also note that when the flood ending time becomes known, the ending times in the P-VTEC and H-VTEC strings will be changed to reflect that (see Section 2.1.7).

## 5 Special H-VTEC Rules, Applications and Interpretations

This section explains unique applications of the H-VTEC in specific products and/or situations.

### 5.1 FLS and FFS Products issued as Follow-Ups to Warnings.

One of the uses of the FLS is to provide follow-up information on Flood Warnings. The FFS is used to provide follow-up information on Flash Flood Warnings. When used in this manner, the FLS and FFS will share the phenomenon, significance, event times, and ETN of the original warning.

### 5.2 Flood Advisories Issued Under the Flood Statement Identifier

Flood Advisories issued under the Flood Statement (FLS) identifier provide information on elevated river/stream flows or ponding of water in urban or other areas, when such events warrant notification of the public in a product less urgent than a warning. Areal Flood Advisories use the P-VTEC phenomenon code FA while Flood Advisories for Forecast Points use the phenomenon code FL, with both using a significance level of Y. While actual Event Beginning and Ending Times are coded in the P-VTEC string of a Flood Advisory, all the times in the H-VTEC string are coded as zeros (since Flood Warning criteria are not expected). More information on Flood Statements issued for Advisories can be found in NWSI 10-922.

### 5.3 Non-Flood Segments Included in Flood Warning for Forecast Points Product

A Flood Warning for Forecast Points (FLW) or its associated follow-up statement (FLS) may also include segments for forecast points which are expected to remain below flood warning criteria. Inclusion of such segments provides a complete set of forecast and warning information for a series of points along a river reach, regardless of whether or not they are in flood. Segments for forecast points which are below product issuance criteria will use the ROU action code with the HY phenomenon code and S significance level. All the other P-VTEC and H-VTEC elements will use default values (zeros or letter Os) except for the H-VTEC site identifier (which identifies the forecast point) and immediate cause.

### 5.4 Multiple Hydrologic P-VTEC Strings in a Single Product Segment

Normally, there will only be one hydrologic P-VTEC string included in a single product segment, since VTEC upgrade and downgrade operations are not performed on hydrologic products. However, when areal Flash Flood Watches are replaced by areal Flood Watches (or vice-versa), there will be paired CAN/NEW, CAN/EXA, or CAN/EXB P-VTEC strings, the first (CAN) for the watch being replaced, and the second (NEW, EXA, or EXB) for the new watch being issued. In such a case, a single H-VTEC string will appear after the two P-VTEC strings. Being an areal watch product, the only element in the H-VTEC string which will be populated by a non-default value will be the immediate cause. The immediate cause value encoded will apply to the NEW (or EXA or EXB) P-VTEC string.

# APPENDIX A - Listing of P-VTEC Elements

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## 1 Generic P-VTEC Structure

/k.aaa.cccc.pp.s.####.yymmddThhnn$Z_B$-yymmddThhnn$Z_E$/

## 2 Fixed identifier (k)

| | | | |
|---|---|---|---|
| O | Operational Product | E | Experimental Product |
| T | Test Product | X | Experimental VTEC in an Operational Product |

## 3 Actions (aaa)

| | | | |
|---|---|---|---|
| NEW | New Event | CAN | Event Cancelled |
| CON | Event Continued | UPG | Event Upgraded |
| EXT | Event Extended (Time) | EXP | Event Expired |
| EXA | Event Extended (Area) | COR | Corrected |
| EXB | Event Extended (Both Time and Area) | ROU | Routine |

**Office ID (cccc)**

Standard four-letter identifier indicating the NWS office with the primary responsibility for the affected area.

## 4 Phenomenon (pp)

Note that not all phenomenon codes are currently being used in NWS products. Refer to the spreadsheets in Appendix C for the list of valid VTEC events.

## 5.1 Phenomenon (pp) codes grouped by hazard type

**Winter**

| | |
|---|---|
| BZ | Blizzard |
| WS | Winter Storm |
| WW | Winter Weather |
| LE | Lake Effect Snow |
| ZR | Freezing Rain |
| IS | Ice Storm |
| WC | Wind Chill |
| SQ | Snow Squall |

**Non-Precipitation**

| | |
|---|---|
| DU | Blowing Dust |
| DS | Dust Storm |
| WI | Wind |
| HW | High Wind |
| LW | Lake Wind |
| SM | Dense Smoke (land) |
| FG | Dense Fog (land) |
| ZF | Freezing Fog |
| HZ | Hard Freeze |
| FZ | Freeze |
| FR | Frost |
| HT | Heat |
| EH | Excessive Heat |
| EC | Extreme Cold |
| AS | Air Stagnation |
| AF | Ashfall (land) |

**Water Resources**

| | |
|---|---|
| DF | Debris Flow |
| FL | Flood |
| FA | Areal Flood |
| FF | Flash Flood |
| HY | Hydrologic |

**Severe Storms**

| | |
|---|---|
| SV | Severe Thunderstorm |
| TO | Tornado |

**Marine and Coastal**

| | |
|---|---|
| MA | Marine |
| ZY | Freezing Spray |
| UP | Heavy Freezing Spray |
| SC | Small Craft |
| SI | Small Craft for Winds |
| SW | Small Craft for Hazardous Seas |
| RB | Small Craft for Rough Bar |
| BW | Brisk Wind |
| GL | Gale |
| SE | Hazardous Seas |
| SR | Storm |
| HF | Hurricane Force Wind |
| LS | Lakeshore Flood |
| CF | Coastal Flood |
| SU | High Surf |
| TS | Tsunami |
| LO | Low Water |
| MF | Dense Fog |
| MS | Dense Smoke |
| MH | Ashfall |
| BH | Beach Hazard |
| RP | Rip Current Risk |

**Tropical**

| | |
|---|---|
| TR | Tropical Storm |
| HU | Hurricane |
| TY | Typhoon |
| EW | Extreme Wind |
| SS | Storm Surge |

**Other**

| | |
|---|---|
| FW | Fire Weather |

## 5.2 Phenomenon (pp) codes in alphabetical order

| | |
|---|---|
| AF | Ashfall (land) |
| AS | Air Stagnation |
| BH | Beach Hazard |
| BW | Brisk Wind |
| BZ | Blizzard |
| CF | Coastal Flood |
| DF | Debris Flow |
| DS | Dust Storm |
| DU | Blowing Dust |
| EC | Extreme Cold |
| EH | Excessive Heat |
| EW | Extreme Wind |
| FA | Areal Flood |
| FF | Flash Flood |
| FG | Dense Fog (land) |
| FL | Flood |
| FR | Frost |
| FW | Fire Weather |
| FZ | Freeze |
| GL | Gale |
| HF | Hurricane Force Wind |
| HT | Heat |
| HU | Hurricane |
| HW | High Wind |
| HY | Hydrologic |
| HZ | Hard Freeze |
| IS | Ice Storm |
| LE | Lake Effect Snow |
| LO | Low Water |
| LS | Lakeshore Flood |
| LW | Lake Wind |
| MA | Marine |
| MF | Dense Fog (marine) |
| MH | Ashfall (marine) |
| MS | Dense Smoke (marine) |
| RB | Small Craft for Rough Bar |
| RP | Rip Current Risk |
| SC | Small Craft |
| SE | Hazardous Seas |
| SI | Small Craft for Winds |
| SM | Dense Smoke (land) |
| SR | Storm |
| SS | Storm Surge |
| SQ | Snow Squall |
| SU | High Surf |
| SV | Severe Thunderstorm |
| SW | Small Craft for Hazardous Seas |
| TO | Tornado |
| TR | Tropical Storm |
| TS | Tsunami |
| TY | Typhoon |
| UP | Heavy Freezing Spray |
| WC | Wind Chill |
| WI | Wind |
| WS | Winter Storm |
| WW | Winter Weather |
| ZF | Freezing Fog |
| ZR | Freezing Rain |
| ZY | Freezing Spray |

### 5 Significance (s)

Note that not all significance codes are being used in NWS products. Refer to the spreadsheets referenced in Appendix C for the current list of valid VTEC events.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| W | Warning | Y | Advisory | F | Forecast | N | Synopsis |
| A | Watch | S | Statement | O | Outlook | | |

### 6 Event Tracking Number - ETN (####)

A four-digit number assigned to keep track of an event during its lifetime. ETNs are assigned sequentially each year by each WFO for each combination of unique event phenomenon and significance. Certain convective watch redefining products issued by WFOs use the same ETN as the originating national watch product, but a single WFO will not use every ETN in sequence. (See Sections 2.1.6.1 and 3.3.) There will be some differences in assigned ETNs for tropical cyclone watches and warnings in different ocean basins. (See Sections 2.1.6.1, 3.4.1, 3.5 and 3.6.)

## 7 Event Beginning and Ending Date/Time Groups

**(yymmddThhnn$Z_B$-yymmddThhnn$Z_E$)** Note that the subscripts B and E will not appear in P-VTEC strings, just a letter Z.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| yy | Year | dd | Date | hh | hour | $Z_B$ | Place holder - beginning time |
| mm | Month | T | Place holder | nn | Minute | $Z_E$ | Place holder - ending time |

*Note: Additional codes will be added as needed.*

# APPENDIX B - Listing of H-VTEC Elements

**Generic H-VTEC Structure**

/nwsli.s.ic.yymmddThhnn$Z_B$.yymmddThhnn$Z_C$.yymmddThhnn$Z_E$.fr/

**Site Identifier (nwsli)**

Five character NWS Site Identifier. For areal flood products, coded as five zeros (00000).

**Flood Severity (s)**

N None - used for advisories, where flood stage is not expected to be met

0 for Flood/Flash Flood Watches, Areal Flood Warnings, and for Flash Flood Warnings where no hydrologic observations and/or forecasts for specific locations in the warning area

*The following codes are used for Flood Warnings and follow-up Flood Statements in which hydrologic observations and forecasts are provided for specific forecast points. These codes apply to flooding that is forecast, is occurring, or did occur during the period of time covered by the warning.*

| | | | |
|---|---|---|---|
| 1 | Minor | 3 | Major |
| 2 | Moderate | U | Unknown |

**Immediate Cause (ic)**

| | | | |
|---|---|---|---|
| ER | Excessive Rainfall | FT | Upstream Flooding plus Tidal Effects |
| SM | Snowmelt | ET | Elevated Upstream Flow plus Tidal Effects |
| RS | Rain and Snowmelt | WT | Wind and/or Tidal Effects |
| DM | Dam or Levee Failure | DR | Upstream Dam or Reservoir Release |
| GO | Glacier-Dammed Lake Outburst | MC | Other Multiple Causes |
| IJ | Ice Jam | OT | Other Effects |
| IC | Rain and/or Snowmelt and/or Ice Jam | UU | Unknown |
| FS | Upstream Flooding plus Storm Surge | | |

**Flood Timing (yymmddThhnn$Z_B$.yymmddThhnn$Z_C$.yymmddThhnn$Z_E$)** Note that the subscripts B, C and E. will not appear in time groups of actual H-VTEC strings, just a letter Z

yy Year

mm Month

dd Date

T Place holder

hh hournn Minute

$Z_B$ Place holder - beginning time

$Z_C$ Place holder - crest time

$Z_E$ Place holder - ending time

**Flood Record Status (fr)**

OO The flood record status is not applicable, such as in the following products: Flood Watches, Flash Flood Warnings, Areal Flood Warnings, Areal Flood Advisories, and non-flood (ROU) segments in Flood Warnings for Forecast Points

NO A record flood is not expected

NR Near record or record flood expected

UU Flood without a period of record to compare

*Note: Additional codes will be added as needed.*

# APPENDIX C - Examples and Interpretations

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## 1 Key to VTEC examples

Throughout this Appendix and in the main text of this Directive, examples of P-VTEC and H-VTEC coding are included to illustrate and clarify points. Only the UGC and VTEC string(s) of the product(s) are included in the examples (in Courier New font). The examples are indented from the rest of the text in a 10 point font and include all the information necessary to create the UGC and VTEC strings.

Here is an example of a multi-segment Flood Warning which is being extended in time. Explanations of the example keywords (which are bolded here) are given below in the order in which they will normally appear in the examples. Depending on the type of product, not all of these keywords will appear in every example.

***Scenario**: Flood Warnings extended in time with severity increased*
**Issuing Office**: WFO Wichita KS (KICT)

**Current time**: 1946 UTC on June 30, 2011
**Event (Product)**: Flood Warning for Forecast Points (FLW)
**Immediate Cause**: Excessive Rainfall
**Product expiration time**: 0746 UTC on July 1, 2011
**Segment 1**
**Valid for**: Verdigris River at Independence (IDPK1 - Kansas Counties 125 and 205)
**Event Tracking Number**: 7th Flood Warning of the year for Forecast Points issued by KICT
**Expected Flood Severity**: Major, with record flooding expected
**Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning**: *0851 UTC on June 29*, 1800 UTC on July 1, 2011, and Until Further Notice
**Segment 2**
**Valid for**: Verdigris River at Coffeyville (CFVK1 - Kansas County 125)
**Event Tracking Number**: 10th Flood Warning of the year for Forecast Points issued by KICT
**Expected Flood Severity**: Major, with record flooding expected
**Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning**: *1727 UTC on June 29*, 0000 UTC on July 2, 2011, and Until Further Notice

(**segment 1 of 2 within FLW product** - warning extended for the Verdigris at Independence)

```
KSC125-205-010746-

                                                                (UGC)
/O.EXT.KICT.FL.W.0007.000000T0000Z-000000T0000Z/                (P-VTEC)
/IDPK1.3.ER.110629T0851Z.110701T1800Z.000000T0000Z.NR/          (H-VTEC)
```

**(segment 2 of 2 within FLW product** - warning extended for the Verdigris River at Coffeyville)

```
KSC125-010746-

                                                                (UGC)
/O.EXT.KICT.FL.W.0010.000000T0000Z-000000T0000Z/                (P-VTEC)
/CFVK1.3.ER.110629T1727Z.110702T0000Z.000000T0000Z.NR/          (H-VTEC)
```

***Explanation***: This Flood Warning for Forecast Points product from WFO Wichita has been issued for two forecast points on the Verdigris River in Kansas. Each forecast point is in a separate segment, and each forecast point has a different ETN (of *0007* and *0010*). The purpose of the product is to extend the valid time of the warnings (*EXT* - in the P-VTEC strings) to be valid Until Further Notice (*000000T0000Z*) in both the P-VTEC and H-VTEC strings. In addition, from the product headline (not shown) the flood severity has been changed from Minor to Major (*3* - in the H-VTEC) and record flooding is now expected (*NR* - in H-VTEC). The event beginning time in each P-VTEC string has been set to zeros, since the flooding began at both points on June 29 (in the H-VTEC strings). etc...

## Example keywords:

***Scenario*** - a brief description of why the product is being issued.
**Issuing Office** - the name and four-character identifier of the issuing office.
**Current time** - the time (in UTC) at which the product is being issued. This is the time that would be included in the WMO header and in local time in the product MND.
**Immediate Cause** - for flood events, the primary cause of the actual or expected flooding. The immediate cause codes are listed in Appendix B.

**Event (product)** - the event(s) give the VTEC event(s) included in this issuance, and the product (in parenthesis) is the three-character product class under which the product is issued.
**Product expiration time** - the time (in UTC) at which the product expires. This is the time that is included in the UGC string. If multi-segmented products have different expiration times for different segments, the **Segment expiration time** may be included in each segment rather than an overall Product expiration time.
**Segment x** - included in many segmented examples when the information is segment specific.
**Valid for** or **Product valid for** - the area (county, parish, or land or marine zone) or specific gauge (in the case of point floods) for which that particular product or product segment is valid.
**Event Tracking Number** - the ETN(s) assigned to the event(s) included in the product.
**Expected (*or actual*) Event Beginning, Crest, and Ending times...** - the dates and times in the UGC when the event is expected to begin and end, and when the H-VTEC is included, expected to crest. These are the times that are included in the P-VTEC and H-VTEC strings. If the event beginning time and/or flood crest time have already occurred, the time will be in *italics*. If an event is being cancelled, the cancellation time will also be in *italics* (and in parentheses), with the previously forecast event ending time also given since that is what will appear in the P-VTEC string. Non-hydrologic events will not include the crest time.
**segment x of y within...** - the UGC and VTEC string(s) which would appear in the product segment.
**(UGC)** - The UGC string for the product segment.
**(P-VTEC)** - The P-VTEC string for the product segment. If there are multiple P-VTEC strings in a segment, they will be numbered 1, 2, etc.
**(H-VTEC)** - For flood products, the H-VTEC string for the product segment.
***Explanation*** - a more detailed description of the VTEC coding used in the product.

## 2 Single Events

Typically, only one VTEC event will appear in a given unsegmented product or in a product segment. Areal or temporal changes, multiple VTEC events, and corrections to ongoing events are covered in later sections.

*Example - <u>New Gale Watch</u>*

*Scenario: Initial issuance of a Gale Watch*
Issuing Office: WFO Milwaukee WI (KMKX)
Current time: 0940 UTC on December 2, 2011
Event (Product): Gale Watch (MWW)
Product valid for: Lake Michigan Zones 643 thru 646
Product expiration time: 1745 UTC on December 2, 2011
Event Tracking Number: 2nd Gale Watch of the year issued by KMKX
Expected Event Beginning and Ending times of the Advisory: 0000 UTC and 1200 UTC on December 3, 2011

```
LMZ643>646-021745-                                    (UGC)
/O.NEW.KMKX.GL.A.0002.111203T0000Z-111203T1200Z/      (P-VTEC)
```

*Explanation:* WFO Milwaukee issues an MWW product on December 2, 2011 for a NEW Gale Watch (*GL.A* - in the P-VTEC) in their four Lake Michigan marine zones (*LMZ643>646* - in the UGC). The watch is valid from 0000 UTC to 1200 UTC on December 3 (P-VTEC string).

*Example - <u>Coastal Flood Advisory continued</u>*

*Scenario: Coastal Flood Advisory continued*
Issuing Office: WFO Baltimore MD/Washington DC (KLWX)
Current time: 1914 UTC on April 7, 2011
Event (Product): Coastal Flood Advisory (CFW)
Product valid for: District of Columbia Zone 1; Maryland Zones 7, 11, 13, 14, and 16 thru 18; and Virginia Zones 52 thru 55, and 57
Product expiration time: 0300 UTC on April 8, 2011
Event Tracking Number: 4th Coastal Flood Advisory of the year issued by KLWX
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *1432 UTC on April 7* and 1500 UTC on April 8, 2011

DCZ001-MDZ007-011-013-014-016>018-VAZ052>055-
057-080300- (UGC)
/O.CON.KLWX.CF.Y.0004.000000T0000Z-110408T1500Z/ (P-VTEC)

*Explanation:* Earlier, WFO Baltimore/Washington had issued its fourth Coastal Flood Advisory of the year for several of its forecast zones. This follow-up CFW product continues the advisory with no changes in area or event ending time. Since the advisory was in effect immediately upon initial issuance (at 1432 UTC on April 7), the event beginning time is zeroed out in this product.

*Example – <u>Beach Hazards Statement</u>*

*Scenario: Beach Hazards Statement*
*Issuing Office: WFO Northern Indiana (KIWX)*
Current time: 0953 UTC on May 23, 2013
Event (Product): Beach Hazard Statement (CFW)
Product valid for: Indiana Zone 3, Michigan Zone 77
Product expiration time: 1700 UTC on May 23, 2013
Event Tracking Number: 1st Beach Hazards Statement of the year issued by KIWX
Expected (*or actual*) Event Beginning and Ending times of the Statement: 1500 *UTC on May 23* and 0000 UTC on May 25, 2013.

INZ003-MIZ077-231700- (UGC)
/O.NEW.KIWX.BH.S.0001.130523T1500Z-130525T0000Z/ (P-VTEC)

*Explanation:* WFO Northern Indiana issued its first Beach Hazards Statement of the year for two of its zones.

*Example – <u>Rip Current Risk Statement</u>*

*Scenario: Rip Current Statement*
*Issuing Office: WFO Taunton, MA (KBOX)*
Current time: 1002 UTC on May 24, 2013
Event (Product): Rip Current Risk Statement (CFW)
Product valid for: Massachusetts Zone 20 Rhode Island zone 6, 7, 8
Product expiration time: 1815 UTC on May 24, 2013
Event Tracking Number: 1st Rip Current Risk Statement of the year issued by KBOX

Expected (*or actual*) Event Beginning and Ending times of the Statement: 1002 *UTC on May 23* and 0000 UTC on May 25, 2013.

MAZ020-RIZ006>008-241815- (UGC)

/O.NEW.KBOX.RP.S.0001.130524T1002Z-130525T0000Z/ (P-VTEC)

*Explanation:* WFO Taunton, MA issued its first Rip Current Risk Statement of the year for four of its zones.

## *Example - Lake Effect Snow Warning expired*

*Scenario: Lake Effect Snow Warning had expired*
Issuing Office: WFO Northern Indiana (KIWX)
Current time: 0503 UTC on January 29, 2012
Event (Product): Lake Effect Snow Warning (WSW)
Product valid for: Indiana Zones 3 thru 5; Michigan Zones 77 thru 79
Product expiration time: 0615 UTC on January 29, 2012
Event Tracking Number: 2nd Lake Effect Snow Warning of the year issued by KIWX
Expected (*or actual*) Event Beginning and Ending times of the Warning: *0211 UTC on January 28* and 0500 UTC on January 29, 2012

INZ003>005-MIZ077>079-290615- (UGC)

/O.EXP.KIWX.LE.W.0002.000000T0000Z-120129T0500Z/ (P-VTEC)

*Explanation:* WFO Northern Indiana had allowed the Lake Effect Snow Warning to expire at 0500 UTC and is sending a final WSW product to wrap up the event. Although the event is over (i.e., the event ended when the event ending time of 0500 UTC was reached), the product segment has a later expiration time (in the UGC) to allow dissemination of the message via NOAA Weather Radio and other outlets.

## *Example - Test Extreme Cold Warning cancelled*

*Scenario: Test Extreme Cold Warning is cancelled*
Issuing Office: WFO Fairbanks AK (PAFG)
Current time: 2117 UTC on June 2, 2011
Event (Product): Extreme Cold Warning (NPW)
Product valid for: Alaska Zones 223, 225, and 226
Product expiration time: 2230 UTC on June 2, 2011
Event Tracking Number: 1st Extreme Cold Warning of the year issued by PAFG
Expected (*or actual*) Event Beginning and Ending times of the Warning: 0500 UTC and 1500 UTC on June 3, 2011 (*2117 UTC on June 2*)

AKZ223-225-226-022230- (UGC)

/T.CAN.PAFG.EC.W.0001.110603T0500Z-110603T1500Z/ (P-VTEC)

*Explanation:* WFO Fairbanks had issued a Test Extreme Cold Warning (note the *T* at the start of the P-VTEC string) for a few of their forecast zones, and is now cancelling the test warning well before the event was scheduled to begin. The event ending time (1500 UTC on June 3) does not change from the previous issuance.

## 3 Multiple Events in a Single Product Segment

Occasionally, multiple related VTEC events may appear in a single product segment. These related events may be occurring at roughly the same time or may be sequential, but either way, are all valid for the geographic area defined in the corresponding UGC string.

*Example - Blowing Dust Advisory and Wind Advisory*

*Scenario: Blowing Dust Advisory and Wind Advisory in effect for the same area*
Issuing Office: WFO Tucson AZ for WFO Phoenix AZ (KPSR)
Current time: 0934 UTC on January 5, 2012
Events (Product): Blowing Dust Advisory and Wind Advisory (NPW)
Product valid for: California Zones 30 thru 33
Product expiration time: 2115 UTC on January 5, 2012
Event Tracking Numbers: 1st Blowing Dust Advisory and 1st Wind Advisory of the year issued by KPSR
Expected Event Beginning and Ending times of the
Blowing Dust Advisory: 1400 UTC on January 5 and 0400 UTC on January 6, 2012
Wind Advisory: 1000 UTC on January 5 and 0400 UTC on January 6, 2012

```
CAZ030>033-052115-                                  (UGC)
/O.NEW.KPSR.DU.Y.0001.120105T1400Z-120106T0400Z/     (P-VTEC 1)
/O.EXT.KPSR.WI.Y.0001.120105T1000Z-120106T0400Z/     (P-VTEC 2)
```

*Explanation:* Two separate events are included in a single product segment of an NPW product from WFO Phoenix (issued by WFO Tucson, their backup office). The ETNs reflect those of Phoenix. The NEW Blowing Dust Advisory (P-VTEC 1) is in effect from 1400 UTC on January 5 until 0400 UTC on January 6. The event beginning time of the Wind Advisory (P-VTEC 2) has been moved up to 1000 UTC on January 5, hence the use of the EXT action code. Although the Blowing Dust Advisory begins after the Wind Advisory, it is listed first because it is NEW. See NWSI 10-1703 Section 3.2.

*Example - Winter Storm Warning and Winter Weather Advisory*

*Scenario: Winter Storm Warning and Winter Weather Advisory in effect for different elevations of the same zone*
Issuing Office: WFO Great Falls MT (KTFX)
Current time: 1937 UTC on February 8, 2012
Events (Product): Winter Storm Warning and Winter Weather Advisory (WSW)
Product valid for: Montana Zone 14
Product expiration time: 0400 UTC on February 9, 2012
Event Tracking Numbers: 6th Winter Storm Warning and 2nd Winter Weather Advisory of the year issued by KTFX
Expected (*or actual*) Event Beginning and Ending times of the
Winter Storm Warning: *1800 UTC on February 7* and 0000 UTC on February 10, 2012
Winter Weather Advisory: 0000 UTC on February 9 and 0000 UTC on February 10, 2012

```
MTZ014-090400-                                      (UGC)
```

/O.CON.KTFX.WS.W.0006.000000T0000Z-120210T0000Z/ (P-VTEC 1)

/O.CON.KTFX.WW.Y.0002.120209T0000Z-120210T0000Z/ (P-VTEC 2)

*Explanation:* WFO Great Falls has a Winter Storm Warning currently in effect for the portion of Montana Zone 14 above 5500 feet, and a Winter Weather Advisory in effect beginning at 0000 UTC for the portion of that zone below 5500 feet, both of which are being continued from earlier issuances of the WSW product. As discussed in Section 2.1.2 of NWSI 10-1703, there is no elevation data included in the VTEC. Those parsing the product to determine exactly where the warning and advisory are in effect would get that information from the headlines and/or text of the product (which are not included here).

## *Example - Coastal Flood Watch and High Surf Advisory*

*Scenario: Coastal Flood Watch and High Surf Advisory in effect for the same zones*
Issuing Office: WFO Charleston SC (KCHS)
Current time: 1534 UTC on June 2, 2011
Events (Product): Coastal Flood Watch and High Surf Advisory (CFW)
Product valid for: South Carolina Zones 48 thru 51
Product expiration time: 0000 UTC on June 3, 2011
Event Tracking Numbers: 7th High Surf Advisory and 1st Coastal Flood Watch of the year issued by KCHS
Expected Event Beginning and Ending times of the
High Surf Advisory: 0300 UTC and 1500 UTC on June 3, 2011
Coastal Flood Watch: 2200 UTC on June 2 and 0600 UTC on June 3, 2011

SCZ048>051-030000- (UGC)

/O.CON.KCHS.SU.Y.0007.110603T0300Z-110603T1500Z/ (P-VTEC 1)

/O.CON.KCHS.CF.A.0001.110602T2200Z-110603T0600Z/ (P-VTEC 2)

*Explanation:* Two separate events (High Surf Advisory and Coastal Flood Watch) are included in a single product segment of a Coastal Hazard Message (CFW product) from WFO Charleston. As stated in NWSI 10-1703 Section 3.2, the advisory is listed before the watch. When the VTEC action code is the same, advisories appear before watches, even though the event beginning time of the watch is earlier.

## *Example - Freeze Warning and Watches for different nights*

*Scenario: Freeze Warning continued for tonight, with New Freeze Watches issued for the next two nights*
Issuing Office: WFO Peachtree City GA (KFFC)
Current time: 1911 UTC on April 5, 2011
Events (Product): Freeze Warning and Freeze Watches (NPW)
Product valid for: Georgia Zones 1 thru 9, 11 thru 16, 19 thru 21, 30, 31, 41, 42, and 52 thru 54
Product expiration time: 0315 UTC on April 6, 2011
Event Tracking Numbers: 1st Freeze Warning and 1st and 2nd Freeze Watches of the year issued by KFFC
Expected Event Beginning and Ending times of the
Freeze Warning: 0400 UTC and 1200 UTC on April 6, 2011
Freeze Watch 0001: 0400 UTC and 1300 UTC on April 7, 2011
Freeze Watch 0002: 0400 UTC and 1300 UTC on April 8, 2011

GAZ001>009-011>016-019>021-030-031-041-042-
052>054-060315- (UGC)

/O.NEW.KFFC.FZ.A.0001.110407T0400Z-110407T1300Z/ (P-VTEC 1)

/O.NEW.KFFC.FZ.A.0002.110408T0400Z-110408T1300Z/ (P-VTEC 2)

/O.CON.KFFC.FZ.W.0001.110406T0400Z-110406T1200Z/ (P-VTEC 3)

*Explanation:* Three separate events are included in a single product segment of an NPW product from WFO Peachtree City. The Freeze Warning for tonight (P-VTEC 3) is continued, and two new Freeze Watches are being issued for the following two nights (P-VTEC 1 and P-VTEC 2). The ordering of the P-VTEC strings follows the guidelines in NWSI 10-1703 Section 3.2. NEW events appear before CONtinued ones.

## 4 Changes in P-VTEC Elements

### 4.1 Changes in Phenomenon and/or Significance Level

Examples of event upgrades, downgrades, and replacements are given below. For a complete list of event types that upgrade, downgrade, or replace other events, refer to Appendix C for the link to the VTEC Upgrade/Downgrade/Replace Product List.

#### 4.1.1 Upgrade

The UPG action code is used to upgrade from a Watch to either a related Warning or Advisory, from an Advisory to a related Warning; or from a discrete Marine Watch or Warning to another discrete Marine Watch or Warning with higher wind speed criteria. Upgrades of Tropical events in the TCV product (see NWSI 10-1703 Section 3.5) are done using the CAN action code (see example in Section 7.1 of this Appendix below).

*Example - <u>Staggered upgrade of Watch to Warning and Advisory</u>*

**Product 1**

*Scenario: Upgrade portion of an existing Winter Storm Watch to a Winter Storm Warning*
Issuing Office: WFO St Louis MO (KLSX)
Current time: 0355 UTC on February 10, 2012
Events (Product): Winter Storm Watch and Winter Storm Warning (WSW)
Product valid for: Illinois Zones 64, 65, 69, 70, 74, 79, and 98 thru 102; Missouri Zones 41, 47 thru 52, 59 thru 65, 72 thru 75, 84, 85, and 99
Product expiration time: 1600 UTC on February 10, 2012
Event Tracking Numbers: 3rd Winter Storm Watch and 2nd Winter Storm Warning of the year issued by KLSX
Segment 1
Valid for: Illinois Zones 74 and 79; Missouri Zones 72 thru 75, 84, 85, and 99
Expected (*or actual*) Event Beginning and Ending times of the
Winter Storm Watch: 1200 UTC on February 10 and 1200 UTC on February 11, 2012
(*0355 UTC on February 10*)
Winter Storm Warning: 1200 UTC on February 10 and 1200 UTC on February 11, 2012

Segment 2

Valid for: Illinois Zones 64, 65, 69, 70, and 98 thru 102; Missouri Zones 41, 47 thru 52, and 59 thru 65
Expected Event Beginning and Ending times of the Winter Storm Watch: 1200 UTC on February 10 and 1200 UTC on February 11, 2012

(segment 1 of 2 within WSW product - portion of watch upgraded to warning)

ILZ074-079-MOZ072>075-084-085-099-101600- (UGC)

/O.UPG.KLSX.WS.A.0003.120210T1200Z-120211T1200Z/ (P-VTEC 1)

/O.NEW.KLSX.WS.W.0002.120210T1200Z-120211T1200Z/ (P-VTEC 2)

(segment 2 of 2 within WSW product - portion of watch continued)

ILZ064-065-069-070-098>102-MOZ041-047>052-

059>065-101600- (UGC)

/O.CON.KLSX.WS.A.0003.120210T1200Z-120211T1200Z/ (P-VTEC)

*Explanation:* Earlier, a Winter Storm Watch had been issued for much of the WFO St Louis forecast area. At 0355 UTC, the forecaster decides to change the southern portion of the watch to a Winter Storm Warning. Still uncertain about accumulations elsewhere, the forecaster opts to keep the remainder of the watch as it is for now. This requires two segments in the WSW product. The first segment contains the upgrade of the Winter Storm Watch to the Winter Storm Warning, using the *UPG* and *NEW* action codes. The second segment contains the continued Winter Storm Watch.

**Product 2**

*Scenario: Upgrade the rest of the Winter Storm Watch to a Winter Weather Advisory*
Issuing Office: WFO St Louis MO (KLSX)
Current time: 1037 UTC on February 10, 2012
Events (Product): Winter Storm Watch, Winter Storm Warning, and Winter Weather Advisory (WSW)
Product valid for: Illinois Zones 64, 65, 69, 70, 74, 79, and 98 thru 102; Missouri Zones 41, 47 thru 52, 59 thru 65, 72 thru 75, 84, 85, and 99
Product expiration time: 2245 UTC on February 10, 2012
Event Tracking Numbers: 3rd Winter Storm Watch, 2nd Winter Storm Warning, and 3rd Winter Weather Advisory of the year issued by KLSX
Segment 1
Valid for: Illinois Zones 74 and 79; Missouri Zones 72 thru 75, 84, 85, and 99
Expected (*or actual*) Event Beginning and Ending times of the
Winter Storm Warning: *1200 UTC on February 10* and 1200 UTC on February 11, 2012
Segment 2
Valid for: Missouri Zones 47 thru 49, 59, and 62
Expected Event Beginning and Ending times of the
Winter Storm Watch: 1200 UTC on February 10 and 1200 UTC on February 11, 2012 (*1037 UTC on February 10*)
Winter Weather Advisory: 1200 UTC on February 10 and 1200 UTC on February 11, 2012
Segment 3
Valid for: Illinois Zones 64, 65, 69, 70, and 98 thru 102; Missouri Zones 41, 50 thru 52, 60. 61, and 63 thru 65
Expected Event Beginning and Ending times of the
Winter Storm Watch: 1200 UTC on February 10 and 1200 UTC on February 11, 2012 (1037 UTC on February 10)
Winter Weather Advisory: 1800 UTC on February 10 and 1200 UTC on February 11, 2012

(Segment 1 of 3 within WSW product - warning continued)

ILZ074-079-MOZ072>075-084-085-099-102245- (UGC)

/O.CON.KLSX.WS.W.0002.120210T1200Z-120211T1200Z/ (P-VTEC)

(Segment 2 of 3 within WSW product - portion of watch upgraded to advisory)

MOZ047>049-059-062-102245- (UGC)

/O.UPG.KLSX.WS.A.0003.120210T1200Z-120211T1200Z/ (P-VTEC 1)

/O.NEW.KLSX.WW.Y.0003.120210T1200Z-120211T1200Z/ (P-VTEC 2)

(Segment 3 of 3 within WSW product - rest of watch upgraded to advisory)

ILZ064-065-069-070-098>102-MOZ041-050>052-060-061-063>065-102245- (UGC)

/O.UPG.KLSX.WS.A.0003.120210T1200Z-120210T1200Z/ (P-VTEC 1)

/O.NEW.KLSX.WW.Y.0003.120210T1800Z-120210T1200Z/ (P-VTEC 2)

*Explanation:* About eight hours later, the forecaster upgrades the rest of the Winter Storm Watch to a Winter Weather Advisory. The Winter Storm Warning (Segment 1) is continued. The Winter Weather Advisory (in Segments 2 and 3) is new, and uses the *NEW* action code in P-VTEC string 2. The reason for the two advisory segments is because of the different expected event beginning times - at 1200 UTC in the western portion (Segment 2) and at 1800 UTC in the central and eastern portions (Segment 3).

*Example - Upgrade Gale Warning to Storm Warning*

*Scenario: Upgrade a Gale Warning to a Storm Warning*
Issuing Office: WFO Caribou ME (KCAR)
Current time: 1241 UTC on March 21, 2012
Events (Product): Gale Warning and Storm Warning (MWW)
Product valid for: Northwestern North Atlantic Marine Zones 50 thru 52
Product expiration time: 2045 UTC on March 21, 2012
Event Tracking Numbers: 22th Gale Warning and 2nd Storm Warning of the year issued by KCAR
Expected (*or actual*) Event Beginning and Ending times of the
Gale Warning: *0600 UTC on March 20* and 1000 UTC on March 22, 2012 (*1241 UTC on March 21*)
Storm Warning: *1241 UTC on March 21* and 1000 UTC on March 22, 2012

ANZ050>052-212045- (UGC)

/O.UPG.KCAR.GL.W.0022.000000T0000Z-120322T1000Z/ (P-VTEC 1)

/O.NEW.KCAR.SR.W.0002.120321T1241Z-120322T1000Z/ (P-VTEC 2)

*Explanation:* The UPG VTEC action code is used when upgrading between Marine Warnings with discrete criteria. In this case, the existing Gale Warning (P-VTEC 1) is being upgraded to a new Storm Warning (P-VTEC 2) which has a higher wind speed threshold.

4.1.2 Downgrade.

A Downgrade from a Warning to a related Advisory or from a discrete Marine or Tropical Watch

or Warning to another Marine or Tropical Watch or Warning with lower wind speed criteria is handled using the CAN action code.

*Example - Downgrade from Warning to Advisory*

*Scenario: Downgrade a High Wind Warning to a Wind Advisory*
Issuing Office: WFO Grand Forks ND (KFGF)
Current time: 1658 UTC on May 6, 2011
Events (Product): High Wind Warning and Wind Advisory (NPW)
Product valid for: Minnesota Zones 2, 3, 22, 23, 27 thru 31, and 40; and North Dakota Zones 39 and 53
Product expiration time: 0200 UTC on May 7, 2011
Event Tracking Numbers: 1st High Wind Warning and 6th Wind Advisory of the year issued by KFGF
Expected (*or actual*) Event Beginning and Ending times of the
High Wind Warning: *1352 UTC* and 1800 UTC (*1658 UTC*) on May 6, 2011
Wind Advisory: *1658 UTC on May 6* and 0200 UTC on May 7, 2011

MNZ002-003-022-023-027>031-040-NDZ039-053-070200- (UGC)

/O.CAN.KFGF.HW.W.0001.000000T0000Z-110506T1800Z/ (P-VTEC 1)

/O.NEW.KFGF.WI.Y.0006.110506T1658Z-110507T0200Z/ (P-VTEC 2)

*Explanation:* Two P-VTEC strings are required to downgrade this High Wind Warning to a Wind Advisory. The first (*CAN*) P-VTEC string indicates the product that is being downgraded or cancelled (the Warning), and the second (*NEW*) string indicates the new product being issued (the Advisory). Since the Warning valid time had already begun when the action to downgrade it to an Advisory occurred, the beginning valid time of the Warning is coded as all zeros in the first P-VTEC string.

*Example - Downgrade from Hurricane Warning to Tropical Storm Warning*

*Scenario: Downgrade a Hurricane Warning to a Tropical Storm Warning*
Issuing Office: National Hurricane Center, Miami FL (KNHC)
Current time: 1307 UTC on August 22, 2011
Events (Product): Hurricane Warning and Tropical Storm Warning (TCV)
Product valid for: Puerto Rico Zones 1 thru 13
Product expiration time: 2100 UTC on August 22, 2011
Event Tracking Numbers: 9th Tropical System of the year for the Atlantic Basin
Expected (*or actual*) Event Beginning and Ending times of the Hurricane Warning originally issued:
*1500 UTC on August 21* and Until Further Notice
Tropical Storm Warning: 1300 UTC on August 22, 2011 and Until Further Notice

PRZ001-002-003-004-005-006-007-008-009-010-011-012-013-222100- (UGC)

/O.CAN.KNHC.HU.W.1009.000000T0000Z-000000T0000Z/ (P-VTEC 1)

/O.NEW.KNHC.TR.W.1009.110822T1300Z-000000T0000Z/ (P-VTEC 2)

*Explanation:* As Hurricane Irene (ETN *1009*- the 9th named tropical cyclone of the year in the Atlantic Basin in 2011) moves away from Puerto Rico the Hurricane Warning that was in effect is downgraded to a Tropical Storm Warning. This is done with the use of two P-VTEC strings. The first (*CAN*) P-VTEC string indicates the product that is being downgraded (the Hurricane Warning), and the second (*NEW*) string indicates the new product being issued (the Tropical Storm Warning). Since the Hurricane Warning valid time had already begun when the action to downgrade it occurred, the beginning valid time of

the first P-VTEC string is coded as all zeros in the first P-VTEC string. Likewise, since all Tropical Watches and Warnings from the NHC are open-ended, the event ending times of both P-VTEC strings are coded as all zeros.

### 4.1.3 Replace

Replacing one non-tropical event or non-discrete-criteria marine event with a related event of the same significance level is done with the CAN action code.

*Example - Replace Winter Storm Watch with Blizzard Watch*

*Scenario: Replace a Winter Storm Watch with a Blizzard Watch*
Issuing Office: WFO Pueblo CO (KPUB)
Current time: 1201 UTC on February 23, 2012
Events (Product): Winter Storm Watch and Blizzard Watch (WSW)
Product valid for: Colorado Zones 89, and 93 thru 99
Product expiration time: 1830 UTC on February 23, 2012
Event Tracking Numbers: 3rd Winter Storm Watch and 1st Blizzard Watch of the year issued by KPUB
Expected (*or actual*) Event Beginning and Ending times of the
Winter Storm Watch: 0700 UTC and 2300 UTC on February 24, 2012 (*1201 UTC on February 23*)
Blizzard Watch: 0700 UTC and 2300 UTC on February 24, 2012

```
COZ089-093>099-231830-                                  (UGC)
/O.CAN.KPUB.WS.A.0003.120224T0700Z-120224T2300Z/        (P-VTEC 1)
/O.NEW.KPUB.BZ.A.0001.120224T0700Z-120224T2300Z/        (P-VTEC 2)
```

*Explanation:* Two P-VTEC strings are required to replace the Winter Storm Watch with a Blizzard Watch. The first (*CAN*) P-VTEC string indicates the product that is being replaced (the Winter Storm Watch), and the second (*NEW*) string indicates the new product being issued (the Blizzard Watch). Both watch events were/are expected to begin over 18 hours in the future.

### 4.1.4 WFO Watch and Warning/Advisory in Different Product Classes.

Most Convective- and Flood-related Watch and Warning/Advisory VTEC events are contained in different product classes. For example, Severe Thunderstorm and Tornado Watches are issued as WOU products by the SPC and as WCN products by WFOs, while Severe Thunderstorm, Tornado, and Special Marine Warnings are issued by WFOs as SVR, TOR, and SMW products, respectively. See Section 7.2 for an example of a Tornado Watch and convective warning(s) and Section 8.3 for a Flash Flood Watch and Flood Warnings/Advisories.

## 4.2 Changes in Area and/or Time

### 4.2.1 Change in Area.

Changes in area are handled differently depending on whether the area is being added to the event or being removed. (See Section 4.2.3 below for Changes in Both Area and Time). If area is being added to an event, the EXA action code is used in the product segment containing

the added area. If area is being removed from an event, the CAN action code is used in the product segment with the removed area.

*Example - Adding area to an event*

**Product 1**

*Scenario: Freezing Fog Advisory is issued for several zones*
Issuing Office: WFO Springfield MO (KSGF)
Current time: 0710 UTC on December 14, 2011
Event (Product): Freezing Fog Advisory (NPW)
Product valid for: Kansas Zones 97 and 101; and Missouri Zones 70, 77, 79 thru 82, 88 thru 97, and 101 thru 105
Product expiration time: 1500 UTC on December 14, 2011
Event Tracking Number: 2nd Freezing Fog Advisory of the year issued by KSGF
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *0710 UTC* and 1500 UTC on December 14, 2011

KSZ097-101-MOZ070-077-079>082-088>097-101>105-141500- (UGC)

/O.NEW.KSGF.ZF.Y.0002.111214T0710Z-111214T1500Z/ (P-VTEC)

*Explanation:* WFO Springfield issues a Freezing Fog Advisory for several zones in Kansas and Missouri.

**Product 2**

*Scenario: Issue a follow-up Statement to add the rest of its forecast area to the Advisory*
Issuing Office: WFO Springfield MO (KSGF)
Current time: 0931 UTC on December 14, 2011
Event (Product): Freezing Fog Advisory (NPW)
Product valid for: Kansas Zones 73, 97, and 101; and Missouri Zones 55 thru 58, 66 thru 71, 77 thru 83, 88 thru 98, and 101 thru 106
Product expiration time: 1500 UTC on December 14, 2011
Event Tracking Number: 2nd Freezing Fog Advisory of the year issued by KSGF
Segment 1
Valid for: Kansas Zone 73; Missouri Zones 55 thru 58, 66 thru 69, 71, 78, 83, 98, and 106
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *0931 UTC* and 1500 UTC
on December 14, 2011
Segment 2
Valid for: Kansas Zones 97 and 101; and Missouri Zones 70, 77, 79 thru 82, 88 thru 97, and 101 thru
105
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *0710 UTC* and 1500 UTC
on December 14, 2011

(Segment 1 of 2 within NPW product - newly expanded area of advisory)

KSZ073-MOZ055>058-066>069-071-078-083-098-106-141500- (UGC)

/O.EXA.KSGF.ZF.Y.0002.000000T0000Z-111214T1500Z/ (P-VTEC)

(Segment 2 of 2 within NPW product - continued portion of advisory)

KSZ097-101-MOZ070-077-079>082-088>097-101>105-141500- (UGC)

/O.CON.KSGF.ZF.Y.0002.000000T0000Z-111214T1500Z/ (P-VTEC)

*Explanation:* A little over two hours after the initial Freezing Fog Advisory was issued, WFO Springfield issues another NPW product to add the rest of its Kansas and Missouri zones to the Advisory area. The new zones (in the first segment) are added using the EXA action code. Since the event had already begun (at the zones in the second segment), the event beginning time in both product segments is coded as zeros.

## *Example - Removing area from an event*

**Product 1**

*Scenario: Severe Thunderstorm Warning is issued for portions of two counties*
Issuing Office: WFO Chicago IL (KLOT)
Current time: 2250 UTC on May 16, 2011
Event (Product): Severe Thunderstorm Warning (SVR)
Product valid for: Illinois Counties 31 and 43
Product expiration time: 2345 UTC on May 16, 2011
Event Tracking Number: 30th Severe Thunderstorm Warning of the year issued by KLOT
Expected (*or actual*) Event Beginning and Ending times of the Warning: *2250 UTC* and 2345 UTC on May 16, 2011

ILC031-043-162345- (UGC)

/O.NEW.KLOT.SV.W.0030.110516T2250Z-110516T2345Z/ (P-VTEC)

*Explanation:* WFO Chicago issues a new Severe Thunderstorm Warning for portions of two counties in Illinois.

**Product 2**

*Scenario: Issue a follow-up Statement to remove one county from the Warning*
Issuing Office: WFO Chicago IL (KLOT)
Current time: 2322 UTC on May 16, 2011
Event (Product): Severe Thunderstorm Warning (SVS)
Product valid for: Illinois Counties 31 and 43
Product expiration time of the
- Cancelled segment: 2332 UTC on May 16, 2011
- Continued segment: 2345 UTC on May 16, 2011

Event Tracking Number: 30th Severe Thunderstorm Warning of the year issued by KLOT
Segment 1
- Valid for: Illinois County 43
- Expected (*or actual*) Event Beginning and Ending times of the Warning: *2250 UTC* and 2345 UTC (*2322 UTC*) on May 16, 2011

Segment 2
- Valid for: Illinois County 31
- Expected (*or actual*) Event Beginning and Ending times of the Warning: *2250 UTC* and 2345 UTC on May 16, 2011

(Segment 1 of 2 within SVS product - cancelled portion of warning)

ILC043-162332- (UGC)

/O.CAN.KLOT.SV.W.0030.000000T0000Z-110516T2345Z/ (P-VTEC)

(Segment 2 of 2 within SVS product - continued portion of warning)
ILC031-162345- (UGC)
/O.CON.KLOT.SV.W.0030.000000T0000Z-110516T2345Z/ (P-VTEC)

*Explanation:* About thirty minutes after the initial Severe Thunderstorm Warning was issued, WFO Chicago issues a follow-up SVS product. The first segment of the product removes County 43 from the warning (by use of the CAN action code), while the second segment continues the warning in County 31 until the event ending time of 2345 UTC. The expiration time of the first product segment is set 10 minutes in the future (2332 UTC) to allow dissemination of the cancellation via NOAA Weather Radio and other outlets.

### 4.2.2 Change in Time

The EXT action code is used for all changes in event timing for the pre-existing area of an event. That includes changes to either or both the event beginning and ending times. The only caveat is that the current event beginning or ending time of an event cannot be changed once it has been reached.

*Example - <u>Flash Flood Warning Event Ending Time changed</u>*

**Product 1**

*Scenario: Flash Flood Warning is issued*
Issuing Office: WFO Upton NY (KOKX)
Current time: 1755 UTC on March 8, 2012
Event (Product): Flash Flood Warning (FFW)
Immediate Cause: Excessive Rainfall
Product valid for: New Jersey County 31 and New York County 71
Product expiration time: 2000 UTC on March 8, 2012
Event Tracking Number: 3rd Flash Flood Warning of the year issued by KOKX
Expected Flood Severity: Unknown
Expected (*or actual*) Event Beginning, Crest and Ending times of the Warning: *1755 UTC on March 8, 2012*, crest time not included, and 2000 UTC on March 8, 2012

NJC031-NYC071-082000- (UGC)
/O.NEW.KOKX.FF.W.0003.120308T1755Z-120308T2000Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* WFO Upton issues a new Flash Flood Warning for portions of a county in New Jersey and an adjacent county in New York.

**Product 2**

*Scenario: Flash Flood Warning Event Ending Time is changed to six hours later*
Issuing Office: WFO Upton NY (KOKX)
Current time: 1955 UTC on March 8, 2012
Event (Product): Flash Flood Warning (FFW)

Immediate Cause: Excessive Rainfall
Product valid for: New Jersey County 31 and New York County 71
Product expiration time: 0200 UTC on March 9, 2012
Event Tracking Number: 3rd Flash Flood Warning of the year issued by KOKX
Expected Flood Severity: Unknown
Expected (*or actual*) Event Beginning, Crest and Ending times of the Warning: *1755 UTC on March 8, 2012*, crest time not included, and 0200 UTC on March 9, 2012

NJC031-NYC071-090200- (UGC)
/O.EXT.KOKX.FF.W.0003.000000T0000Z-120309T0200Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* Shortly before the original Flash Flood Warning was scheduled to expire, the forecaster decides to continue the warning for another six hours, until 0200 UTC, as the heavy rains continue to fall across the warning area. Flash Flood Warnings are the only short duration convective warning that can be extended in time via the EXT action code.

### 4.2.3 Changes in Both Area and Time.

When a new area is added to an existing event, and the event beginning and/or ending times for this new area are different than what had been in effect for any of the current area of the event, the EXB action code is used with the new area. When area is removed from an existing event, it is done using the CAN action code. Any change in event timing to the ongoing portion of an event (for addition of area) or to the continuing portion of an event (for removal of area) is done using the EXT action code.

*Example - <u>Addition and removal of area along with change in time of an event</u>*

**Product 1**

*Scenario: Flash Flood Watch issued for a portion of Puerto Rico and the U.S. Virgin Islands*
Issuing Office: WFO San Juan PR (TJSJ)
Current time: 0202 UTC on August 18, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Puerto Rico Zones 2 thru 4, 6, 7, 9, 11, and 13; and Virgin Island Zone 2
Product expiration time: 1415 UTC on August 18, 2011
Event Tracking Number: 4th Flash Flood Watch of the year issued by TJSJ
Expected Flood Severity: Unknown
Expected (*or actual*) Event Beginning, Crest and Ending times of the Statement: *0202 UTC on August 18, 2011*, unknown, and 2000 UTC on August 18, 2011

PRZ002>004-006-007-009-011-013-VIZ002-181415- (UGC)
/O.NEW.TJSJ.FF.A.0004.110818T0202Z-110818T2000Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* WFO San Juan issues a Flash Flood Watch for much of the Island of Puerto Rico and one of the Virgin Islands, as some of the outer rain bands from Hurricane Dean are expected to reach the area. The watch is in effect immediately upon issuance for the next 18 hours (until 2000 UTC).

**Product 2**

*Scenario: Flash Flood Watch extended in time*
Issuing Office: WFO San Juan PR (TJSJ)
Current time: 1413 UTC on August 18, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Puerto Rico Zones 2 thru 4, 6, 7, 9, 11, and 13; and Virgin Island Zone 2
Product expiration time: 0000 UTC on August 19, 2011
Event Tracking Number: 4th Flash Flood Watch of the year issued by TJSJ
Expected Flood Severity: Unknown
Expected (*or actual*) Event Beginning, Crest and Ending times of the Statement: *0202 UTC on August 18, 2011*, unknown, and 0000 UTC on August 19, 2011

PRZ002>004-006-007-009-011-013-VIZ002-190000- (UGC)

/O.EXT.TJSJ.FF.A.0004.000000T0000Z-110819T0000Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* Just before the original watch product was set to expire, the forecaster decides to extend the ending time of the entire watch an additional four hours, from 2000 UTC August 18 to 0000 UTC August 19. This is done using the EXT action code.

**Product 3**
*Scenario: Flash Flood Watch cancelled in one area, expanded into another area, and extended in time*
Issuing Office: WFO San Juan PR (TJSJ)
Current time: 2112 UTC on August 18, 2011
Event (Product): Flash Flood Watch (FFA)
Product valid for: Puerto Rico Zones 2 thru 4, 6, 7, 9, 10, 11, and 13; and Virgin Island Zone 2
Product expiration time of the
Cancelled segment: 2215 UTC on August 18, 2011
Other segments: 0600 UTC on August 19, 2011
Event Tracking Number: 4th Flash Flood Watch of the year issued by TJSJ
Segment 1
Valid for: Puerto Rico Zone 2
Expected (or actual) Event Beginning, Crest and Ending times of the Statement: *0202 UTC on August 18, 2011*, unknown, and 0000 UTC on August 19, 2011 (*2112 UTC on August 18*)
Segment 2
Valid for: Puerto Rico Zone 10
Expected (or actual) Event Beginning, Crest and Ending times of the Statement: *2112 UTC on August 18, 2011*, unknown, and 0600 UTC on August 19, 2011
Segment 3
Valid for: Puerto Rico Zones 3, 4, 6, 7, 9, 11, and 13; and Virgin Island Zone 2
Expected (or actual) Event Beginning, Crest and Ending times of the Statement: *0202 UTC on August 18, 2011*, unknown, and 0600 UTC on August 19, 2011

(Segment 1 of 3 within FFA product - cancelled area)

PRZ002-182215- (UGC)
/O.CAN.TJSJ.FF.A.0004.000000T0000Z-110819T0000Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

(Segment 2 of 3 within FFA product - new area being added to watch)
PRZ010-190600- (UGC)
/O.EXB.TJSJ.FF.A.0004.000000T0000Z-110819T0600Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

(Segment 3 of 3 within FFA product - continued portion of watch with new event ending time)
PRZ003-004-006-007-009-011-013-VIZ002-190600- (UGC)
/O.EXT.TJSJ.FF.A.0004.000000T0000Z-110819T0600Z/ (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* As the situation progresses, it becomes apparent that the watch area needs to be adjusted and its timing changed. A portion of northeastern Puerto Rico (Zone 2) is dropped from the watch (Segment 1) by means of the CAN action code. The remainder of the previous watch area (Segment 3) is continued, but the watch ending time is extended another six hours (from 0000 UTC to 0600 UTC on August 19). A portion of western Puerto Rico (Zone 10) is added to the watch area (Segment 2) by means of the EXB action code. EXB is used since the timing in the continuing area of the watch has changed from the previous product issuance.

## 5 Changes in H-VTEC Elements

Changes in the H-VTEC flood beginning and ending times will normally be reflected in changes to the P-VTEC event beginning and ending times, which are discussed in Section 4 above. Changes in the immediate cause and, when coded with non-default values, the site identifier and flood record status, can be handled in updated follow-up statements or corrections to the initial message. See also NWSI 10-922.

### 5.1 Changes in Flood Severity

According to NWSI 10-922, a follow-up to a Flood Warning which includes an increase in the Flood Severity category (from Minor to either Moderate or Major, or from Moderate to Major) will be issued in a Flood Warning (FLW) product. A decrease in the Flood Severity category (from Major to either Moderate or Minor, or from Moderate to Minor) can be issued in a Flood Statement (FLS) product, unless some other change requires issuance of an FLW.

*Example - Flood severity category increased*

**Product 1**

*Scenario: Flood Warning issued*
Issuing Office: WFO Quad Cities IA IL (KDVN)
Current time: 1535 UTC on January 28, 2012

Event (Product): Flood Warning for Forecast Point (FLW)
Immediate Cause: Ice Jam
Product valid for: Rock River at Moline IL (MLII2 - Illinois Counties 73 and 161)
Product expiration time: 0335 UTC on January 29, 2012
Event Tracking Number: 8th Flood Warning of the year for Forecast Points issued by KDVN
Expected Flood Severity: Minor
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1535 UTC* (*1424 UTC*) *on January 28*, 0600 UTC on February 2, 2012, and Until Further Notice

ILC073-161-290335- (UGC)

/O.NEW.KDVN.FL.W.0008.120128T1535Z-000000T0000Z/ (P-VTEC)

/MLII2.1.IJ.120128T1424Z.120202T0600Z.000000T0000Z.NO/ (H-VTEC)

*Explanation:* A new Point Flood Warning is issued for a gauge on the Rock River at Moline IL. The flooding, due to an ice jam along with rising river levels upstream, caused the gauge to reach flood stage about an hour before the warning was issued (at 1424 UTC). This time is reflected in the flood beginning time in the H-VTEC, while the event beginning time in the P-VTEC reflects the time that the warning was issued (the current time of 1535 UTC). The flooding is forecast to continue until further notice. The flood severity is expected to remain minor (*1* - in the H-VTEC).

**Product 2**

*Scenario: Flood Severity category raised*
Issuing Office: WFO Quad Cities IA IL (KDVN)
Current time: 0312 UTC on January 29, 2012
Event (Product): Flood Warning for Forecast Point (FLW)
Immediate Cause: Ice Jam
Product valid for: Rock River at Moline IL (MLII2 - Illinois Counties 73 and 161)
Product expiration time: 1511 UTC on January 29, 2012
Event Tracking Number: 8th Flood Warning of the year for Forecast Points issued by KDVN
Expected Flood Severity: Moderate
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1535 UTC* (*1424 UTC*) *on January 28*, 0000 UTC on February 2, 2012, and Until Further Notice

ILC073-161-291511- (UGC)

/O.CON.KDVN.FL.W.0008.000000T0000Z-000000T0000Z/ (P-VTEC)

/MLII2.2.IJ.120128T1424Z.120202T0000Z.000000T0000Z.NO/ (H-VTEC)

*Explanation:* Nearly 12 hours later, a follow-up product is issued. While this would normally be issued in a FLS (Flood Statement) product, the increase in the forecast flood severity from minor to moderate (*2* - in the H-VTEC) requires that the follow-up be issued in a Flood Warning (FLW) product.

## 6 Corrections.

The VTEC action codes used in corrections will vary depending on whether the correction is being made to any element of the UGC or VTEC strings, or to something else in the product (such as a misspelled word in the text).

### 6.1 Corrections to non-UGC or non-VTEC Elements.

Corrections not involving UGC or VTEC elements will use the VTEC action code COR.

*Example - Correction for typos in the text*

**Product 1**

*Scenario: Red Flag Warning in effect for several zones*
Issuing Office: WFO Melbourne FL (KMLB)
Current time: 0710 UTC on April 30, 2011
Event (Product): Red Flag [Fire Weather] Warning (RFW)
Product valid for: Florida Zones 41, 44 thru 46, 53, 58, and 144
Product expiration time: 2300 UTC on April 30, 2011
Event Tracking Number: 38th Red Flag Warning of the year issued by KMLB
Segment 1
Valid for: Florida Zone 58
Expected (*or actual*) Event Beginning and Ending times of the Warning: 1700 UTC and 2300 UTC on April 30, 2011
Segment 2
Valid for: Florida Zones 41, 44 thru 46, 53, and 144
Expected (*or actual*) Event Beginning and Ending times of the Warning: 1700 UTC and 2300 UTC on April 30, 2011

(Segment 1 of 2 within RFW product - expanded portion of warning)

FLZ058-302300- (UGC)

/O.EXA.KMLB.FW.W.0038.110430T1700Z-110430T2300Z/ (P-VTEC)

(Segment 2 of 2 within RFW product - original portion of warning)

FLZ041-044>046-053-144-302300- (UGC)

/O.CON.KMLB.FW.W.0038.110430T1700Z-110430T2300Z/ (P-VTEC)

*Explanation:* WFO Melbourne issues a follow-up Red Flag Warning product to add a zone (Florida 58) to the existing warning area.

**Product 2**

*Scenario: Red Flag Warning corrected for typographical errors*
Issuing Office: WFO Melbourne FL (KMLB)
Current time: 0807 UTC on April 30, 2011
Event (Product): Red Flag Warning (RFW)
Product valid for: Florida Zones 41, 44 thru 46, 53, 58, and 144
Product expiration time: 2300 UTC on April 30, 2011
Event Tracking Number: 38th Red Flag Warning of the year issued by KMLB
Segment 1
Valid for: Florida Zone 58
Expected (*or actual*) Event Beginning and Ending times of the Warning: 1700 UTC and 2300 UTC on April 30, 2011
Segment 2
Valid for: Florida Zones 41, 44 thru 46, 53, and 144
Expected (*or actual*) Event Beginning and Ending times of the Warning: 1700 UTC and 2300 UTC on April 30, 2011

(Segment 1 of 2 within RFW product - correction to expanded portion of warning)
FLZ058-302300- (UGC)
/O.COR.KMLB.FW.W.0038.110430T1700Z-110430T2300Z/ (P-VTEC)

(Segment 2 of 2 within RFW product - correction to original portion of warning)
FLZ041-044>046-053-144-302300- (UGC)
/O.COR.KMLB.FW.W.0038.110430T1700Z-110430T2300Z/ (P-VTEC)

*Explanation:* Shortly after issuing the previous product, WFO Melbourne discovered typographical errors in both product segments and issues a correction. Since the errors were not related to the UGC or VTEC, the corrected product segments both use the COR (correction) action code. None of the other VTEC elements are changed from the previous issuance.

## 6.2 Corrections to UGC or VTEC Elements.

The examples below show how corrections to either the UGC or VTEC elements will not use the VTEC action code COR. Instead, the appropriate VTEC action code will be used.

*Example - <u>Correction for error in event ending time</u>*

**Product 1**

*Scenario: High Wind Warning is Issued*
Issuing Office: WFO Sioux Falls SD (KFSD)
Current time: 1313 UTC on May 6, 2011
Event (Product): High Wind Warning (NPW)
Product valid for: Minnesota Zones 72, 80, 81, and 90
Product expiration time: 2115 UTC on May 6, 2011
Event Tracking Number: 3rd High Wind Warning of the year issued by KFSD
Expected (*or actual*) Event Beginning and Ending times of the Warning: *1313 UTC on May 6, 2011* and 1700 UTC on May 7, 2011

MNZ072-080-081-090-062115- (UGC)
/O.NEW.KFSD.HW.W.0003.110506T1313Z-110507T1700Z/ (P-VTEC)

*Explanation:* WFO Sioux Falls issues a new High Wind Warning for four Minnesota zones.

**Product 2**

*Scenario: Event Ending Time in High Wind Warning is Corrected*
Issuing Office: WFO Sioux Falls SD (KFSD)
Current time: 1327 UTC on May 6, 2011
Event (Product): High Wind Warning (NPW)
Product valid for: Minnesota Zones 72, 80, 81, and 90
Product expiration time: 1700 UTC on May 6, 2011
Event Tracking Number: 3rd High Wind Warning of the year issued by KFSD
Expected (*or actual*) Event Beginning and Ending times of the Warning: *1313 UTC* and 1700 UTC on May 6, 2011

MNZ072-080-081-090-061700- (UGC)

/O.EXT.KFSD.HW.W.0003.000000T0000Z-110506T1700Z/ (P-VTEC)

*Explanation:* Shortly after issuing the previous product, the forecaster realized that the event ending time of the warning was 24 hours too far into the future. The warning was intended to run until 1700 UTC on May 6, not 1700 UTC on May 7. A correction is sent. The product text, UGC product expiration time, and VTEC event ending time are all corrected. Since the error involves part of the P-VTEC string, the appropriate VTEC action code (*EXT*) is used in the corrected product. The event beginning time is zeroed out as the event began when the initial warning was issued.

## *Example - Correcting the county list in a Severe Thunderstorm Watch*

**Product 1**

*Scenario: Severe Thunderstorm Watch issued for several North Carolina counties*
Issuing Office: WFO Greenville-Spartanburg SC (KGSP)
Current time: 1538 UTC on April 17, 2011
Event (Product): Severe Thunderstorm Watch (WCN)
Product valid for: North Carolina Counties 3, 11, 23, 25, 27, 35, 45, 59, 71, 97, 109, 111, 115, 119, 121, 159, and 199
Product expiration time: 2100 UTC on April 17, 2011
Event Tracking Number: 196th convective watch of the year in the Contiguous U.S., this one for a Severe Thunderstorm Watch including part of the KGSP forecast area
Expected (*or actual*) Event Beginning and Ending times of the Watch: *1538 UTC* and 2100 UTC on April 17, 2011

NCC003-011-023-025-027-035-045-059-071-097-109-

111-115-119-121-159-199-172100- (UGC)

/O.NEW.KGSP.SV.A.0196.110417T1538Z-110417T2100Z/ (P-VTEC)

*Explanation:* The NWS Storm Prediction Center had just issued Severe Thunderstorm Watch 196 for portions of North Carolina, Tennessee and Virginia in a WOU product which is not shown here. This includes part of WFO Greenville-Spartanburg's county warning area. The WFO issues a WCN product which included its counties in the watch.

**Product 2**

*Scenario: Issue a follow-up WCN to remove two counties inadvertently included*
Issuing Office: WFO Greenville-Spartanburg SC (KGSP)
Current time: 1607 UTC on April 17, 2011
Event (Product): Severe Thunderstorm Watch (WCN)
Product valid for: North Carolina Counties 3, 11, 23, 25, 27, 35, 45, 59, 71, 97, 109, 111, 115, 119, 121, 159, and 199
Product expiration time of the
Cancelled segment: 1715 UTC on April 17, 2011
Continued segment: 2100 UTC on April 17, 2011

Event Tracking Number: 196th convective watch of the year in the Contiguous U.S., this one for a Severe Thunderstorm Watch including part of the KGSP forecast area
Segment 1
Valid for: North Carolina Counties 45 and 71
Expected (*or actual*) Event Beginning and Ending times of the Watch: *1538 UTC* and 2100 UTC (*1607 UTC*) on April 17, 2011
Segment 2
Valid for: North Carolina Counties 3, 11, 23, 25, 27, 35, 59, 97, 109, 111, 115, 119, 121, 159, and 199
Expected (*or actual*) Event Beginning and Ending times of the Watch: *1538 UTC* and 2100 UTC on April 17, 2011

(Segment 1 of 2 within WCN product - cancelled portion of watch)

```
NCC045-071-171715-                                          (UGC)
/O.CAN.KGSP.SV.A.0196.000000T0000Z-110417T2100Z/      (P-VTEC)
```

(Segment 2 of 2 within WCN product - continued portion of watch)

```
NCC003-011-023-025-027-035-059-097-109-111-115-
119-121-159-199-172100-                                     (UGC)
/O.CON.KGSP.SV.A.0196.000000T0000Z-110417T2100Z/      (P-VTEC)
```

*Explanation:* Shortly after issuing the initial WCN product, the forecaster realized that North Carolina Counties 45 and 71 were inadvertently included in the Severe Thunderstorm Watch. A correction is sent. For such errors, a segmented follow-up product is issued to cancel the watch in Counties 45 and 71 and continue it in the other counties.

## 7 National Center and Related WFO VTEC Products

While most VTEC products originate from WFOs, there are tropical and non-hydrologic convective VTEC products which originate from National Centers. Based on these National Center products, WFOs will issue follow-on VTEC products, some with the same ETNs as the National Center products.

### 7.1 Tropical

The NHC issues the national TCVs which cover tropical cyclone watches and warnings for the immediate coastal land zones in the Contiguous U.S., Puerto Rico and the U.S. Virgin Islands. The CPHC issues national TCV which covers tropical cyclone watches and warnings for all land zones in Hawaii. Tropical-related watches and warnings for adjacent marine zones and inland zones are the responsibility of the local WFOs, and are issued (along with the center-issued land zones) in Hurricane Local Watch/Warning Statement (TCV) for Atlantic basin and Honolulu WFOs or the Hurricane Local Statement (HLS) for Eastern and Western Pacific WFOs. See NWSI 10-601 and NWSI 10-1703 Sections 3.5 and 3.6 for more information. The example below shows a TCV issuance from the NHC, followed by a Hurricane Local Watch/Warning Statement (TCV) from WFO San Juan, Puerto Rico.

*Example - <u>Continued Tropical Storm Warning and New Hurricane Watch Issued by NHC and Subsequently Issued TCV from WFO San Juan, Puerto Rico</u>*

**Product 1**

*Scenario:*
Issuing Office: National Hurricane Center, Miami FL (KNHC)
Current time: 0907 UTC on August 21, 2011
Events (Product): Tropical Storm Warning and Hurricane Watch (TCV)
Product valid for: Puerto Rico Zones 01 thru 13 and U.S. Virgin Island Zones 01, 02
Product expiration time: 1500 UTC on August 21, 2011
Event Tracking Numbers: 9th Tropical System of the year for the Atlantic Basin (ETN 1009)

Segment 1
Valid for: Puerto Rico Zones 01 thru 13
Expected (*or actual*) Event Beginning and Ending times of the Tropical Storm Warning originally issued: *2300 UTC on August 20, 2011* and Until Further Notice
Hurricane Watch: 0900 UTC *on August 21, 2011* and Until Further Notice

Segment 2
Valid for: U.S. Virgin Island Zones 01, 02
Expected (*or actual*) Event Beginning and Ending times of the Tropical Storm Warning originally issued: *2300 UTC on August 20, 2011* and Until Further Notice

(Segment 1 of 2 within TCV product – continued Tropical Storm Warning, Hurricane Watch now in effect)

PRZ001-002-003-004-005-006-007-008-009-010-011-012-013-211500- (UGC)

/O.NEW.KNHC.HU.A.1009.110821T0900Z-000000T0000Z/ (P-VTEC 1)

/O.CON.KNHC.TR.W.1009.000000T0000Z-000000T0000Z/ (P-VTEC 2)

(Segment 2 of 2 within TCV product - continued Tropical Storm Warning)

VIZ001-002-211500- (UGC)

/O.CON.KNHC.TR.W.1009.000000T0000Z-000000T0000Z/ (P-VTEC 1)

*Explanation:* Tropical Storm Irene, the ninth tropical cyclone of the year in the Atlantic basin, is moving west through the Leeward Islands towards Puerto Rico. Tropical Storm Warning for Puerto Rico continues with a hurricane watch now in effect. Tropical Storm warning continues for the U.S. Virgin Islands. The TCV product originates from the NHC (using the office identifier KNHC) and uses the special National Center ETN for Tropical Cyclones (as discussed in Section 2.1.6.1.b of NWSI 10-1703) of *1009*, where *1* means the Atlantic Basin and *009* is for the ninth named Tropical Cyclone of the year in that basin. In addition, since all NHC Watches and Warnings are open-ended, the event ending times are coded as zeros.

**Product 2**

*Scenario: WFO San Juan, PR updates their Hurricane Local Watch/Warning Product*
Issuing Office: WFO San Juan PR (TJSJ)
Current time: 0954 UTC on August 21, 2011
Events (Product): Tropical Storm Warning, Hurricane Watch (TCV)
Product valid for: Puerto Rico Zones 1 thru 13; U.S Virgin Island ZonesProduct expiration time: 1000 UTC on August 22, 2011
Event Tracking Numbers: 9th named Tropical Cyclone of the year for the Atlantic Basin (ETN 1009)

Segment 1

Valid for: Puerto Rico Zones 1 thru 13
Expected (*or actual*) Event Beginning and Ending times of the Tropical Storm Warning originally issued: *2300 UTC on August 20, 2011* and Until Further Notice
Hurricane Watch: *0900 UTC on August 21, 2011* and Until Further Notice

Segment 2

Valid for: U.S. Virgin Island Zones 1 and 2
Expected (*or actual*) Event Beginning and Ending times of the Tropical Storm Warning originally issued: *2300 UTC on August 20, 2011* and Until Further Notice

(Segment 1 of 2 within TCV product – Tropical Storm Warning continues, Hurricane Watch now in effect)

PRZ001>013-221000- (UGC)

/O.NEW.TJSJ.HU.A.1009.110821T0900Z-000000T0000Z/ (P-VTEC 1)

/O.CON.TJSJ.TR.W.1009.000000T0000Z-000000T0000Z/ (P-VTEC 2)

(Segment 2 of 2 within TCV product – Tropical Storm Warning continues)

VIZ001-002-221000- (UGC)

/O.CON.TJSJ.TR.W.1009.000000T0000Z-000000T0000Z/ (P-VTEC 1)

*Explanation*: Using the information from the NHC TCV, WFO San Juan issues an updated local TCV. The first segment of the TCV product covers the areas in the new Hurricane Watch (*HU.A*) area as well as the continued Tropical Storm Warning (TR.W). The second segment covers the areas in the continued Tropical Storm Warning (*TR.W*). All zones use the same ETN (1009) as the TCV product from the NHC. All of the TR.W and HU.A events are in effect until further notice. The MWW issued by SJU would show marine zones with this same VTEC, as appropriate.

## 7.2 Non-Hydrologic Convective (Severe Thunderstorm and Tornado)

The SPC includes VTEC information for Severe Thunderstorm and Tornado Watches in their WOU products. See NWSI 10-512 and NWSI 10-1703 Section 3.3 for more information. WFOs impacted by these watches (which are pre-coordinated with the SPC) issue WCN products that cover their specific land (and marine zone, if applicable) county warning areas. See NWSI 10-511 and NWSI 10-1703 Section 3.3 for more information. The example below shows an initial WOU product issued by the SPC for a new Tornado Watch, and is followed by related convective watch and warning products issued by WFO Jacksonville, one of the WFOs impacted by this Tornado Watch.

*Example - Initial Tornado Watch issued by the SPC, and related products from a WFO*

**Product 1**

*Scenario: Initial Tornado Watch issuance by the SPC*
Issuing Office: Storm Prediction Center, Norman OK (KWNS)
Current time: 0548 UTC on February 4, 2012
Event (Product): Tornado Watch (WOU)
Product valid for: Florida Counties 9, 17, 35, 53, 69, 75, 83, 95, 101, 107, 117, 119, and 127; Western North Atlantic Marine Zones 454 and 550; and Gulf of Mexico Marine Zone 850
Product expiration time: 1100 UTC on February 4, 2012
Event Tracking Number: 15th Watch of the year issued by the SPC (this one for Tornado)
Expected Event Beginning and Ending times of the Watch: 0550 UTC and 1100 UTC on February 4, 2012

(Segment 1 of 2 within WOU product - Florida counties in watch)

```
FLC009-017-035-053-069-075-083-095-101-107-117-119-
127-041100-                                              (UGC)
/O.NEW.KWNS.TO.A.0015.120204T0550Z-120204T1100Z/      (P-VTEC)
```

(Segment 2 of 4 within WOU product - Marine zones in watch)

```
AMZ454-550-GMZ850-041100-                                (UGC)
/O.NEW.KWNS.TO.A.0015.120204T0550Z-120204T1100Z/      (P-VTEC)
```

*Explanation:* Each segment in this WOU product uses the same ETN (of *0015*), and each is coded as *NEW* (from the P-VTEC strings). Subsequent WCN products issued by any of the WFOs impacted by the watch (see NWSI 10-1703 Section 3.3.1) will use the same ETN (of *0015*), as well as the same phenomenon (*TO*) and significance level (*A*). The watch impacts WFOs Melbourne, Tampa Bay, and Jacksonville Florida.

**Product 2**

*Scenario: Initial WCN issuance from WFO Jacksonville, which replaces a previous watch in the WFO area*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0552 UTC on February 4, 2012
Event (Product): Tornado Watch (WCN)

Product valid for: Florida Counties 1, 3, 7, 19, 23, 31, 35, 41, 83, 107, 109, 121, and 125; Western North Atlantic Marine Zones 450, 452, and 454
Product expiration time for the
Expired segments: 0700 UTC on February 4, 2012
Upgraded segments: 1100 UTC on February 4, 2012
Event Tracking Number: 14th and 15th Watches of the year issued by the SPC (both for Tornado)

Segment 1
Valid for: Florida Counties 35, 83, 107
Expected (or actual) Event Beginning and Ending times of the
Tornado Watch 0014: *2120 UTC on February 3* and 0600 UTC (*0552 UTC*) on February 4, 2012
Tornado Watch 0015: *0552 UTC* and 1100 UTC on February 4, 2012

Segment 2
Valid for: Western North Atlantic Marine Zone 454
Expected (or actual) Event Beginning and Ending times of the
Tornado Watch 0014: *2120 UTC on February 3* and 0600 UTC (*0552 UTC*) on February 4, 2012
Tornado Watch 0015: *0552 UTC* and 1100 UTC on February 4, 2012
Segment 3
Valid for: Florida Counties 1, 3, 7, 19, 23, 31, 41, 109, 121, and 125
Expected (or actual) Event Beginning and Ending times of Watch 0014: *2120 UTC on February 3* and 0600 UTC on February 4, 2012

Segment 4
Valid for: Western North Atlantic Marine Zones 450 and 452
Expected (or actual) Event Beginning and Ending times of Watch 0014: *2120 UTC on February 3* and 0600 UTC on February 4, 2012

(Segment 1 of 4 within WCN product - replaced watch for land counties)

```
FLC035-083-107-041100-                                    (UGC)
/O.CAN.KJAX.TO.A.0014.000000T0000Z-120204T0600Z/      (P-VTEC 1)
/O.NEW.KJAX.TO.A.0015.120204T0552Z-120204T1100Z/      (P-VTEC 2)
```

(Segment 2 of 4 within WCN product - replaced watch for a marine zone)

```
AMZ454-041100-                                            (UGC)
/O.CAN.KJAX.TO.A.0014.000000T0000Z-120204T0600Z/      (P-VTEC 1)
/O.NEW.KJAX.TO.A.0015.120204T0552Z-120204T1100Z/      (P-VTEC 2)
```

(Segment 3 of 4 within WCN product - expired watch for land counties)

```
FLC001-003-007-019-023-031-041-109-121-125-040700-        (UGC)
/O.EXP.KJAX.TO.A.0014.000000T0000Z-120204T0600Z/      (P-VTEC)
```

(Segment 4 of 4 within WCN product - expired watch for marine zones)

```
AMZ450-452-040700-                                        (UGC)
/O.EXP.KJAX.TO.A.0014.000000T0000Z-120204T0600Z/      (P-VTEC)
```

*Explanation:* Part of the WFO Jacksonville county warning and forecast area had been covered by an earlier Tornado Watch (ETN *0014*) from the SPC which is scheduled to expire at 0600 UTC. The WFO has included part of that area in the new Tornado Watch (ETN *0015*). Based on the UGC rules listed in NWSI 10-1702, the land counties and marine zones are in separate product segments. The counties and zones which are included in the new watch (ETN *0015*) are in separate segments from those which were only in the expiring watch (ETN *0014*). Since the WCN is being issued within 10 minutes of the original watch event ending time, segments three and four are coded with the EXP (expiration) event code, while the first two segments with the watch replacement use CAN/NEW (see NWSI 10-1703 Sections 2.1.2 and 3.1). The watch ETN and event ending time remain the same as in the WOU product from the SPC. However, the new watch event beginning time in the WCN is a few minutes later than in the SPC WOU, as it took the WFO a few minutes to generate their WCN product.

**Product 3**

*Scenario: Tornado Warning issued for a portion of one county*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0618 UTC on February 4, 2012
Event (Product): Tornado Warning (TOR)
Product valid for: Florida County 35
Product expiration time: 0700 UTC on February 4, 2012
Event Tracking Number: 7th Tornado Warning of the year issued by KJAX
Expected (or actual) Event Beginning and Ending times of the Warning: *0618 UTC* and 0700 UTC on February 4, 2012

FLC035-040700- (UGC)

/O.NEW.KJAX.TO.W.0007.120204T0618Z-120204T0700Z/ (P-VTEC)

*Explanation*: WFO Jacksonville issues a Tornado Warning for a portion of a single county in Florida. The text of the warning mentions the ongoing Tornado Watch (ETN *0015*), but the ETN for the warning (*0007*) reflects the number of Tornado Warning (*TO.W*) events issued by the WFO so far that year. As with all convective and flood events, the UPG (upgrade) action code is not used when going from a watch to a warning, as convective and hydrologic watches typically cover large areas for several hours while convective and flood warnings typically cover a much smaller area (counties or portions of a county) for a much shorter time and do not replace the watch.

**Product 4**

*Scenario: Special Marine Warning issued for two marine zones*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0623 UTC on February 4, 2012
Event (Product): Special Marine Warning (SMW)
Product valid for: Western North Atlantic Marine Zones 454 and 474
Product expiration time: 0730 UTC on February 4, 2012
Event Tracking Number: 4th Special Marine Warning of the year issued by KJAX
Expected (or actual) Event Beginning and Ending times of the Warning: *0623 UTC* and 0730 UTC on February 4, 2012

AMZ454-474-040730- (UGC)

/O.NEW.KJAX.MA.W.0004.120204T0623Z-120204T0730Z/ (P-VTEC)

*Explanation*: WFO Jacksonville issues a Special Marine Warning for two marine zones off the east coast of Florida. The text of the warning mentions the ongoing Tornado Watch (ETN *0015*), but the ETN for the warning (*0004*) reflects the number of Special Marine Warning events issued by the WFO so far that year. Any follow-up statements (issued as MWS products) would maintain the same phenomenon code, significance level, ETN, and event ending time as this original warning.

**Product 5**

*Scenario: Follow-up statement issued for Tornado Warning*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0633 UTC on February 4, 2012
Event (Product): Tornado Warning (SVS)
Product valid for: Florida County 35
Product expiration time: 0700 UTC on February 4, 2012
Event Tracking Number: 7th Tornado Warning of the year issued by KJAX
Expected (or actual) Event Beginning and Ending times of the Warning: *0618 UTC* and 0700 UTC on February 4, 2012

FLC035-040700- (UGC)

/O.CON.KJAX.TO.W.0007.000000T0000Z-120204T0700Z/ (P-VTEC)

*Explanation*: At 0633 UTC, WFO Jacksonville issues a follow-up statement to their earlier Tornado Warning (Product 3, above) in a Severe Weather Statement product. The phenomenon code, significance level, ETN, and event ending time are the same as in the original warning. Since the warning began upon issuance at 0618 UTC, the event beginning time in this follow-up statement is coded as all zeros.

**Product 6**

*Scenario: Final follow-up statement issued for Tornado Warning*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0655 UTC on February 4, 2012
Event (Product): Tornado Warning (SVS)
Product valid for: Florida County 35
Product expiration time: 0700 UTC on February 4, 2012
Event Tracking Number: 7th Tornado Warning of the year issued by KJAX
Expected (or actual) Event Beginning and Ending times of the Warning: *0618 UTC* and 0700 UTC on February 4, 2012

FLC035-040700- (UGC)

/O.EXP.KJAX.TO.W.0007.000000T0000Z-120204T0700Z/ (P-VTEC)

*Explanation*: As the Tornado Warning event ending time of 0700 UTC approaches, WFO Jacksonville issues a final follow-up statement announcing that fact (using the EXP action code), along with contact information in case severe weather or damage was observed. As with the earlier SVS (Product 5), the phenomenon code, significance level, ETN, and event ending time are the same as in the original warning.

**Product 7**

*Scenario: Second Special Marine Warning issued for the same marine zones*
Issuing Office: WFO Jacksonville FL (KJAX)
Current time: 0734 UTC on February 4, 2012
Event (Product): Special Marine Warning (SMW)

Product valid for: Western North Atlantic Marine Zones 454 and 474
Product expiration time: 0830 UTC on February 4, 2012
Event Tracking Number: 5th Special Marine Warning of the year issued by KJAX
Expected (or actual) Event Beginning and Ending times of the Warning: *0734 UTC* and 0830 UTC on February 4, 2012

AMZ454-474-040830- (UGC)

/O.NEW.KJAX.MA.W.0005.120204T0734Z-120204T0830Z/ (P-VTEC)

*Explanation*: Shortly after the earlier Special Marine Warning (Product 4, above) expired (at 0730 UTC), WFO Jacksonville issues a second SMW for the same two marine zones off the east coast of Florida, although the actual warning area is slightly larger than the earlier warning. This NEW event has a different ETN (*0005*) than the previous SMW. Even if this warning had been issued before the previous SMW had expired, this would still be a NEW warning with an incremented ETN. The FFW is the only short duration warning that can use the EXT action code. See NWSI 10-1703 Section 2.1.2 (including Table 1) for more information.

## 8 Full Event Sequences.

These examples show full sequences of VTEC events for three different phenomena, from initial watch to warning and/or advisory, to eventual cancellation and/or expiration.

### 8.1 Wind

*Example - <u>High Wind Watch, High Wind Warning, and Wind Advisories for the Hawaiian Islands</u>*

**Product 1**

*Scenario: Initial Watch issuance*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 1330 UTC on December 18, 2011
Event (Product): High Wind Watch (NPW)
Product valid for: Hawaii Zone 28
Product expiration time: 0130 UTC on December 19, 2011
Event Tracking Number: 1st High Wind Watch of the year issued by PHFO
Expected Event Beginning and Ending times of the Watch: 0400 UTC on December 19 and 0300 UTC on December 20, 2011

HIZ028-190130- (UGC)

/O.NEW.PHFO.HW.A.0001.111219T0400Z-111220T0300Z/ (P-VTEC)

*Explanation:* A new High Wind Watch is issued for the Big Island summits (Hawaii Zone 28) by WFO Honolulu.

**Product 2**

*Scenario: Watch upgraded to Wind Advisory with additional area included*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 1707 UTC on December 18, 2011

Events (Product): High Wind Watch and Wind Advisory (NPW)
Product valid for: Hawaii Zones 22 and 28
Product expiration time: 0515 UTC on December 19, 2011
Event Tracking Numbers: 1st High Wind Watch and 4th Wind Advisory of the year issued by PHFO
Segment 1
Valid for: Hawaii Zone 28
Expected (*or actual*) Event Beginning and Ending times of the
High Wind Watch: 0400 UTC on December 19 and 0300 UTC on December 20, 2011 (*1707 UTC on December 18*)
Wind Advisory: *1707 UTC on December 18* and 2300 UTC on December 19, 2011
Segment 2
Valid for: Hawaii Zone 22
Expected (or actual) Event Beginning and Ending times of the Wind Advisory: *1707 UTC on December 18* and 2300 UTC on December 19, 2011

(Segment 1 of 2 within NPW product - upgrade watch to advisory)

```
HIZ028-190515-                                          (UGC)
/O.UPG.PHFO.HW.A.0001.111219T0400Z-111220T0300Z/        (P-VTEC 1)
/O.NEW.PHFO.WI.Y.0004.111218T1707Z-111219T2300Z/        (P-VTEC 2)
```

(Segment 2 of 2 within NPW product - new advisory)

```
HIZ022-190515-                                          (UGC)
/O.NEW.PHFO.WI.Y.0004.111218T1707Z-111219T2300Z/        (P-VTEC)
```

*Explanation*: A few hours later, long before the watch was to have taken effect, wind speeds increase to advisory criteria. The forecaster decides to replace the future watch with an immediate advisory. This is done by using an UPG/NEW pair of P-VTEC strings, since an Advisory is considered to be an upgrade of a related Watch. Alternatively, the High Wind Watch could have been continued with its previously scheduled event times, with the Wind Advisory issued to run from the current time (1704 UTC on the 18th) until the Watch event beginning time (0400 UTC on the 19th). A second segment is added for a new Wind Advisory for Haleakala Summit on Maui (Hawaii Zone 22). Since there was no existing watch for that zone, it appears as a separate product segment. Since the advisory is beginning in both segments with the product issuance, the *NEW* action code is used in both segments.

**Product 3**

*Scenario: Advisory extended to all Hawaii zones*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 2027 UTC on December 18, 2011
Event (Product): Wind Advisory (NPW)
Product valid for: Hawaii Zones 1 thru 28
Product expiration time: 0830 UTC on December 19, 2011
Event Tracking Number: 4th Wind Advisory of the year issued by PHFO
Segment 1
Valid for: Hawaii Zones 1 thru 21, and 23 thru 27
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *2027 UTC on December 18* and 2300 UTC on December 19, 2011
Segment 2
Valid for: Hawaii Zones 22 and 28
Expected (or actual) Event Beginning and Ending times of the Advisory: *1707 UTC on December 18* and 2300 UTC on December 19, 2011

(Segment 1 of 2 within NPW product - expanded advisory area)

HIZ001>021-023>027-190830- (UGC)

/O.EXA.PHFO.WI.Y.0004.000000T0000Z-111219T2300Z/ (P-VTEC)

(Segment 2 of 2 within NPW product - continued advisory)

HIZ022-028-190830- (UGC)

/O.CON.PHFO.WI.Y.0004.000000T0000Z-111219T2300Z/ (P-VTEC)

*Explanation:* A few hours after the Advisory was raised for the summits, it is expanded across the rest of the Hawaiian Islands. This required two product segments: the first for the area added to the advisory using the *EXA* action code; and the second for the area previously included in the advisory using the *CON* action code.

**Product 4**

*Scenario: Wind Advisory upgraded to High Wind Warning on the summits and continued elsewhere*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 2124 UTC on December 18, 2011
Events (Product): Wind Advisory and High Wind Warning (NPW)
Product valid for: Hawaii Zones 1 thru 28
Product expiration time: 0930 UTC on December 19, 2011
Event Tracking Numbers: 4th Wind Advisory and 1st High Wind Warning of the year issued by PHFO
Segment 1
Valid for: Hawaii Zones 22 and 28
Expected (or actual) Event Beginning and Ending times of the
High Wind Warning: *2124 UTC on December 18* and 1600 UTC on December 19, 2011
Wind Advisory: *1707 UTC on December 18* and 2300 UTC on December 19, 2011 (*2124 UTC on December 18*)
Segment 2
Valid for: Hawaii Zones 1 thru 21, and 23 thru 27
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *2027 UTC on December 18* and 2300 UTC on December 19, 2011

(Segment 1 of 2 within NPW product - upgrade advisory to warning)

HIZ022-028-190930- (UGC)

/O.CAN.PHFO.WI.Y.0004.000000T0000Z-111219T2300Z/ (P-VTEC 1)

/O.NEW.PHFO.HW.W.0001.111218T2124Z-111219T1600Z/ (P-VTEC 2)

(Segment 2 of 2 within NPW product - continued advisory)

HIZ001>021-023>027-190930- (UGC)

/O.CON.PHFO.WI.Y.0004.000000T0000Z-111219T2300Z/ (P-VTEC)

*Explanation:* The wind speeds at the summits (Zones 22 and 28) continued to increase, and an hour after the previous product was issued, the Wind Advisory there is upgraded to a High Wind Warning (Segment 1). Elsewhere, the advisory was continued (Segment 2).

**Product 5**

*Scenario: High Wind Warning continued on the summits; Advisory elsewhere cancelled*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 0556 UTC on December 19, 2011
Events (Product): Wind Advisory and High Wind Warning (NPW)
Product valid for: Hawaii Zones 1 thru 28
Event Tracking Numbers: 4th Wind Advisory and 1st High Wind Warning of the year issued by PHFO
Segment 1

Valid for: Hawaii Zones 1 thru 21, and 23 thru 27
Segment expiration time: 0700 UTC on December 19, 2011
Expected (*or actual*) Event Beginning and Ending times of the Advisory: *2027 UTC on December 18* and 2300 UTC (*0556 UTC*) on December 19, 2011

Segment 2

Valid for: Hawaii Zones 22 and 28
Segment expiration time: 1600 UTC on December 19, 2011
Expected (or actual) Event Beginning and Ending times of the Warning: *2124 UTC on December 18* and 1600 UTC on December 19, 2011

(Segment 1 of 2 within NPW product - cancelled advisory)

HIZ001>021-023>027-190700- (UGC)

/O.CAN.PHFO.WI.Y.0004.000000T0000Z-111219T2300Z/ (P-VTEC)

(Segment 2 of 2 within NPW product - continued warning)

HIZ022-028-191600- (UGC)

/O.CON.PHFO.HW.W.0001.000000T0000Z-111219T1600Z/ (P-VTEC)

*Explanation:* Eight hours after the previous product, wind speeds below the summits had diminished to less than advisory criteria, and the Wind Advisory is cancelled (Segment 1). The High Wind Warning remained in effect at the summits (Segment 2). The difference in segment expiration times (as coded in the UGC strings) reflect the difference between a cancellation and a continuation. Segment 1 (with the cancellation) expires in about an hour, which allows time for the message to be broadcast via NOAA Weather Radio and other outlets. Segment 2 (with the continuation) expires in several hours, which in this case is the same time the High Wind event is expected to end.

**Product 6**

*Scenario: High Wind Warning cancelled for Haleakala Summit; extended for the Big Island summits*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 1252 UTC on December 19, 2011
Event (Product): High Wind Warning (NPW)
Product valid for: Hawaii Zones 22 and 28
Event Tracking Number: 1st High Wind Warning of the year issued by PHFO
Segment 1

Valid for: Hawaii Zone 22
Segment expiration time: 1400 UTC on December 19, 2011
Expected (or actual) Event Beginning and Ending times of the Warning: *2124 UTC on December 18* and 1600 UTC (*1252 UTC*) on December 19, 2011

Segment 2

Valid for: Hawaii Zone 28
Segment expiration time: 2200 UTC on December 19, 2011

Expected (or actual) Event Beginning and Ending times of the Warning: *2124 UTC on December 18* and 2200 UTC on December 19, 2011

(Segment 1 of 2 within NPW product - cancelled warning)

HIZ022-191400- (UGC)

/O.CAN.PHFO.HW.W.0001.000000T0000Z-111219T1600Z/ (P-VTEC)

(Segment 2 of 2 within NPW product - extended warning)

HIZ028-192200- (UGC)

/O.EXT.PHFO.HW.W.0001.000000T0000Z-111219T2200Z/ (P-VTEC)

*Explanation:* Some time later, the winds on Haleakala Summit (Zone 22) had diminished, and the High Wind Warning there is cancelled (Segment 1). High winds continue on the Big Island summits (Zone 28) and are expected to continue longer than what had been forecast earlier, so the event ending time in Segment 2 is extended to 2200 UTC. As with Product 5, the segment containing the cancellation (Segment 1) expires in about an hour.

**Product 7**

*Scenario: Remaining High Wind Warning downgraded to Wind Advisory*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 1958 UTC on December 19, 2011
Events (Product): High Wind Warning, Wind Advisory (NPW)
Product valid for: Hawaii Zone 28
Product expiration time: 0100 UTC on December 20, 2011
Event Tracking Numbers: 1st High Wind Warning and 5th Wind Advisory of the year issued by PHFO
Expected (*or actual*) Event Beginning and Ending times of the
High Wind Warning: *2124 UTC on December 18* and 2200 UTC (*1958 UTC*) on December 19, 2011
Wind Advisory: *1958 UTC on December 19* and 0100 UTC on December 20, 2011

HIZ028-200100- (UGC)

/O.CAN.PHFO.HW.W.0001.000000T0000Z-111219T2200Z/ (P-VTEC 1)

/O.NEW.PHFO.WI.Y.0005.111219T1958Z-111220T0100Z/ (P-VTEC 2)

*Explanation:* A few hours before the High Wind Warning for the Big Island summits was set to end, observations showed that winds had diminished below Warning criteria, and the High Wind Warning is downgraded to a Wind Advisory. Since the earlier Wind Advisory (ETN *0004*) had been cancelled over 12 hours ago, this Wind Advisory uses the NEW action code with an incremented ETN (*0005*).

**Product 8**

*Scenario: Wind Advisory expires*
Issuing Office: WFO Honolulu HI (PHFO)
Current time: 0050 UTC on December 20, 2011
Event (Product): Wind Advisory (NPW)
Product valid for: Hawaii Zone 28
Product expiration time: 0200 UTC on December 20, 2011
Event Tracking Number: 5th Wind Advisory of the year issued by PHFO

Expected (*or actual*) Event Beginning and Ending times of the Advisory: *1958 UTC on December 19* and 0100 UTC on December 20, 2011

HIZ028-200200- (UGC)

/O.EXP.PHFO.WI.Y.0005.000000T0000Z-111220T0100Z/ (P-VTEC)

*Explanation:* Shortly before the Wind Advisory was set to end, the forecaster issues a final NPW for the event confirming that the advisory would be allowed to expire at its scheduled ending time of 0100 UTC. The EXP action code was used to show that. The product expires a bit later (0200 UTC - in the UGC string) to allow dissemination of the product via NOAA Weather Radio and other outlets.

## 8.2 Coastal Hazards.

### *Example - High Surf Advisories and Warnings and Coastal Flood Watch, Warning and Advisories for portions of the Washington and Oregon coasts*

**Product 1**

*Scenario: Initial High Surf Advisory and Coastal Flood Watch issuance*
Issuing Office: WFO Portland OR (KPQR)
Current time: 2208 UTC on December 1, 2011
Events (Product): High Surf Advisory and Coastal Flood Watch (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1215 UTC on December 2, 2011
Event Tracking Numbers: 11th High Surf Advisory and 1st Coastal Flood Watch of the year issued by KPQR
Segment 1
Valid for: Oregon Zone 2
Expected Event Beginning and Ending times of the
High Surf Advisory: 1400 UTC on December 2 and 0600 UTC on December 3, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011
Segment 2
Valid for: Oregon Zone 1 and Washington Zone 21
Expected Event Beginning and Ending times of the
High Surf Advisory: 2000 UTC on December 2 and 0600 UTC on December 3, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011

(Segment 1 of 2 within CFW product - for central Oregon coast)

ORZ002-021215- (UGC)

/O.NEW.KPQR.SU.Y.0011.111202T1400Z-111203T0600Z/ (P-VTEC 1)

/O.NEW.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/ (P-VTEC 2)

(Segment 2 of 2 within CFW product - for northern Oregon and southern Washington coasts)

ORZ001-WAZ021-021215- (UGC)

/O.NEW.KPQR.SU.Y.0011.111202T2000Z-111203T0600Z/ (P-VTEC 1)

/O.NEW.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/ (P-VTEC 2)

*Explanation:* An approaching strong Pacific storm prompts WFO Portland to issue a High Surf Advisory and Coastal Flood Watch for its coastal zones. Two segments are required because the High Surf timing is different for the different coastal areas. High Surf conditions are expected to begin affecting the central Oregon coast (Oregon Zone 2, in Segment 1) about 16 hours in the future and reach the northern Oregon and southern Washington coasts (Oregon Zone 1 and Washington Zone 21, in Segment 2) about six hours later, while Coastal Flood conditions are possible across the entire coastal area in about 32 hours.

**Product 2**

*Scenario: High Surf Advisory upgraded to Warning; Coastal Flood Watch continued*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1214 UTC on December 2, 2011
Events (Product): High Surf Advisory, High Surf Warning, and Coastal Flood Watch (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 2300 UTC on December 2, 2011
Event Tracking Numbers: 11th High Surf Advisory, 2nd High Surf Warning, and 1st Coastal Flood Watch of the year issued by KPQR
Segment 1
Valid for: Oregon Zone 1 and Washington Zone 21
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Advisory: 2000 UTC on December 2 and 0600 UTC on December 3, 2011
(*1214 UTC on December 2*)
High Surf Warning: 0600 UTC on December 3 and 0000 UTC on December 4, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011
Segment 2
Valid for: Oregon Zone 2
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Advisory: 1400 UTC on December 2 and 0600 UTC on December 3, 2011
(*1214 UTC on December 2*)
High Surf Warning: 0000 UTC on December 3 and 0000 UTC on December 4, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011

(Segment 1 of 2 within CFW product - for northern Oregon and southern Washington coasts)

| | |
|---|---|
| ORZ001-WAZ021-022300- | (UGC) |
| /O.UPG.KPQR.SU.Y.0011.111202T2000Z-111203T0600Z/ | (P-VTEC 1) |
| /O.NEW.KPQR.SU.W.0002.111203T0600Z-111204T0000Z/ | (P-VTEC 2) |
| /O.CON.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/ | (P-VTEC 3) |

(Segment 2 of 2 within CFW product - for central Oregon coast)

| | |
|---|---|
| ORZ002-022300- | (UGC) |
| /O.UPG.KPQR.SU.Y.0011.111202T1400Z-111203T0600Z/ | (P-VTEC 1) |
| /O.NEW.KPQR.SU.W.0002.111203T0000Z-111204T0000Z/ | (P-VTEC 2) |
| /O.CON.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/ | (P-VTEC 3) |

*Explanation:* With the second product issuance, about 14 hours after the initial CFW product, the forecaster decides to upgrade the High Surf Advisory to a High Surf Warning with a later event beginning time than the original advisory. This is accomplished by using UPG/NEW pairs in both product segments. The Coastal Flood Watch continues for the three zones with no change in timing.

**Product 3**

*Scenario: High Surf Warning event beginning time moved forward; Coastal Flood Watch continued*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1334 UTC on December 2, 2011
Events (Product): High Surf Warning and Coastal Flood Watch (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 2300 UTC on December 2, 2011
Event Tracking Numbers: 2nd High Surf Warning and 1st Coastal Flood Watch of the year issued by KPQR
Segment 1
Valid for: Oregon Zone 2
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Warning: *1334 UTC on December 3* and 0000 UTC on December 4, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011
Segment 2
Valid for: Oregon Zone 1 and Washington Zone 21
Expected Event Beginning and Ending times of the
High Surf Warning: 2000 UTC on December 2 and 0000 UTC on December 4, 2011
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011

(Segment 1 of 2 within CFW product - for central Oregon coast)

```
ORZ002-022300-                                          (UGC)
/O.EXT.KPQR.SU.W.0002.111202T1334Z-111204T0000Z/         (P-VTEC 1)
/O.CON.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/         (P-VTEC 2)
```

(Segment 2 of 2 within CFW product - for northern Oregon and southern Washington coasts)

```
ORZ001-WAZ021-022300-                                   (UGC)
/O.EXT.KPQR.SU.W.0002.111202T2000Z-111204T0000Z/         (P-VTEC 1)
/O.CON.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/         (P-VTEC 2)
```

*Explanation:* A little over an hour later, it becomes apparent that the high surf conditions had reached the central Oregon Coast, so the event beginning time of the High Surf Warning is moved ahead in both product segments - to begin immediately on the central Oregon coast (at 1334 UTC, in Segment 1) and in about six hours for the northern Oregon and southern Washington coasts (at 2000 UTC, in Segment 2). The High Surf Warning ending time and the Coastal Flood Watch begin and end times remain unchanged.

**Product 4**

*Scenario: Coastal Flood Watch upgraded to Warning; High Surf Warning event ending time changed*
Issuing Office: WFO Portland OR (KPQR)
Current time: 2148 UTC on December 2, 2011
Events (Product): Coastal Flood Watch, Coastal Flood Warning, and High Surf Warning (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1200 UTC on December 3, 2011
Event Tracking Numbers: 1st Coastal Flood Watch, 1st Coastal Flood Warning, and 2nd High Surf Warning of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
Coastal Flood Watch: 0600 UTC on December 3 and 0200 UTC on December 4, 2011 (*2148 UTC on December 2*)
Coastal Flood Warning: 1200 UTC and 2000 UTC on December 3, 2011
High Surf Warning: *1334 UTC/2000 UTC on December 3* and 1200 UTC on December 3, 2011

| | |
|---|---|
| ORZ001-002-WAZ021-031200- | (UGC) |
| /O.UPG.KPQR.CF.A.0001.111203T0600Z-111204T0200Z/ | (P-VTEC 1) |
| /O.NEW.KPQR.CF.W.0001.111203T1200Z-111203T2000Z/ | (P-VTEC 2) |
| /O.EXT.KPQR.SU.W.0002.000000T0000Z-111203T1200Z/ | (P-VTEC 3) |

*Explanation:* Eight hours later, the next CFW product upgrades the Coastal Flood Watch to a Coastal Flood Warning, which has a slightly different effective time than the Watch. Now that the High Surf Warning event beginning time has been reached in both segments with identical event ending times, and the Coastal Flood timing was identical in the two segments, the two segments can be combined into one. In addition, the event ending time of the High Surf Advisory is changed again - to coincide with the start of the Coastal Flood Warning. Although the Coastal Flood Watch and Warning events begin later than the already existing High Surf Advisory, the UPG/NEW has precedence over the EXT and appears first, as per Section 3.2 of NWSI 10-1703.

**Product 5**

*Scenario: High Surf Warning cancelled; Coastal Flood Warning event times changed*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1112 UTC on December 3, 2011
Events (Product): High Surf Warning and Coastal Flood Warning (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 2130 UTC on December 3, 2011
Event Tracking Numbers: 1st Coastal Flood Warning and 2nd High Surf Warning of the year issued by KPQR

Expected (*or actual*) Event Beginning and Ending times of the
High Surf Warning: *1334 UTC/2000 UTC on December 3* and 1200 UTC (*1112 UTC*) on December 3, 2011
Coastal Flood Warning: *1112 UTC on December 3* and 0000 UTC on December 4, 2011

| | |
|---|---|
| ORZ001-002-WAZ021-032130- | (UGC) |
| /O.CAN.KPQR.SU.W.0002.000000T0000Z-111203T1200Z/ | (P-VTEC 1) |
| /O.EXT.KPQR.CF.W.0001.111203T1112Z-111204T0000Z/ | (P-VTEC 2) |

*Explanation:* With the next product issuance, less than an hour before the Coastal Flood Warning was scheduled to begin (at 1200 UTC), the forecaster opts to end the High Surf Warning and start the Coastal Flood Warning immediately, by use of CAN action code in the first P-VTEC string and EXT action code in the second P-VTEC string. In addition, the event ending time of the Coastal Flood Warning is also changed, from 2000 UTC on the December 3 to 0000 UTC on December 4.

**Product 6**

*Scenario: Coastal Flood Warning ending time extended again*
Issuing Office: WFO Portland OR (KPQR)
Current time: 2115 UTC on December 3, 2011
Event (Product): Coastal Flood Warning (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 0800 UTC on December 4, 2011
Event Tracking Number: 1st Coastal Flood Warning of the year issued by KPQR

Expected (*or actual*) Event Beginning and Ending times of the
Coastal Flood Warning: *1112 UTC on December 3* and 0800 UTC on December 4, 2011

ORZ001-002-WAZ021-040800- (UGC)

/O.EXT.KPQR.CF.W.0001.000000T0000Z-111204T0800Z/ (P-VTEC)

*Explanation:* With the next product issuance, the forecaster decides to extend the event ending time of the Coastal Flood Warning from 0000 UTC to 0800 UTC on December 4, as the coastal flooding conditions are expected to last longer than earlier thought. This is the first instance in this event sequence where the product expiration time (in the UGC) matches the event ending time (in the P-VTEC), as the warning event is scheduled to end within 12 hours. Up to this point, the P-VTEC event ending time(s) along with many of the event beginning time(s) have all been long after the UGC product expiration time, which is common for long duration events.

**Product 7**

*Scenario: Coastal Flood Warning downgraded to Advisory, new High Surf Warning issued*
Issuing Office: WFO Portland OR (KPQR)
Current time: 0337 UTC on December 4, 2011
Events (Product): Coastal Flood Warning, Coastal Flood Advisory, and High Surf Warning (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1145 UTC on December 4, 2011
Event Tracking Numbers: 1st Coastal Flood Warning, 2nd Coastal Flood Advisory, and 3rd High Surf Warning of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
Coastal Flood Warning: *1112 UTC on December 3* and 0800 UTC (*0337 UTC*) on December 4, 2011
Coastal Flood Advisory: *0337 UTC* and 2000 UTC on December 4, 2011
High Surf Warning: *0337 UTC* on December 4 and 0600 UTC on December 5, 2011

ORZ001-002-WAZ021-041145- (UGC)

/O.CAN.KPQR.CF.W.0001.000000T0000Z-111204T0800Z/ (P-VTEC 1)

/O.NEW.KPQR.CF.Y.0002.111204T0337Z-111204T2000Z/ (P-VTEC 2)

/O.NEW.KPQR.SU.W.0003.111204T0337Z-111205T0600Z/ (P-VTEC 3)

*Explanation:* Six hours later, it now appears that the coastal flood threat has eased sufficiently for the Coastal Flood Warning to be cancelled. However, the presence of minor tidal overflow along the coast and persistent large swells prompts the forecaster to issue a new Coastal Flood Advisory (for the tidal overflow) and a new High Surf Warning (for the high surf produced by the large swells). The change from Coastal Flood Warning to Advisory can be considered a downgrade, by way of CAN/NEW. Note that the ETN for the High Surf Warning has incremented (*0002* to *0003*) from the last issuance in Product 2.

**Product 8**

*Scenario: High Surf Warning and Coastal Flood Advisory both continued*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1100 UTC on December 4, 20011
Events (Product): High Surf Warning and Coastal Flood Advisory (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21

Product expiration time: 2300 UTC on December 4, 2011
Event Tracking Numbers: 2nd Coastal Flood Advisory and 3rd High Surf Warning of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Warning: *0337 UTC* on December 4 and 0600 UTC on December 5, 2011
Coastal Flood Advisory: *0337 UTC* and 2000 UTC on December 4, 2011

| | |
|---|---|
| ORZ001-002-WAZ021-042300- | (UGC) |
| /O.CON.KPQR.SU.W.0003.000000T0000Z-111205T0600Z/ | (P-VTEC 1) |
| /O.CON.KPQR.CF.Y.0002.000000T0000Z-111204T2000Z/ | (P-VTEC 2) |

*Explanation:* No changes are made with the next product issuance some seven hours later.

**Product 9**

*Scenario: Coastal Flood Advisory extended; High Surf Warning continued*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1809 UTC on December 4, 2011
Events (Product): Coastal Flood Advisory and High Surf Warning (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 0600 UTC on December 5, 2011
Event Tracking Numbers: 3rd High Surf Warning and 2nd Coastal Flood Advisory of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
Coastal Flood Advisory: *0337 UTC on December 4* and 0000 UTC on December 6, 2011
High Surf Warning: *0337 UTC* on December 4 and 0600 UTC on December 5, 2011

| | |
|---|---|
| ORZ001-002-WAZ021-050600- | (UGC) |
| /O.EXT.KPQR.CF.Y.0002.000000T0000Z-111206T0000Z/ | (P-VTEC 1) |
| /O.CON.KPQR.SU.W.0003.000000T0000Z-111205T0600Z/ | (P-VTEC 2) |

*Explanation:* About two hours before the Coastal Flood Advisory was set to expire (at 2000 UTC on December 4), the forecaster decides to extend the advisory for an additional 28 hours because of the persistent high seas and very high river levels due to precipitation from the same storm. This is done using the EXT action code.

**Product 10**
*Scenario: High Surf Warning downgraded to Advisory; Coastal Flood Advisory cancelled*
Issuing Office: WFO Portland OR (KPQR)
Current time: 0345 UTC on December 5, 2011
Events (Product): High Surf Warning, High Surf Advisory, and Coastal Flood Advisory (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1145 UTC on December 5, 2011
Event Tracking Numbers: 3rd High Surf Warning, 12th High Surf Advisory, and 2nd Coastal Flood Advisory of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Warning: *0337 UTC on December 4* and 0600 UTC (*0345 UTC*) on December 5, 2011
High Surf Advisory: *0345 UTC* and 1200 UTC on December 5, 2011
Coastal Flood Advisory: *0337 UTC on December 4* and 0000 UTC on December 6, 2011 (*0345 UTC on December 5*)

ORZ001-002-WAZ021-051145- (UGC)

/O.CAN.KPQR.SU.W.0003.000000T0000Z-111205T0600Z/ (P-VTEC 1)

/O.NEW.KPQR.SU.Y.0012.111205T0345Z-111205T1200Z/ (P-VTEC 2)

/O.CAN.KPQR.CF.Y.0002.000000T0000Z-111206T0000Z/ (P-VTEC 3)

*Explanation:* Despite the earlier extension of the Coastal Flood Advisory, it later becomes apparent that this coastal event is winding down. About nine hours after the previous CFW issuance, the High Surf Warning is downgraded to a Surf Advisory, and the Coastal Flood Advisory is cancelled. Note that the event ending time of the new Surf Advisory is about six hours later than the event ending time of the cancelled High Surf Warning. Note also that the Surf Advisory ETN has incremented (*0011* to *0012*) since the last time it was issued in Product 1.

**Product 11a**

*Scenario: High Surf Advisory cancelled*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1114 UTC on December 5, 2011
Event (Product): High Surf Advisory (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1215 UTC on December 5, 2011
Event Tracking Numbers: 12th High Surf Advisory of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Advisory: *0345 UTC* and 1200 UTC (*1115 UTC*) on December 5, 2011

ORZ001-002-WAZ021-051215- (UGC)

/O.CAN.KPQR.SU.Y.0012.000000T0000Z-111205T1200Z/ (P-VTEC)

*Explanation:* Less than an hour before the Surf Advisory event is scheduled to end (1200 UTC), the forecaster opts to cancel it.

**Product 11b**

*Scenario: High Surf Advisory allowed to expire*
Issuing Office: WFO Portland OR (KPQR)
Current time: 1144 UTC on December 5, 2011
Event (Product): High Surf Advisory (CFW)
Product valid for: Oregon Zones 1 and 2; Washington Zone 21
Product expiration time: 1215 UTC on December 5, 2011
Event Tracking Numbers: 12th High Surf Advisory of the year issued by KPQR
Expected (*or actual*) Event Beginning and Ending times of the
High Surf Advisory: *0345 UTC* and 1200 UTC on December 5, 2011

ORZ001-002-WAZ021-051215- (UGC)

/O.EXP.KPQR.SU.Y.0012.000000T0000Z-111205T1200Z/ (P-VTEC)

*Explanation:* Alternatively, the forecaster could have waited until the advisory was closer to ending (within 30 minutes for long duration events) and issued a final CFW product announcing the advisory's expiration, using the EXP action code.

## 8.2 Areal/ Small Stream Flooding

*Example - Flash Flood Watches and Warnings and Flood Advisories in Utah*

**Product 1**

*Scenario: New Flash Flood Watch issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0605 UTC on September 22, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Zones 15, 16, 19 thru 21, 517, and 518
Product expiration time: 1200 UTC on September 22, 2011
Event Tracking Number: 7th Flash Flood Watch of the year issued by KSLC
Expected Flood Severity: None coded
Expected Event Beginning, Crest, and Ending times of the Watch: 1200 UTC on September 22, 2011, crest time not included, 0000 UTC on September 23, 2011

UTZ015-016-019>021-517-518-221200- (UGC)

/O.NEW.KSLC.FF.A.0007.110922T1200Z-110923T0000Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* This new Flash Flood Watch (*FF.A* - in the P-VTEC) is issued by WFO Salt Lake City for the daytime period (1200 UTC to 0000 UTC) for several zones in the southwestern half of Utah. Because this is an areal Flood Watch, the only H-VTEC element not coded with default values (either letter Os or zeros) is the immediate cause, which is *ER* for Excessive Rainfall.

**Product 2**

*Scenario: Flash Flood Watch continued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 1150 UTC on September 22, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Zones 15, 16, 19 thru 21, 517, and 518
Product expiration time: 2000 UTC on September 22, 2011
Event Tracking Number: 7th Flash Flood Watch of the year issued by KSLC
Expected Flood Severity: None coded
Expected Event Beginning, Crest, and Ending times of the Watch: 1200 UTC on September 22, 2011, crest time not included, 0000 UTC on September 23, 2011

UTZ015-016-019>021-517-518-222000- (UGC)

/O.CON.KSLC.FF.A.0007.110922T1200Z-110923T0000Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* About six hours later, just before the original FFA product expires, a follow-up FFA product is issued continuing the Flash Flood Watch. No changes are made to the watch area or timing. Since the event beginning time (1200 UTC) has not yet been reached, it is still coded in the P-VTEC string.

**Product 3**

*Scenario: New Flash Flood Warning issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 1651 UTC on September 22, 2011
Event (Product): Flash Flood Warning (FFW)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Counties 21 and 53
Product expiration time: 2300 UTC on September 22, 2011
Event Tracking Number: 70th Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1651 UTC on September 22, 2011*, crest time not included, and 2300 UTC on September 22, 2011

UTC021-053-222300- (UGC)

/O.NEW.KSLC.FF.W.0070.110922T1651Z-110922T2300Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* A new areal Flash Flood Warning is issued for portions of two southwestern Utah counties which are included in the zone-based Flash Flood Watch. The ETN for this warning is independent of the one used for the watch, which remains in effect. The beginning and ending event times in the P-VTEC string correspond to when the flooding is expected to begin (current time) and end. Because this is an areal warning, the actual flood beginning, crest, and ending times are not coded in the H-VTEC string.

**Product 4**

*Scenario: Second Flash Flood Warning issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 1828 UTC on September 22, 2011
Event (Product): Flash Flood Warning (FFW)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 25
Product expiration time: 0030 UTC on September 23, 2011
Event Tracking Number: 71st Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1828 UTC on September 22, 2011*, crest time not included, and 0030 UTC on September 23, 2011

UTC025-230030- (UGC)

/O.NEW.KSLC.FF.W.0071.110922T1828Z-110923T0030Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* About an hour and a half later, at 1828 UTC, a second new Flash Flood Warning is issued for portions of another Utah county which is included in the zone-based Flash Flood Watch.

**Product 5**

*Scenario: Flash Flood Watch extended*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 1947 UTC on September 22, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall

Product valid for: Utah Zones 15, 16, 19 thru 21, 517, and 518
Product expiration time: 0300 UTC on September 23, 2011
Event Tracking Number: 7th Flash Flood Watch of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Watch: *1200 UTC on September 22, 2011*, crest time not included, 0300 UTC on September 23, 2011

| | |
|---|---|
| UTZ015-016-019>021-517-518-230300- | (UGC) |
| /O.EXT.KSLC.FF.A.0007.000000T0000Z-110923T0300Z/ | (P-VTEC) |
| /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ | (H-VTEC) |

*Explanation:* With the next FFA issuance, about eight hours after the previous one (Product 2), the ending time of the Flash Flood Watch is extended three hours, from 0000 UTC to 0300 UTC on September 23. This is done (via the *EXT* action code) because the showers and thunderstorms producing the heavy rain are expected to last into the evening.

**Product 6**

*Scenario: Follow-up statement to first Flash Flood Warning*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 2040 UTC on September 22, 2011
Event (Product): Flash Flood Warning (FFS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Counties 21 and 53
Product expiration time: 2300 UTC on September 22, 2011
Event Tracking Number: 70th Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1651 UTC on September 22, 2011*, crest time not included, and 2300 UTC on September 22, 2011

| | |
|---|---|
| UTC021-053-222300- | (UGC) |
| /O.CON.KSLC.FF.W.0070.000000T0000Z-110922T2300Z/ | (P-VTEC) |
| /00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ | (H-VTEC) |

*Explanation:* At 2040 UTC, an FFS product is issued to continue the first Flash Flood Warning (ETN *0070*, Product 3, above). The only VTEC elements to change from the initial warning are the P-VTEC action code (from *NEW* to *CON*) and event beginning time (which is zeroed out since the warning was valid upon issuance).

**Product 7**

*Scenario: Follow-up statement to second Flash Flood Warning*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 2212 UTC on September 22, 2011
Event (Product): Flash Flood Warning (FFS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 25
Product expiration time: 0030 UTC on September 23, 2011
Event Tracking Number: 71st Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded

Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1828 UTC on September 22, 2011*, crest time not included, and 0030 UTC on September 23, 2011

```
UTC025-230030-                                                    (UGC)
/O.CON.KSLC.FF.W.0071.000000T0000Z-110923T0030Z/                  (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/            (H-VTEC)
```

*Explanation:* At 2212 UTC, a follow-up FFS product is issued continuing the second Flash Flood Warning (ETN *0071*, Product 4, above). Like the earlier FFS product issued for the other warning, this warning is being continued with no change in its ending time.

**Product 8**

*Scenario: First Flash Flood Warning allowed to expire*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 2253 UTC on September 22, 2011
Event (Product): Flash Flood Warning (FFS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Counties 21 and 53
Product expiration time: 2303 UTC on September 22, 2011
Event Tracking Number: 70th Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1651 UTC on September 22, 2011*, crest time not included, and 2300 UTC on September 22, 2011

```
UTC021-053-222303-                                                (UGC)
/O.EXP.KSLC.FF.W.0070.000000T0000Z-110922T2300Z/                  (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/            (H-VTEC)
```

*Explanation:* Shortly before the first Flash Flood Warning (ETN *0070*) was scheduled to end (at 2300 UTC) a follow-up FFS product is issued to say it will be allowed to expire. The only change from the previous follow-up (Product 6) is the use of the *EXP* action code in the P-VTEC string. The product expiration time (in the UGC) goes beyond the P-VTEC event ending time to allow dissemination of the message via NOAA Weather Radio and other outlets.

**Product 9**

*Scenario: New areal Flood Advisory issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 2305 UTC on September 22, 2011
Event (Product): Areal Flood Advisory (FLS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 53
Product expiration time: 0200 UTC on September 23, 2011
Event Tracking Number: 30th areal Flood Advisory of the year issued by KSLC, this one a Small Stream Flood Advisory
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *2305 UTC on September 22, 2011*, crest time not included, and 0200 UTC on September 23, 2011

UTC053-230200- (UGC)

/O.NEW.KSLC.FA.Y.0030.110922T2305Z-110923T0200Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* At 2305 UTC, shortly after the first Flash Flood Warning (ETN 0070) had ended, the forecaster decides to issue a new Flood Advisory for a portion of the expired warning area, as runoff from the earlier heavy rains was still making its way through many of the canyons, dry washes, and small streams in the area. Although there are several different flavors of areal Flood Advisories (as defined in NWSI 10-922, Section 11), they all use the same phenomenon (*FA*) and significance level (*Y*) in an FLS product. The text of the product tells more about the event, including the type of areal advisory being issued. Being an areal product, the only H-VTEC element coded with an actual value is the immediate cause. As with all of the other products issued during this event by WFO Salt Lake City, the cause is excessive rainfall (*ER*).

**Product 10**

*Scenario: Second Flash Flood Warning allowed to expire*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0028 UTC on September 23, 2011
Event (Product): Flash Flood Warning (FFS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 25
Product expiration time: 0038 UTC on September 23, 2011
Event Tracking Number: 71st Flash Flood Warning of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *1828 UTC on September 22, 2011*, crest time not included, and 0030 UTC on September 23, 2011

UTC025-230038- (UGC)

/O.EXP.KSLC.FF.W.0071.000000T0000Z-110923T0030Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* At 0028 UTC, just before the second Flash Flood Warning (ETN *0071*) was scheduled to end (at 0030 UTC), a follow-up FFS product is issued to say it will be allowed to expire. The contents are similar to the earlier expiration FFS (Product 8) issued for the other warning.

**Product 11**

*Scenario: Second areal Flood Advisory issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0043 UTC on September 23, 2011
Event (Product): Areal Flood Advisory (FLS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 25
Product expiration time: 0345 UTC on September 23, 2011
Event Tracking Number: 31st areal Flood Advisory of the year issued by KSLC, this one a Small Stream Flood Advisory
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *0043 UTC on September 23, 2011*, crest time not included, and 0345 UTC on September 23, 2011

UTC025-230345- (UGC)

/O.NEW.KSLC.FA.Y.0031.110923T0043Z-110923T0345Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* At 0043 UTC, shortly after the second Flash Flood Warning (ETN 0071) had ended, the forecaster decides to issue a second new Flood Advisory covering the expired warning area and additional parts of the county, as runoff from the earlier heavy rains was still making its way through many of the canyons, dry washes, and small streams in the area.

**Product 12**

*Scenario: First Flood Advisory allowed to expire*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0207 UTC on September 23, 2011
Event (Product): Areal Flood Advisory (FLS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 53
Product expiration time: 0217 UTC on September 23, 2011
Event Tracking Number: 30th areal Flood Advisory of the year issued by KSLC, this one a Small Stream Flood Advisory
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *2305 UTC on September 22, 2011*, crest time not included, and *0200 UTC on September 23, 2011*

UTC053-230217- (UGC)

/O.EXP.KSLC.FA.Y.0030.000000T0000Z-110923T0200Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* At 0207 UTC, shortly after the first Flood Advisory (ETN *0030*, Product 9) reached its event ending time (0200 UTC), a final expiration statement is issued. The heavy rains in the area had ended and the threat of flooding along small streams had decreased.

**Product 13**

*Scenario: New Flash Flood Watch issued for some areas, expired in others*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0313 UTC on September 23, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Zones 15, 16, 19 thru 21, 517, and 518
Event Tracking Number: 7th and 8th Flash Flood Watches of the year issued by KSLC
Expected Flood Severity: None coded
Segment 1
Valid for: Utah Zones 20, 21, 517, and 518
Segment expiration time: 0600 UTC on September 23, 2011
Expected (*or actual*) Event Beginning, Crest, and Ending times of the
ETN 0007 Watch: *1200 UTC on September 22, 2011*, crest time not included, *0300 UTC on September 23, 2011*
ETN 0008 Watch: *0313 UTC on September 23, 2011*, crest time not included, 0600 UTC on September 23, 2011
Segment 2

Valid for: Utah Zones 15, 16, and 19
Segment expiration time: 0415 UTC on September 23, 2011
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Watch: *1200 UTC on September 22, 2011*, crest time not included, *0300 UTC on September 23, 2011*

(Segment 1 of 2 within FFA product - extended portion of watch)

```
UTZ020-021-517-518-230600-                                  (UGC)
/O.EXP.KSLC.FF.A.0007.000000T0000Z-110923T0300Z/            (P-VTEC 1)
/O.NEW.KSLC.FF.A.0008.110923T0313Z-110923T0600Z/            (P-VTEC 2)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/      (H-VTEC)
```

(Segment 2 of 2 within FFA product - expired portion of watch)

```
UTZ015-016-019-230415-                                      (UGC)
/O.EXP.KSLC.FF.A.0007.000000T0000Z-110923T0300Z/            (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/      (H-VTEC)
```

*Explanation:* Shortly after 0300 UTC, the forecaster decided that the Flash Flood Watch was needed for a few more hours in four of the zones. But since the original watch (ETN *0007*) had expired at 0300 UTC, it could not be extended. A new watch (ETN *0008*) had to be issued. Since the FFA product was issued within 30 minutes of the original watch's expiration, the original watch is included in the FFA product with the *EXP* action code.

**Product 14**

*Scenario: Third areal Flood Advisory issued*
Issuing Office: WFO Salt Lake City UT (KSLC)
Current time: 0333 UTC on September 23, 2011
Event (Product): Areal Flood Advisory (FLS)
Immediate Cause: Excessive Rainfall
Product valid for: Utah County 25
Product expiration time: 0530 UTC on September 23, 2011
Event Tracking Number: 32nd areal Flood Advisory of the year issued by KSLC, this one a Small Stream Flood Advisory
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Warning: *0333 UTC on September 23, 2011*, crest time not included, and 0530 UTC on September 23, 2011

```
UTC025-230530-                                              (UGC)
/O.NEW.KSLC.FA.Y.0032.110923T0333Z-110923T0530Z/            (P-VTEC)
/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/      (H-VTEC)
```

*Explanation:* At 0333 UTC, a third new areal Flood Advisory is issued as additional showers and thunderstorms had developed in a section of Utah County 25 which was not included in the earlier Flood Advisory (Product 11). Since area cannot be added to existing Flood Advisories (i.e., the EXA action code cannot be used), a new Advisory must be issued.

**Product 15**

*Scenario: Extended Flash Flood Watch allowed to expire*
Issuing Office: WFO Salt Lake City UT (KSLC)

Current time: 0557 UTC on September 23, 2011
Event (Product): Flash Flood Watch (FFA)
Immediate Cause: Excessive Rainfall
Product valid for: Utah Zones 20, 21, 517, and 518
Product expiration time: 0700 UTC on September 22, 2011
Event Tracking Number: 8th Flash Flood Watch of the year issued by KSLC
Expected Flood Severity: None coded
Expected (*or actual*) Event Beginning, Crest, and Ending times of the Watch: *0313 UTC on September 23, 2011*, crest time not included, 0600 UTC on September 23, 2011

UTZ020-021-517-518-230700- (UGC)

/O.EXP.KSLC.FF.A.0008.000000T0000Z-110923T0600Z/ (P-VTEC)

/00000.0.ER.000000T0000Z.000000T0000Z.000000T0000Z.OO/ (H-VTEC)

*Explanation:* As the ending time of the extended watch approaches, it is apparent that the threat of additional heavy rain has ended, and the watch is allowed to expire at 0600 UTC. The FFA product expiration time of 0700 UTC (in the UGC) allows for dissemination of the expiration message via NOAA Weather Radio and other outlets.