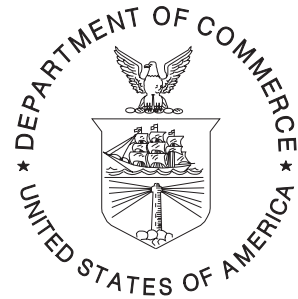U.S. DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration
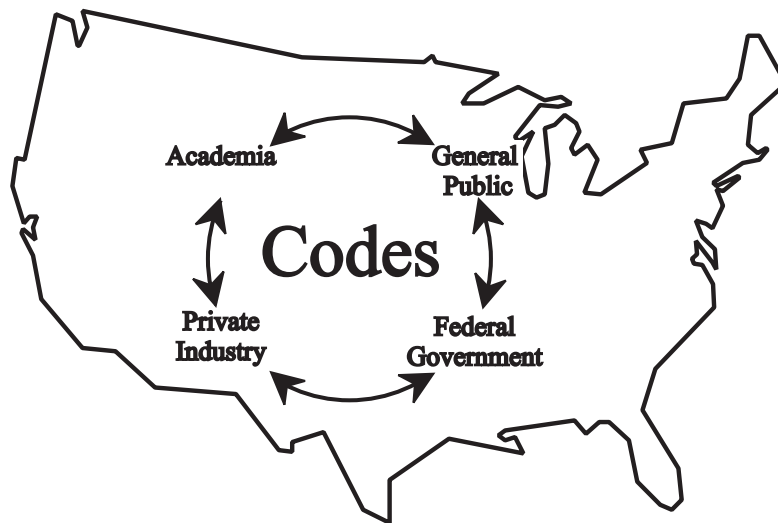
OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

FEDERAL METEOROLOGICAL HANDBOOK No. 12

United States Meteorological Codes and Coding Practices

Academia General Public

Codes

Private Industry Federal Government

FCM-H12-1998

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December 1998

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FEDERAL METEOROLOGICAL HANDBOOK
NUMBER 12

UNITED STATES METEOROLOGICAL CODES
AND CODING PRACTICES

CHANGE AND REVIEW LOG

Use this page to record changes, notices and reviews.

Change Number	Page Numbers	Date Posted	Initials
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Changes are indicated by a vertical line in the margin next to the change.

Review Date	Comments	Initials

FOREWORD

This first edition of Federal Meteorological Handbook No. 12 (FMH-12), *"United States Meteorological Codes and Coding Practices"* describes meteorological codes and coding practices used within the United States. The handbook serves as a United States supplement to codes that may or may not be covered in the World Meteorological Organization's (WMO) *Manual of Codes No. 306.* FMH-12 will not include all codes used in the United States but only those codes that are not documented elsewhere in the Federal Meteorological Handbook series.

This handbook prescribes Federal standards and coding practices and provides a reference for users of these data.

The standards in FMH-12 are applicable to all United States Federal agencies and should be reflected in their manuals and directives.

The Working Group for Meteorological Codes is responsible for preparing FMH-12 and ensuring it remains current.

Samuel P. Williamson
Federal Coordinator for Meteorological
  Services and Supporting Research

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GENERAL INFORMATION AND PROCEDURES

1. **Format and Structure**. The Handbook consists of three major parts: Part A - Atmospheric, Part B - Land, and Part C - Marine. The three parts are (a) linked to the type of data that is being coded and transmitted and (b) associated with the geographical origin of the data.

2. **Incorporation of Other Codes**. This Handbook was not intended to contain <u>all</u> meteorological codes used nationally, or codes used only by one agency. As agencies identify and agree upon additional codes for inclusion, these codes will be published and inserted into the appropriate section.

3. **Definitions**. Throughout this Handbook, the following definitions apply:

  * "shall" indicates a procedure or practice that is mandatory
  * "should" indicates a procedure or practice that is recommended
  * "may" indicates a procedure or practice that is optional
  * "will" indicates futurity; it is not a requirement to be applied to practices

4. **Changes to the Handbook**. Changes, additions, deletions, and corrections will be issued, as necessary. These changes shall be issued only by the Office of the Federal Coordinator for Meteorology (OFCM) after consultation and coordination with the Working Group for Meteorological Codes (WG/MC).

5. **Relation to Other Handbooks and Manuals**

Individual agencies may issue their own manuals that further define or describe agency specific coding procedures and practices. Such manuals shall complement, not change, the standards contained in FMH-12.

FMH-12 is consistent with agreements and publications of the World Meteorological Organization (WMO), specifically *WMO No. 306 - Manual on Codes*, with the International Civil Aviation Organization (ICAO) *Annex 3, Meteorological Service for International Air Navigation,* and civil as well as military weather services. Where the United States does not follow international standards for coding practices, exceptions or differences have been filed with WMO and/or ICAO as applicable. The listing of exceptions and differences to the standards and practices can be obtained from WMO and ICAO.

6. **Agency Procedures and Procedural Changes**

Agencies may issue manuals and directives to provide more detailed instructions and training to their personnel and users. Copies of these procedures shall be provided to the reference library. Agencies may also issue changes to their procedures as follows:

  a. Routine procedural changes that are in conformance with FMH-12 may be issued by an agency at any time without coordination with the WG/MC.

  b. Procedural changes not in conformance with FMH-12 shall be coordinated with the WG/MC when time allows. However, when necessary to meet urgent requirements, procedural changes not in conformance with FMH-12 may be issued by an agency without coordination with the WG/MC. Copies of changes shall be forwarded to the WG/MC for coordination and appropriate action.

7.   **Reference Library**

The WG/MC shall maintain a record and library of agency procedures, changes, and supplements issued by all participating agencies. The WG/MC shall establish a procedure for making these procedures, changes, and supplements available to users.

8.   **Other Questions and Suggestions Regarding FMH-12**

Questions or suggestions about the content or organization of this Handbook should be directed to:

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PART A. ATMOSPHERIC

CHAPTER 1

PILOT REPORTS

1.1 General

Pilot weather reports (PIREPs) are a valuable source of information not available from surface-based observations.

1.2 Scope

This chapter contains instructions for manual encoding and dissemination of pilot reports in a standard format which facilitates processing, transmission, storage, and retrieval of reports of in-flight weather occurrences. To assure consistent understanding, standard meteorological contractions shall be used in the reporting of in-flight weather phenomena. Where possible, authorized contractions and abbreviations shall be utilized. Although the reporting of some elements in a PIREP are optional, the disseminated report shall be in accordance with this chapter.

The Committee for Aviation Services and Research (CASR), Office of the Federal Coordinator for Meteorology (OFCM), retains cognizant responsibility for the maintenance and contents of this chapter.

1.3 Definitions

1.3.1 PIREP. Contraction for a Pilot Weather Report.

1.3.2 Text Element Indicator (TEI). A two-letter contraction with solidus used in the standard PIREP message to identify the elements being reported.

1.3.3 NAVAID. An electronic navigation aid facility, specifically limited to VHF Omni-Directional Radio Range (VOR), or combined VHF Omni-Directional Radio Range/Tactical Air Navigation (VORTAC) facilities.

1.4 Encoding Pilot Reports. Appropriate data received from a pilot either in the air or on the ground, or from a reliable source on the ground, shall be placed in a standard format for dissemination. Each report shall:

   a. Identify the type of report and each element in the report by a TEI.

   b. Include, as a minimum, entries for message type, location, time, flight level, type of aircraft, and at least one other element.

   c. Describe location with reference to a VHF NAVAID or the three- or four-letter airport identifier.

   d. Use only authorized contractions and aircraft designators, listed in FAA Order 7340.1 *Contractions*, and authorized three- or four-letter location identifiers. Where plain language is called for, authorized contractions and abbreviations should be used. However, in no case should an essential remark be omitted due to lack of readily available contractions.

e. Omit TEIs for unreported or unknown elements other than those in paragraph 1.4.b. If one of the required TEIs is unknown, enter "UNKN" for that element.

1.4.1   **<u>Pilot Report Format</u>**. Place data received from a pilot in the following format:

UUA_or UA/OV_(location)/TM_(time)/FL(flight level)/TP_(type of aircraft) /SK_(sky cover)/WX_(weather)/TA_(temperature)/WV_(winds)/TB_(turbulence) /IC_(icing)/RM_(remarks)

   NOTE: Each TEI is preceded by a solidus (/) and, except for flight level, followed by a space. The underline "_" is used for illustration purposes only to indicate a required space.   In the individual TEI sections which follow, the information enclosed in parentheses ( ) depict the format of optional entries.

1.4.1.1   **<u>Message Type (UUA or UA)</u>**. Indicates that an urgent (UUA) or routine (UA) pilot report follows. "UUA" shall be used whenever any of the following are reported:

   a. Hail (GR or GS)

   b. Low Level Wind Shear (LLWS)

   c. Severe icing

   d. Severe or extreme turbulence, including Clear Air Turbulence (CAT)

   e. Tornado, funnel cloud, or waterspout (FC)

   f.   Volcanic Eruption and/or Ash (VA) when reported by any source, in the air or on the ground.

   g. Any condition that, in the judgment of the person entering the PIREP into the system, would present an extreme hazard to flight.

1.4.1.2   **<u>Location (/OV)</u>**. After the TEI, describe the point at which, or the line along which, the reported phenomenon or phenomena occurred by reference to a VHF NAVAID(s) or an airport using the three- or four-letter location identifier. (**NOTE**: some weather processing systems may drop the leading "K", "P", or "H" on the location identifier and display only the 3-letter identifier). If appropriate, the identifier is followed by the radial bearing and distance from the NAVAID or airport. Using three-digits each, indicate the magnetic bearing direction in degrees followed by the distance in nautical miles.

FORMAT: /OV_LOC/AIRPORT or NAVAID(RRRDDD)(-AIRPORT or NAVAID(RRRDDD)

LOC/AIRPORT or NAVAID is the three- or four-letter location identifier for the airport or three- or four-letter identifier for the VHF NAVAID. RRR and DDD are the magnetic bearing and distance from the location, respectively. Notice the lack of a space between location and RRRDDD and also before and after the hyphen when two AIRPORTS/NAVAIDs are reported. Contractions, such as DURGC, or statements, such as AT TOP OF CLIMB, shall not be used in this field, but may be added as Remarks (/RM). A further explanation of distance, reference an airport, may be added in remarks, such as "MDW 10E".

Examples:

Pilot Reports Location as:	Encode:
Over Kennedy, New York Airport	/OV_KJFK
Five miles east of Philadelphia, Pennsylvania Airport	/OV_KMXE107025/RM_PHL_5E
or,	/OV_KPHL090005
Departing Hannibal, Missouri	/OV_KHAE
Along route from St. Louis to Kansas City, Missouri	/OV_KSTL-KMKC
Ten miles southwest of Reno, Nevada Airport	/OV_KFMG233016/RM_RNO_10SW
or,	/OV_KRNO225010
30 east of St. Louis VORTAC to 15 northeast of Kansas City VORTAC	/OV_KSTL090030-KMKC045015

1.4.1.3   Time (/TM). Enter the UTC time, GGgg, in hours and minutes, when the reported phenomenon was (or phenomena were) encountered or occurred.

FORMAT: /TM_GGgg

1.4.1.4   Flight Level (/FL). The aircraft's altitude (flight level), HHH, shall be entered in hundreds of feet above mean sea level (MSL) when the phenomenon was (or phenomena were) first encountered, or if the altitude is unknown, enter UNKN. If an aircraft was climbing or descending, enter the appropriate contraction (DURGC or DURGD) in the remarks section. If the condition was encountered within a layer, enter the altitude range of the layer within the appropriate phenomenon *TEI or in remarks*.

NOTE: There is no space between the "FL" TEI and the altitude.

FORMAT: /FLHHH(-HHH)

1.4.1.5   Type of Aircraft (/TP). If the type of aircraft is unknown, enter UNKN; otherwise enter the aircraft type designator, i.e., B737, F4, etc. The proper coding of this TEI is critical for the accurate interpretation and utilization of PIREPs, in particular those of icing or turbulence.

FORMAT: /TP_AAAA or /TP_UNKN

NOTE: FAA Order 7340.1, Chapter 5, "Civil/Military Aircraft Type Designators," provides all recognized aircraft designators for use in PIREPs as agreed to between the FAA and ICAO. The type designators are limited to four alphanumeric characters.

1.4.1.6   Sky Cover (/SK).   A PIREP may include the sky cover TEI. Enter the sky condition followed by the height of the bases and, if applicable, "-TOP" followed by the height of the tops. For each layer, use the cloud cover contractions SKC, FEW, SCT, BKN, or OVC and enter the heights of clouds in hundreds of feet above mean sea level (MSL) in three-digits. If cloud cover amounts range between two values, separate the contractions with a hyphen and no spaces (e.g., BKN-OVC). Indicate unknown heights by using UNKN. If the pilot reports he/she is in clouds, enter OVC, and in remarks enter "IMC." When more than one layer is reported, separate layers by a solidus (/).

NOTE: There are no spaces between cloud cover contractions and heights.

FORMAT: /SK_$N_sN_sN_s$(-$_sN_sN_sN_s$)$h_bh_bh_b$*(-TOP$h_th_th_t$)*/ $N_sN_sN_s$(-$_sN_sN_sN_s$)$h_bh_bh_b$, etc.

$N_sN_sN_s$ is the three letter contraction for the amount of cloud cover, $h_bh_bh_b$ is the height of the base of a layer of clouds in hundreds of feet, and $h_th_th_t$ is the height of the top of the layer in hundreds of feet and is indicated as "-TOP"and the height, $h_th_th_t$. Thus, the code form for cloud amount, base, and tops becomes $N_sN_sN_sh_bh_bh_b$-TOP$h_th_th_t$.

Examples:

```
/SK_OVC100-TOP110
/SK_OVC065-TOPUNKN /RM IMC
/SK_SCT-BKN050-TOP100
/SK_BKN-OVCUNKN-TOP060/BKN120-TOP150/SKC
/SK_OVC015-TOP035/OVC230
/SK_FEW030
/SK_SKC
/SK_OVC-TOP085*
```

*Tops only reported.

1.4.1.7 Weather (/WX). PIREPs may include flight visibility and/or flight weather in this TEI.

a. Flight visibility (FV) - If reported by the pilot, flight visibility will be the first entry in the "/WX" TEI. It shall be entered as FV followed immediately (no space) by the two-digit visibility value rounded, if necessary, to the nearest whole statute mile (SM). When a flight visibility value is reported, append "SM" to the value (e.g., FV03SM). FV99SM will be used to enter a report of unrestricted flight visibility.

b. Weather - Enter one or more of the listed weather types using the appropriate METAR contraction.

WEATHER	METAR ENCODE
FUNNEL CLOUD [1]	FC
TORNADO/WATERSPOUT	+ FC
THUNDERSTORM	TS
MIST (vis greater than 5/8SM)	BR
RAIN/RAIN SHOWERS	RA/SHRA
SQUALLS	SQ
FREEZING RAIN	FZRA
DRIZZLE/FREEZING DRIZZLE	DZ/FZDZ
FOG (vis less than 5/8SM)	FG
PATCHY FOG/PATCHY FOG ON PART OF AIRPORT	BCFG/PRFG
SHALLOW FOG	MIFG
FREEZING FOG	FZFG
HAIL (approximately 1/4" in diameter or more) [2]	GR
HAIL SHOWER	SHGR

SMALL HAIL/SNOW PELLETS	
(less than 1/4" in diameter)	GS
SMALL HAIL SHOWERS	
/SNOW PELLET SHOWERS	SHGS
ICE PELLETS/ICE PELLET SHOWERS	PL/SHPL
SNOW/SNOW SHOWERS	SN/SHSN
DRIFTING SNOW	DRSN
BLOWING SNOW	BLSN
SNOW GRAINS	SG
DUST	DU
DRIFTING DUST	DRDU
BLOWING DUST	BLDU
DUSTSTORM	DS
SAND	SA
DRIFTING SAND	DRSA
BLOWING SAND	BLSA
SANDSTORMS	SS
WELL DEVELOPED DUST/SAND WHIRLS	PO
HAZE	HZ
SMOKE	FU
VOLCANIC ASH	VA
SPRAY	PY

[1] FC is entered in the /WX TEI and FUNNEL CLOUD is spelled out in the /RM TEI. +FC is entered in the /WX TEI and TORNADO or WATERSPOUT is spelled out in the /RM TEI.

[2] If the size of hail is known, enter in 1/4 inch increments in the /RM TEI.

If more than one form of precipitation is combined in the report, the dominant type shall be reported first. The proximity qualifier VC (Vicinity) may be used in combination only with the abbreviations TS, FG, FC (+FC), SH, PO, BLDU, BLSA, and BLSN. Intensity (- for light, no qualifier for moderate, and + for heavy), shall be indicated with precipitation types, except ice crystals and hail, including those associated with a thunderstorm and those of a showery nature. Tornadoes and waterspouts shall be coded as +FC. No intensity shall be ascribed to obscurations of blowing dust, blowing sand and blowing snow. Only moderate and heavy shall be ascribed to duststorms or sandstorms.

Weather layers (i.e., fog, haze, smoke or dust) shall be entered with the base and/or top of the layer, if reported, encoded in the same manner as cloud cover in the /SK TEI (e.g., FU002-TOP030). If more than one type of weather is reported, the types shall be reported in the following order: 1) tornado, funnel cloud, or waterspout; 2) thunderstorm with or without associated precipitation; 3) weather phenomena in order of decreasing dominance, i.e., the most dominant reported first. Separate groups shall be used for each type of weather or thunderstorm, and **no more than three groups** shall be reported in one PIREP.

Coding present weather and the use of qualifiers/descriptors is based on Federal Meteorological Handbook 1 (FMH-1), *Surface Weather Observations and Reports.* Further details are available in each Agency's METAR weather observing document.

FORMAT: /WX_(FVvvSM_)ww(_ww)(_ww)

"vv" is the two-digit flight visibility value and "ww" is the variable length encoded flight weather.

Examples:

/WX_FV02SM_BR_HZ000-TOP083	-- In remarks: /RM BR-TOP009
/WX_FV00SM_+TSRAGR	
/WX_FV99SM	
/WX_FV02SM_VA330	
/WX_FC	-- In remarks: /RM FUNNEL CLOUD
/WX_+FC	-- In remarks: /RM TORNADO, or WATERSPOUT
/WX_BCFG_VC_W	(Decoded: Patches of fog between 5 and 10 SM of the report location to the west)

1.4.1.8   Temperature (/TA). If temperature is reported, it shall be the outside air temperature, using two digits, in whole degrees Celsius. Sub-zero temperatures shall be prefixed with an "M"; for example, a temperature of -2°C shall be coded /TA_M02.

NOTE: 00°C is a positive number.

FORMAT: /TA_(M)T'T'

"T'T'" is the two-digit temperature value in whole degrees Celsius.

1.4.1.9   Wind Direction and Speed (/WV). If reported, wind direction from which the wind is blowing shall be coded in tens of degrees using three figures. Directions less than 100 degrees shall be preceded by a "0". For example, a wind direction of 90° is coded as 090. The wind speed shall be entered as a two or three digit group immediately following the wind direction. The speed shall be coded in whole knots using the hundreds digit (if not zero) and the tens and units digits. The wind group always ends with "KT" to indicate that winds are reported in knots. Speeds of less than 10 knots shall be coded using a leading zero. For example, a wind speed of 8 knots shall be coded 08KT and a wind speed of 112 knots shall be coded 112KT.

FORMAT: /WV_ddd(f)ffKT

"ddd" is the three-digit direction, in whole degrees, from which the wind is blowing; and (f)ff is the wind speed in knots, followed by "KT".

Example:

/WV 26030KT	(Decoded: Wind 260 degrees at 30 knot)
/WV 080110KT	(Decoded: Wind 080 degrees at 110 knots)

1.4.1.10 Turbulence (/TB). If reported, turbulence intensity, type, and altitude are entered as follows:

        a.   Intensity. This is the first element reported after the space following the TEI.   The reportable intensities are LGT, MOD, SEV, and EXTRM. HVY is not a reportable intensity. A range or variations in intensity shall be entered as two values separated by a hyphen (e.g., MOD-SEV). If turbulence was forecast at any level, but none was encountered, enter NEG in the /TB TEI.

b. Type. May be blank, or enter either CAT or CHOP, if reported by the pilot. "CAT" is Clear Air Turbulence. This type of turbulence is encountered in air where no clouds are present and is commonly applied to high-level turbulence associated with wind-shear, often in the vicinity of the jet stream. CAT intensity may be light, moderate, severe, or extreme. "CHOP" turbulence causes rapid and somewhat rhythmic jolts or bumpiness without appreciable changes in altitude or attitude and may be indicated as either light or moderate.

c. Altitude. Enter the reported turbulence altitude only if it differs from the value reported in /FL, or is reported as a layer with defined or undefined boundaries. When entering a layer use a hyphen between height values. Undefined lower and higher boundary limits are entered as BLO or ABV. Use a solidus to separate two or more layers of turbulence.

FORMAT: /TB_III(-III)(_CAT or CHOP_)_$(h_bh_bh_b$-$h_th_th_t)$/III(-III) etc.

"III" is the intensity of the turbulence and CAT or CHOP are the only two entries for type of turbulence permitted. "$h_bh_bh_b$" is the base of the turbulence layer, if defined, or BLO or ABV, if undefined; and "$h_th_th_t$" is the top of a defined layer or the boundary of an undefined layer.

Examples:

```
/TB_EXTRM_350
/TB_MOD-SEV_BLO_080
/TB_LGT_035
/TB_LGT-MOD_CHOP_310-350
/TB_NEG
/TB_NEG_220-280/MOD_CAT_ABV
```

1.4.1.11   Icing (/IC). If reports of icing are received, enter these icing reports using the same format used to report turbulence; i.e., intensity, type, and altitude(s) of icing conditions.

a. Intensity. Enter TRACE, LGT, MOD, SEV, or ranges covering two values separated by a hyphen. HVY is not a reportable intensity. If icing was forecast at any level, but none was encountered, enter NEG in the /IC TEI.

b. Type. Enter the reported icing types as: RIME, CLR, or MX.

(1) RIME - Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.

(2) CLR (Clear) - Glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

(3) MX (Mixed) - A combination of rime and clear icing.

c. Altitude. Enter the reported icing altitude only if it differs from the value reported in /FL, or is reported as a layer with defined or undefined boundaries. When entering a layer use a hyphen between height values. Undefined lower and higher boundary limits are entered as BLO or ABV. Use a solidus to separate two or more layers of icing.

d.   Temperature. If it is available, enter temperature in the report when icing is reported.

FORMAT: /IC_III(-III)_(type)_($h_bh_bh_b$-$h_th_th_t$)/III(-III)_etc.

"III" is the intensity of the icing; type is one of the three listed icing types; "$h_bh_bh_b$" is the base of the icing layer, if defined, or BLO or ABV, if undefined; and "$h_th_th_t$" is the top of a defined layer or the boundary of an undefined layer.

Examples:

 /IC_TRACE_RIME
 /IC_LGT-MOD_RIME_085
 /IC_MOD_MX_035-070
 /IC_LGT_CLR_015-045/SEV_CLR_ABV_075
 /IC_NEG

1.4.1.12   Remarks (/RM).   Data or phenomena reported in this TEI are considered significant, however, they either do not fit in any previously reported TEI or they further define entries reported in other TEIs. The following phenomena may be reported when encountered by pilots. Enter heights, only if they differ from /FL.

       a.   Wind Shear. Low level wind shear (LLWS) is indicated by rapid air speed fluctuations within 2,000 feet of the earth's surface. When the fluctuation in airspeed is 10 knots or more, the report is classified as an Urgent (UUA) PIREP. When LLWS is a reason for issuing an Urgent PIREP, or whenever it is included as an element in any PIREP, enter LLWS as the first remark immediately after the /RM TEI, i.e., /RM LLWS_-15KT_SFC-003_DURGC_RY22_JFK. LLWS may be reported as -, + , or + /-, depending on the effect of the phenomena on the aircraft. If the location of the LLWS encounter is different from the /OV or /FL TEI, then include this information in remarks using the same format(s).

       b.   FUNNEL CLOUD, TORNADO, and WATERSPOUT. Enter the appropriate term followed by the direction of movement, if reported.

       c.   Thunderstorm. Enter areal coverage descriptions (ISOL, FEW, SCT, NMRS), or if storms are reported in a line, enter description (LN, SCT LN, BKN LN, SLD LN), if known. Follow the areal coverage description with the contraction TS, the location and movement of storms, and type of lightning, if known.

       d.   Lightning. Enter frequency (OCNL, FRQ), followed by type, i.e., LTGIC, LTGCC, LTGCG, LTGCA or combinations, as reported by the pilot.

       e.   Electric Discharge. Enter DISCHARGE, followed by altitude.

       f.   Cloud Reports. Heights of bases and tops encountered shall be reported in the /SK TEI. The remarks section is used for clouds that can be seen but were not encountered during flight, such as CS W, OVC BLO, SCT-BKN ABV, CB E MOV NE, etc.

       g.   Language and Terminology. Some information may be reported by the pilot in nonstandard or unencodable terminology, such as very rough or bumpy. If specified phraseology is not adequate, use plain language to enter a description of the phenomena as clearly and concisely as possible. Appropriate remarks made by the pilot which do not fit in any TEI may also be included in the remarks section. Some remarks that fall into this category are DURGC, DURGD, RCA, TOP, TOC, or CONTRAILS.

h. Volcanic Eruption. Volcanic Eruption shall be indicated in the remarks section of an urgent PIREP. (Volcanic ash alone is considered weather phenomena and is included in the /WX TEI.) A report of volcanic activity shall include as much information as possible, such as the name of the volcano, time of observed eruption (if different from /TM entry), location, and any ash cloud observed with the direction of the ash cloud movement. If the report is received from other than a pilot in the air or on the ground, enter aircraft "UNKN", flight level "UNKN", and indicate in remarks that the report is "UNOFFICIAL."

i. For further identification of the source of a PIREP, the aircraft identification, call sign, or registration number may be added to the remarks.

j. The facility encoding the PIREP may be added to the end of the remarks, e.g., "ZLA CWSU".

1.5 <u>Entries on Forms</u>. To facilitate formatting of the PIREP, locally developed procedures may be utilized prior to dissemination based upon these instructions.

1.6 <u>Dissemination</u>. Pilot reports may be sent individually or as part of a collective/bulletin. All pilot reports should be given local and longline dissemination as a PIREP, except:

a. When two or more reports have substantially the same information, disseminate only the most recent. A remark should be included to indicate the number of reports of the same phenomena and the time interval in which they were received, e.g., "3 RPTS last five minutes", "NUMEROUS ACFT." The most representative aircraft should be shown in the /TP TEI.

b. When reports of sky condition have been incorporated into a METAR or SPECI observation, unless deemed appropriate by the person entering the report.

1.6.1 <u>Hazardous Phenomena</u>. Urgent PIREPS (UUAs) (see para. 1.4.1.1.) shall be disseminated in accordance with appropriate agency directives.

1.7 <u>Examples</u>:

a. Clear-air Turbulence. At 2200Z, a Boeing 757-200 pilot reports severe clear-air turbulence between 35,000 and 39,000 feet over Toledo:

UUA/OV_KTOL/TM_2200/FLUNKN/TP_B757/TB_SEV_CAT_350-390

b. Duststorms or Sandstorms. A pilot flying at 4,000 feet reports, at 0750Z, a duststorm 35 miles northeast of Midland, Texas, with a visibility of 3/4 of a mile:

UUA/OV_KMAF045035/TM_0750/FL040/TP_UNKN/WX_FV01SM_DS

c. Electric Discharge. A military pilot flying a Lockheed Orion between Richmond, Virginia, and Washington, D.C., reports at 2120Z that the aircraft experienced an electrical discharge 20 miles south of Washington at an altitude of 5,000 feet:

UA/OV_KDCA180020/TM_2120/FL050/TP_P3/RM_DISCHARGE

d. Estimate. At 1630Z, a pilot of a Cessna 172 reports a duststorm 20 miles west of Kansas City, Missouri headed for the airport. The visibility at 3,500 feet is 10 miles. The pilot estimates the duststorm will reach the airport within 45 minutes.

 UUA/OV_KMKC270020/TM_1630/FL035/TP_C172/WX_FV_10SM_DS/RM
 _DUSTSTORM MOV090_EST_KMKC1715

e. Smoke Layer. A pilot of a Dehavilland 7 reports at 1500Z that there is a smoke layer from 2,000 to 6,500 feet over the field at Pittsburgh:

 UA/OV_KPIT/TM_1500/FLUNKN/TP_DH7/WX_FU020-TOP065

f. Hail. At 2217Z, the pilot of a Fairchild F27 reports moderate hail, 1/2" in diameter, 10 miles south of Omaha, Nebraska at an altitude of 3,500 feet:

 UUA/OV_KOMA180010/TM_2217/FL035/TP_FA27/WX_GR/RM_HLSTO_1/2

g. Icing. The pilot of a Seneca at 1500Z reports moderate rime icing was encountered 5 to 20 miles north of Eugene, Oregon, at 2,000 feet:

 UA/OV_KEUG360005-360020/TM_1500/FL020/TP_PA34/IC_MOD_RIME

h. Cloud Cover. At 0000Z, the pilot of a Shorts 360 reports broken clouds between 3,600 feet and 6,600 feet, 6 miles southeast of Honolulu. At 7,000 feet the pilot is between layers with an overcast deck above:

 UA/OV_PHNL135006/TM_0000/FL070/TP_SH36/SK_BKN036-TOP066
 /UNKN_OVC_ABV

i. Thunderstorm. A pilot reports, at 2224Z, a broken line of thunderstorms 45 miles northwest of Dodge City in a north-south direction. Broken TCU cloud bases are at 3,000 feet with the layer tops at 15,000 feet and CB tops at 32,000 feet. Occasional cloud to cloud and cloud to ground lightning is observed. Type of aircraft is a McDonnell-Douglas DC-9/80:

 UA/OV_KDDC315045/TM_2224/FLUNKN/TP_MD8/SK_BKN030-TOP150
 /WX_TS/RM_BKN_LN_TS_N-S_OCNL_LTGCCCG_CB_TOP320

j. Tornado. At 2314Z, a pilot 35 miles north of Champaign, Illinois reports a tornado moving east northeast. The cloud layer is broken with bases at 3,000 feet. The tornado is observed to be making intermittent contact with the ground:

 UUA/OV_KCMI360035/TM_2314/FLUNKN/TP_UNKN/SK_BKN030
 /WX_+FC/RM_TORNADO_MOV_ENE_INTER_CTC_W_GND

k. Turbulence (not clear air). At 1850Z, the pilot of a Convair 580 flying at 10,000 feet through Donner Summit Pass reports to Reno, Nevada, that light turbulence is being encountered:

 UA/OV_KRNO250035/TM_1850/FL100/TP_CV58/TB_LGT/RM_DONNERSUMMITPASS

l. Wind. The military pilot of a OV1 Mohawk, at 1445Z, has encountered an 82-knot wind 30 miles west of Bismark at 6,000 feet MSL, true wind direction 80 degrees:

 UA/OV_KBIS270030/TM_1445/FL060/TP_OV1/WV_08082

m. Volcanic Eruption and/or Ash. At 2010Z, the pilot of a McDonnell Douglas DC10 at 37,000 feet, 75 miles southwest of Anchorage, reports Mt. Augustine erupted at 2008Z. The pilot also reports an ash cloud 40 miles south of the volcano, moving south-southeast:

NOTE: A report of volcanic eruption/volcanic ash may be received from any source. If the source is other than a pilot in the air or on the ground, the remark section will begin with "UNOFFICIAL."

   UUA/OV_PANC240075/TM_2010/FL370/TP_DC10/WX_VA/RM_VOLCANIC ERUPTION_2008Z_MT_AUGUSTINE_ASH_40S_MOV_SSE

n. Visual Meteorological Conditions. Pilot of a Boeing 737 reports, at 1130Z, that the eastern aproach to Honolulu is now clear and VFR.

   UA/OV_PHNL090030-PHNL270005/TM_1130/FL050/TP_B737/WX_FV99SM

o. Instrument Meteorological Conditions. At 1730Z, a pilot reports a fog bank over Long Island Sound during descent. Tops are at 2,000 ft.

   UA/OV_KLGA090040/TM_1730/FL015/TP_UNKN/WX_FG_TOP020/RM_IMC_DURGD

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GLOSSARY OF TERMS, ABBREVIATIONS, AND ACRONYMS

-	Light intensity, except when associated with LLWS
+	Heavy intensity, except when associated with LLWS
/*	Solidus. Separator between cloud layers, layers of turbulence, or layers of icing
ABV	Above
AC*	Altocumulus Cloud(s)
ACC	Altocumulus Castellanus Cloud(s)
ACFT MSHP	Aircraft Mishap
ACSL	Standing Lenticular Altocumulus Castellanus Cloud(s)
APCH*	Approach
APRNT	Apparent
APRX*	Approximate, approximately
ATCT	Air Traffic Control Tower
B	Began
BC	Patches (descriptor used with FG)
BKN*	Broken (used to describe cloud cover or weather phenomena)
BL*	Blowing (descriptor used with DU, SA, or SN)
BLO*	Below
BR*	Mist
CA	Cloud to air (lightning)
CAS	Committee for Aviation Services
CAT*	Clear Air Turbulence, usually high-level associated with Jet Stream wind shear
CB*	Cumuloniumbus Cloud(s)
CBMAM	Cumuloniumbus Mammatus Cloud(s)
CC*	Cirrocumulus Cloud(s), or Cloud to cloud (lightning)
CCSL	Standing Lenticular Cirrocumulus cloud(s)
CG	Cloud to ground (lightning)
CHOP	Turbulence type characterized by rapid, rhythmic jolts
CIG*	Ceiling
CLR*	Clear (Icing) - a type of glossy, clear, or translucent ice, or (Sky condition) - the absence of clouds reported by an automated weather reporting station
CONS*	Continuous
CONTRAILS	Condensation trails--ice vapor trails created by high-flying aircraft
CS*	Cirrostratus Cloud(s)
CTC*	Contact
DR*	Low Drifting (descriptor used with DU, SA or SN)
DS*	Duststorm
DSNT	Distant
DU*	Widespread Dust

* Indicates abbreviations recognized by ICAO

DURGC	During Climb
DURGD	During Descent
DZ*	Drizzle
E*	East
EMBD*	Embedded (used to describe thunderstorms)
ENE*	East Northeast
ENRT*	Enroute
EST*	Estimate/Estimated
EXTRM	Extreme (Used to modify turbulence)
FAA	Federal Aviation Administration
FC	Funnel Cloud
+ FC	Tornado or Waterspout
FEW*	Few (used to described cloud cover or weather phenomena)
FG*	Fog
FRQ*	Frequent
FT*	Feet
FU*	Smoke
FV	Flight Visibility
FZ*	Freezing (descriptor used with precipitation or fog)
G	Gust/Gusting
GND*	Ground
GR*	Hail of 1/4" in diameter or more
GS*	Small hail/snow pellets (less than 1/4" in diameter)
HLSTO	Hailstone(s)
HVY*	Heavy (Used in Remarks to modify precipitation)
HZ*	Haze
IC*	Ice crystals (weather), or in-cloud (lightning)
ICAO*	International Civil Aviation Organization
IMC	Instrument Meteorological Conditions
INCRG	Increasing
INTER*	Intermittent
ISOL*	Isolated (Used to describe weather phenomena in Remarks of a PIREP)
KT*	Knot(s) (used to describe speed)
LGT*	Light (Used to modify turbulence or icing)
LLWS	Low Level Wind Shear
LN	Line (Used to describe thunderstorm formations in Remarks of a PIREP)
LST	Local Standard Time
LTG	Lightning
LTGCA	Lightning Cloud to Air
LTGCC	Lightning Cloud to Cloud
LTGCG	Lightning Cloud to Ground
LTGIC	Lightning in Cloud

* Indicates abbreviations recognized by ICAO

LWR	Lower
LYR*	Layer (of clouds)
M*	Sub-zero temperature
METAR*	Aviation Routine Weather Report (in aeronautical meteorological code)
MI	Shallow (descriptor used with FG)
MOD*	Moderate (Intensity modifier used with turbulence or icing)
MOV*	Moving
MSL*	Mean Sea Level
MT*	Mountain
MX*	Mixed - A type of Icing characterized as a combination of clear and rime ice.
N*	North
NAVAID	An electronic navigation aid facility (limited to VOR or VORTAC for PIREPs)
NE*	Northeast
NMRS	Numerous (Used to describe weather phenomena in Remarks of a PIREP)
NW*	Northwest
OCNL*	Occasional
OFCM	Office of the Federal Coordinator for Meteorology
OVC*	Overcast
OVR	Over
PCPN	Precipitation
PIREP	Pilot Weather Report
PK WND	Peak wind
PL*	Ice Pellets
PO*	Dust/sand whirls (dust devils)
PR	Partial (descriptor used with FG)
PY	Spray
RA*	Rain
RCA*	Reach Cruising Altitude
RIME	Type of Icing characterized by a rough, milky, opaque appearance
RY	Runway
S*	South
SA*	Sand
SCSL	Standing Lenticular Stratocumulus Cloud(s)
SCT*	Scattered (Used to describe cloud cover or weather phenomena)
SE*	Southeast
SEV*	Severe (Intensity modifier used with turbulence or icing)
SFC*	Surface
SG*	Snow Grains
SH*	Shower(s) (descriptor used with RA, SN, PL, GS or GR)

* Indicates abbreviations recognized by ICAO

SKC*	Sky Clear (Sky condition) - the absence of clouds reported by a manual weather reporting station.
SLD	Solid (Used to describe weather phenomena in Remarks of a PIREP)
SM	Statute Mile
SN*	Snow
SP	Snow Pellets
SPECI	Aviation Weather Special Report (unscheduled)
SQ*	Squall(s)
SS*	Sandstorm
STN*	Station
SW*	Southwest
TACAN*	UHF (Ultra High Frequency - 300 to 3,000 MHz) Tactical Air Navigation Aid
TCU*	Towering Cumulus Cloud(s)
TEI	Text Element Indicator
TOC*	Top of Climb
TOP*	Top of Clouds
TS*	Thunderstorm(s)
UA	Text Element Indicator for a Routine Pilot Report (PIREP)
UNKN	Unknown
UP	Unknown Precipitation (reported by automated station only)
UTC*	Coordinated Universal Time
UUA	Text Element Indicator for an Urgent Pilot Report (PIREP)
VA*	Volcanic Ash
VC*	Vicinity (Proximity qualifier)
VHF*	Very High Frequency (30 to 300 MHz)
VIS*	Visibility
VMC	Visual Meteorological Conditions
VOR*	VHF Omnidirectional Radio Range
VORTAC*	VOR and TACAN Combination
VRB*	Variable
W*	West
WMO	World Meteorological Organization
WND	Wind
Z	Zulu Time, or Coordinated Universal Time

* Indicates abbreviations recognized by ICAO