



Date-Time Groups

The implementation of the METAR Meteorological Code in the early 1990s was a significant change from the old North American Aviation Meteorological Code for the general aviation community in the United States. The use of “units” or “labels” appended to the observed parameters within the aviation weather report for some time groups (Z for ‘Universal Coordinated Time’), wind speed (KT for ‘knots’), visibility (SM for ‘statute miles’), and altimeter setting (A followed by the value expressed in ‘inches of mercury’) assists a pilot greatly in deciphering the METAR weather codes. I have always advocated that pilots accept and read text weather reports in an encoded form as a means of maintaining accuracy (automatic decoding of products has been known to display erroneous information), peruse larger amounts of weather information more efficiently displayed on electronic screens of varying sizes, and save dissemination circuit bandwidth with smaller file sizes in a downloaded data stream.

As students gather and then assess weather information for safety-of-flight and for soaring assessments, errors in comprehending the issuance time and valid times of forecast weather products

can immediately cause confusion. The key to easily and successfully decoding text weather data, especially concerning Meteorological Aviation Weather Reports (METAR) and Terminal Aerodrome Forecasts (TAF), lies within understanding the issuance time of any weather observation product(s) and the valid time of a forecast weather product(s). Subsequently, the complexity of a weather product will significantly be reduced.

Generally, Date-Time Groups are composed of six digits following the identification and type of a weather product [See *Display #1: KSNS METARs and TAF*]. Note the header information for the first Salinas, California (KSNS) Aviation Weather Report: **KSNS 191653Z**. The suffix ‘Z’ clues us that this is a time group of some sort. The first two digits, ‘19,’ denotes the issuance time during the 19th day of the month. The last four digits are the issuance time to the nearest minute relative to Universal Coordinated Time (UTC, and historically referenced in aviation circles previously as Greenwich Mean Time). The METAR is the weather observation at KSNS at 1653Z, or 0953 Pacific Daylight Time (based on a 24-Hr/Day clock). This 6-Digit Grouping, with or

without the “Z” suffix depending on the product, is common among a number of weather information issuances.

The simplicity of the 6-Digit Date-Time Group, however, can be easily confused when a student comes across references to time visually displayed in a different format within the TAF Product [Again see *Display #1: KSNS METARs and TAF*]. Immediately after the TAF location identifier of KSNS, the issuance time is listed as **191122Z**. Based on our previous example, the KSNS TAF was issued on the 19th day of the month at 1122UTC. The valid time of the KSNS TAF then follows defined by the 8-digit group of **1912/2012**. Most TAF issuances are valid for 24-hour time periods beginning at 00Z, 06Z, 12Z, and 18Z. Therefore, the referenced TAF for KSNS is valid beginning on the 19th day of the month at 12Z; and it is valid through the period ending on the 20th day of the month at 12Z. Understanding that a TAF is typically valid for only a 24-hour period, why would the encoding even bother to list the end of the valid period for the forecast? The answer: Because there are approximately 35 airport terminals around the country that are deemed operationally significant within the overall National Airspace System (NAS) and it has been determined that any detrimental weather impact for these 35 airports results in “ripples” within the NAS air traffic flow. For these 35 terminals, the forecast TAF valid time has been expanded to 30 hours to assist in NAS operational planning [See *Display #2: KSFO TAF*]. In looking at the KSFO TAF issued at 191207Z (TAFs are typi-

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KSNS 191653Z 28005KT 10SM OVC010 14/11 A2998 RMK AO2 SLP160 T01390106
KSNS 191649Z 29007KT 10SM OVC010 14/11 A2998 RMK AO2
KSNS 191553Z 00000KT 10SM OVC006 13/11 A2998 RMK AO2 SLP160 T01280106
KSNS 191453Z 24003KT 9SM OVC006 12/11 A2998 RMK AO2 SLP160 T01220106 53005
KSNS 191404Z AUTO 25006KT 10SM OVC006 12/10 A2997 RMK AO2
KSNS 191353Z AUTO 00000KT 10SM OVC004 12/11 A2997 RMK AO2 SLP157 T01220106

KSNS 191122Z 1912/2012 22003KT 6SM BR OVC004
FM191800 29007KT P6SM SKC
FM192100 28015KT P6SM SKC
FM200100 28011KT P6SM BKN010
FM200400 27006KT P6SM OVC004
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Display #1: KSNS METARs and TAF

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FAUS46 KRCI 191045
FA6W
SF0C FA 191045
SYNOPSIS AND VFR CLDS/WX
SYNOPSIS VALID UNTIL 200500
CLDS/WX VALID UNTIL 192300...OTLK VALID 192300-200500
WA OR CA AND CSTL WTRS
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Display #4: SFO FA Header

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KSFO 191207Z 1912/2018 28008KT P6SM FEW005 BKN009
FM191630 04004KT P6SM FEW007
FM192000 30015KT P6SM FEW010
FM192200 29020KT P6SM FEW010
FM200400 29015KT P6SM FEW010
FM200900 30009KT P6SM BKN008
FM201730 31010KT P6SM FEW010
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Display #2: KSFO TAF

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KDLH 191242Z 1913/2012 31013G20KT P6SM SCT012 SCT025 BKN040
TEMPO 1913/1915 SCT012 BKN025
FM191500 31015G24KT P6SM SCT025 SCT045
FM192000 30015G25KT P6SM SCT060
FM200200 32006KT P6SM SCT070
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Display #3: KDLH TAF



cally issued between 20 and 40 minutes in the hour preceding the beginning of the forecast valid time), note that the product Valid Time Group is **1912/2018**. The beginning of the TAF forecast period is on the 19th day of the month at 12Z and it is valid through the 20th day of the month to 18Z. Because of “Amendments” or other factors, the issuance time of a TAF may be other than the “standard,” even, 6-hour times within the 24-hour UTC clock [See **Display #3: KDLH TAF**]. The issuance time of this Duluth, Minnesota TAF, **191242Z**, leads to a Valid Time Period listing of **1913/2012**, i.e., valid from the 19th day of the month and rounded to the 13Z hour, and then valid to the 20th day of the month ending at 12Z.

Changes to the initial weather at the beginning of the valid time of a TAF are delineated by use of the ‘From’ change term, **FM**. Looking at our KDLH example [See **Display #3: KDLH TAF**], the group **FM191500** decodes that on the 19th day of the month at 1500Z, a change in the forecast weather is to occur. The 4-digit time-of-day group, by the way, can be expressed to the nearest minute should the Aviation Forecaster writing the TAF feel the confidence and ability to time a weather event that close. The wind is forecast to come from a direction of 310° relative to True North at 15 gusting to 24 knots, with a prevailing visibility expected to be greater than 6 statute miles, and scattered cloud decks at 2500 feet and 4500 feet above ground level. Also within the TAF product, the time that temporary changes (TEMPO) to the prevailing weather need be listed are similarly formatted much like that of the Valid Time of the TAF, note the ‘TEMPO’ group of **1913/1915**. During the time from the 19th day of the month at 13Z to the 19th day of the month at 15Z, some variability is expected in the sky cover, i.e., the *scattered* cloud deck forecast at 2500 feet above the terminal elevation is expected temporarily to be a *broken* deck (recall that a *broken* cloud deck constitutes a *ceiling*). The Valid Time of any event with some degree of chance of occurring, indicated with the use of a **PROB30** term, is similar in format to decoding the TEMPO time group.

For additional familiarity and practice in weather product Date-Time Groups, let’s look at an example of an Area Forecast Header Block [See **Display #4: SFO**

FA Header]. The format is identical to the 6-digit Date-Time Group within the TAF Header. The Area Forecast (FA) for the West Coast states of Washington, Oregon and California – WA, OR and CA – has been issued for the 19th day of the month at 1045Z, **191045**. However, there is no “Z” appended to this 6-digit grouping, as it is used within the FA. The Weather Synopsis portion of the FA is valid up to the 20th day of the month at 0500Z, **200500**. The specific clouds and weather portion of the FA (12-hour time period) is valid until the 19th day of the month at 2300Z, **192300**, and the *Weather Category Outlook* for an additional 6 hour time period (making the FA an 18-hour weather forecast product) is valid for the period from the 19th day of the month at 2300Z until the 20th day of the month at 0500Z, **192300–200500**.

A good grasp in decoding the Date-Time Groups in aviation weather products enables a pilot to begin the process of immediately “picturing” the current weather situation. Understandably, checking the Date-Time Group of *ANY* weather text or graphic product insures that a correct weather situation is being assessed. Not limited to pilots, it is essential even among professional meteorologists to check the Date-Time Group of weather products received from data sources habitually. It is not unheard of for data circuits to distribute old weather products or numerical weather models to not have run on-time. Prudence dictates all who use weather products to check for currency!

One of the other big challenges in decoding aviation weather products is the location or defining an area of significant weather. I’ll discuss location identifiers and their use in weather products in an upcoming installment of “*Weather To Fly*.”

References

Websites:
 NWS Aviation Weather Center; TAF/METAR Menu
 < <http://www.aviationweather.gov/adds/metars/> >

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