A Pilot's Guide to Aviation Weather Services

Introduction

This brochure is designed to help you use the NATIONAL AVIATION WEATHER SYSTEM to the fullest extent possible. The information and services described here are available from the National Weather Service (NWS), the Federal Aviation Administration (FAA), and information service companies.

For More Information

For more detailed weather information consult AVIATION WEATHER (FAA Advisory circular 00-6A); AVIATION WEATHER SERVICES (FAA Advisory Circular 00-45); and the AIRMAN'S INFORMATION MANUAL, (Chapter 7, Safety of Flight). These publications are available at local government bookstores and from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Abbreviations

The following is a list of abbreviations and acronyms used in this brochure:

A/FD	Airport/Facility Directory
AC	Advisory Circular
AGL	Above Ground Level
ASOS	Automated Surface Observing System

ATIS	Automatic Terminal Information Service
AWOS	Automated Weather Observing System
AWW	Alert Weather Watch
CWA	Center Weather Advisory
CWSU	Center Weather Service Unit
DVFR	Defense VFR (Flight Plan)
EFAS	Enroute Flight Advisory Service
FA	Area Forecast
FAA	Federal Aviation Administration
FD	Wind and Temperature Aloft Forecast
FSS	Flight Service Station
FT	Terminal Forecast
HIWAS	Hazardous In-flight Weather Advisory Service
IFR	Instrument Flight Rules
LIFR	Low IFR Weather Conditions
MSL	Mean Sea Level
MVFR	Marginal VFR Weather Conditions
NOAA	National Oceanic Atmospheric Administration
NOTAM	Notice to Airmen
NWS	National Weather Service
PATWAS	Pilot's Automatic Telephone Weather Answering Service
PBS	Public Broadcasting Service
TIBS	Telephone Information Briefing Service
TWEB	Transcribed Weather Enroute Broadcast
VFR	Visual Flight Rules

Pre-Flight

Preparation for your weather briefing:

A.M. WEATHER is a 15-minute television weather program designed for pilots and can be seen on more than 300 PBS stations Monday through Friday mornings. Check your local TV listings for exact time and station.

Meteorological and aeronautical information is provided by continuous recorded **Transcribed Weather Broadcasts (TWEB)**, the **Pilot's Automatic Telephone Answering Service (PATWAS),** and the **Telephone Information Briefing Service (TIBS)**. Complete weather information is available by telephone call or visit to the nearest **FAA Flight Service Station (FSS)** or designated **NOAA Weather Service Office**. Information is also available from private commercial vendors. During periods of marginal weather, briefers are busy and telephone delays may occur. While waiting for the briefer, you may get basic information from TWEBs, PATWAS, or TIBS - - but do continue to wait for the briefer. The latest hourly aviation weather observations from distant stations are normally available by 5 minutes past the hour.

Pilots may obtain Federal pre-flight weather briefings tailored to your individual needs. Any one of three types of briefings may be requested: **standard, abbreviated** or **outlook.**

A **standard briefing** should normally be requested even when you have received prerecorded or mass media weather information (e.g., TWEB, A.M. WEATHER, etc.). After giving the briefer the necessary background information, you will automatically receive the following:

- adverse conditions
- whether VFR flight is not recommended*
- synopsis of prevailing weather systems
- current conditions
- en route forecast
- destination forecast
- winds aloft

- Notices to Airmen (NOTAMs)*
- any expected delays*
- any additional information the pilot requested.

** Not provided by NWS briefers*

An **abbreviated briefing** should be requested if you have used prerecorded or mass media weather information to make a go/no-go decision and only selected additional information is required. You should provide the pertinent background information, tell the briefer what previous information source you have used, and ask for an abbreviated briefing with specified observation or forecast products.

An **outlook briefing** should be requested for long-range flight planning. This briefing contains forecasts for a flight beginning more than 6 hours in the future. An abbreviated or standard briefing should then be obtained when closer to the time of departure.

For your pre-flight weather briefing, give the briefer the following background information:

Type of flight VFR, IFR or DVFR

1. Aircraft identification or pilot's name
2. Aircraft type
3. Departure point
4. Route-of-flight
5. Destination
6. Altitude(s)
7. Estimated time of departure
8. Estimated time en route or time of arrival

After receiving weather information, either for short or long-range flights, consider carefully if conditions are suitable for your intended flight.

In-Flight

During marginal VFR or IFR conditions, keep a particularly close check on en route, terminal and alternate airport weather. Routine weather information is available by radio from any FAA FSS. Selected FSSs broadcast In-flight Advisories (SIGMETs, Convective SIGMETs, Center Weather Advisories [CWAs], Alert Weather Watches [AWW] and AIRMETs) and severe weather information. TWEBs also can be received while airborne. Pilots should monitor Hazardous In-flight Weather Advisory Service (HIWAS) weather broadcasts routinely. See the **Airport/ Facility Directory** (A/FD) and aeronautical charts for frequencies. Do not hesitate to request specific information from the En Route Flight Advisory Service (EFAS) - "Flight Watch" - on 122.0 MHZ below 18,000 feet MSL. See the A/FD for high altitude frequencies. In-flight briefing procedures are explained in detail in the **Airman's Information Manual**.

Before Landing

Prior to descent, request current weather for the terminal area and conditions at your destination airport. At many airports, this information is continuously broadcast on ATIS, ASOS, AWOS, or selected navigation aids. These broadcasts reduce pilot and controller communications workloads.

Aviation Weather Support Products

TERMINAL FORECASTS (FT) contain information for specific airports. They are issued 3 times a day, amended as needed, and are valid for a 24-hour period. The last six hours of each period is covered by a categorical forecast indicating that VFR, MVFR, IFR, or LIFR conditions are expected. Terminal forecasts are written in the following form:
AIRPORT IDENTIFIER: 3 or 4 alphanumeric characters.
DATE AND VALID TIME PERIOD OF FORECAST: Z or UTC.
MESSAGE TYPE: RTD (Delayed), COR (Corrected), or AMD (Amended).
CEILING: Identified by the letter "C" prefix.
CLOUD HEIGHTS: In hundreds of feet above the airport (AGL).
CLOUD AMOUNT: CLR (Clear), SCT (Scattered), BKN (Broken), OVC (Overcast), or X (Obscured).
VISIBILITY: In statute miles (6+ indicates unrestricted).

WEATHER AND OBSTRUCTION TO VISIBILITY: Standard weather and obstruction to visibility symbols are used.
SURFACE WIND: In tens of degrees and knots. Omitted when less than 6 knots. Gusts indicated by a "G" followed by maximum speed.

CEILING AND VISIBILITY CATEGORIES

Category	Ceiling (feet)		Visibility (miles)
LIFR	less than 500	and/or	less than 1
IFR	500 to 1000	and/or	1 to 3
MVFR	1000 thru 3000	and/or	3 thru 5
VFR	more than 3000	and	more than 5

EXAMPLE OF TERMINAL FORECAST:

DCA 221010 10 SCT C18 BKN 5SW- 3415G25 OCNL C8 X ½ SW.

12Z C50 BKN 3312G22.

04Z MVFR CIG..

Decoded Example: Washington National Airport for the 22nd of the month valid from 10Z to 10Z. Scattered clouds at 1000 feet, ceiling 1800 feet broken, visibility 5 miles in light snow showers, surface wind 340 degrees at 15 knots, gusts to 25 knots. Occasional ceiling 800 feet, sky obscured, visibility one-half mile in moderate snow showers. By 12Z becoming ceiling 5000 feet broken, surface wind 330 degrees at 12 knots, gusts to 22 knots. The categorical outlook for the last 6 hours beginning at 04Z calls for marginal VFR conditions due to ceiling.

AREA FORECASTS (FA) provide an 18-hour synopsis of expected weather patterns; a 12-hour forecast of VFR cloud cover, weather and visibility; and a 6-hour categorical outlook. FAs are prepared 3 times a day (4 times a day in Alaska and Hawaii) and are supplemented and updated by SIGMETs, AIRMETs, and by FA amendments. Heights in the FA are above mean sea level (MSL) unless stated as above ground level (AGL). Ceilings (CIG) are always AGL.

WIND and TEMPERATURE ALOFT FORECASTS (FD) are 6, 12, and 24-hour forecasts of wind direction, speed, and temperatures for selected altitudes to 53,000 feet MSL at specified locations. Direction is relative to true north rounded to the nearest 10 degrees. Speed is in knots. Temperatures aloft (in degrees Celsius) are included with wind data for all but the 3000-foot MSL level and those levels within 2500 feet of the ground. Temperatures above 24,000 feet MSL are always negative. Winds at other locations and altitudes can be obtained by interpolation.

EXAMPLE OF WINDS ALOFT FORECAST:

FT 3000 6000 9000 etc.
ACY 2925 2833+02 2930-03 etc.

Decoded example: For Atlantic City, N.J., at 6000 feet MSL wind from 280 degrees true at 33 knots, temperature 2 degrees Celsius.

IN-FLIGHT ADVISORIES warn pilots of potentially hazardous weather. They include SIGMETs, CONVECTIVE SIGMETs, AIRMETs, and Center Weather Advisories (CWA). **SIGMETs** warn of hazardous conditions of importance to all aircraft i.e. severe icing or turbulence,

duststorms, sandstorms, and volcanic ash. **AIRMETs** warn of less severe conditions which may be hazardous to some aircraft or pilots. SIGMETs are issued as needed. AIRMET bulletins are issued routinely and supplement the Area Forecast (FA). **CONVECTIVE SIGMETs** are issued hourly for thunderstorms in the continuous U.S. **Center Weather Advisories**, issued as needed, are detailed advisories of conditions which meet or approach SIGMET or AIRMET criteria.

EXAMPLE OF SIGMET:

SIGMET OSCAR 2 VALID UNTIL 052100
KS NE
FROM PWE TO OSW TO LBL TO PWE
SVR TURBC BLO 60 XPCD DUE TO STG NWLY FLOW BHD
CDFNT. CONDS CONTG BYD 2100Z.

Decoded Example: SIGMET OSCAR 2 is valid until 2100Z on the 5th day of the month. For Kansas and Nebraska from Pawnee City VORTAC to Oswego VORTAC to Liberal VORTAC to Pawnee City VORTAC. Severe turbulence below 6000 feet expected due to strong northwesterly flow behind a coldfront. Conditions continuing beyond 2100Z.

TRANSCRIBED WEATHER BROADCASTs (TWEB) are continuous broadcasts of recorded NOTAM and weather information prepared for a 50-nautical mile wide zone along a route and for selected terminal areas. TWEBs are broadcast over selected NDB and VOR facilities and generally contain a weather synopsis, in-flight advisories, route and/or local vicinity forecasts. Winds Aloft Forecasts, current weather reports, NOTAMs, and special notices. TWEB outlets are listed below by state:

ACE	277 kHz	PEE	305 kHz	LQ	382 kHz
AIX	323 kHz	RWO	394 kHz	TUK	194 kHz
AMF	403 kHz	SHH	265 kHz	**Michigan**	
ANC	114.3 MHz	SIT	344 kHz	DL	379 kHz
ANI	359 kHz	SMA	230 kHz	FCM	111.8 MHz
AQH	114.7 MHz	SQM	529 kHz	IN	353 kHz
BCC	212 kHz	SSR	114.0 MHz	MS	266 kHz
BET	114.1 MHz	TAL	116.6 MHz	**Nevada**	
BGQ	112.5 MHz	TKA	116.2 MHz	BAM	112.2 MHz
BIG	114.9 MHz	UMM	326 kHz	ELY	110.6 MHz
BKA	116.0 MHz	YAK	113.3 MHz	HZN	114.1 MHz
BTT	116.0 MHz	**Arizona**		ILC	116.3 MHz
CMQ	338 kHz	ENZ	394 kHz	LWL	114.2 MHz
CUN	257 kHz	RYN	338 kHz	SDO	114.3 MHz
DJN	347 kHz	**California**		TPH	117.2 MHz
EAV	391 kHz	ACV	110.2 MHz	New	Mexico
ENM	117.8 MHz	CEC	109.0 MHz	ILT	247 kHz
ENQ	117.6 MHz	FIM	112.5 MHz	RO	305 kHz
FAI	108.2 MHz	FJS	109.6 MHz	**Ohio**	
FDV	529 kHz	FOT	114.0 MHz	CL	344 kHz
FTO	242 kHz	GLJ	111.0 MHz	**Oregon**	
FYU	114.4 MHz	MOG	382 kHz	AST	114.0 MHz
GAM	369 kHz	PBT	338 kHz	CVO	115.4 MHz
GKN	115.6 MHz	POM	110.4 kHz	EUG	112.9 MHz
HHM	356 kHz	SXC	111.4 MHz	PDT	114.7 MHz

HNS	245 kHz	VNY	113.1 MHz	UBG	117.4 MHz
HOM	114.6 MHz	**Idaho**		**Texas**	
HPB	115.2 MHz	MQG	108.2 MHz	EL	242 kHz
IIK	115.9 MHz	**Illinois**		FT	365 kHz
IWW	379 kHz	DPA	108.4 MHz	GLS	206 kHz
LVD	116.5 MHz	ME	350 kHz	**Washington**	
MND	332 kHz	**Iowa**		ALW	111.8 MHz
OCC	305 kHz	DV	353 kHz	PSC	108.4 MHz
ODK	117.1 MHz	**Louisiana**		PUW	109.0 MHz
OME	115.0 MHz	GNI	236 kHz	**Wisconsin**	
OSE	251 kHz	**Maine**		GM	242 kHz
OTZ	115.7 MHz	LNT	344 kHz		

VOR facilities (108.00 - 117.95 MHZ) have line-of-sight range.

NDB (L/MF) facilities (190 - 535 kHz) have varying ranges.

PILOT'S AUTOMATIC TELEPHONE WEATHER ANSWERING SERVICE (PATWAS), and the **TELEPHONE INFORMATION BRIEFING SERVICE (TIBS)**, provide continuous recordings of weather and aeronautical information. The information may include area and/or route briefings, airspace procedures, and special announcements. Telephone numbers for PATWAS and TIBS locations are found in the Airport/Facility Directory.

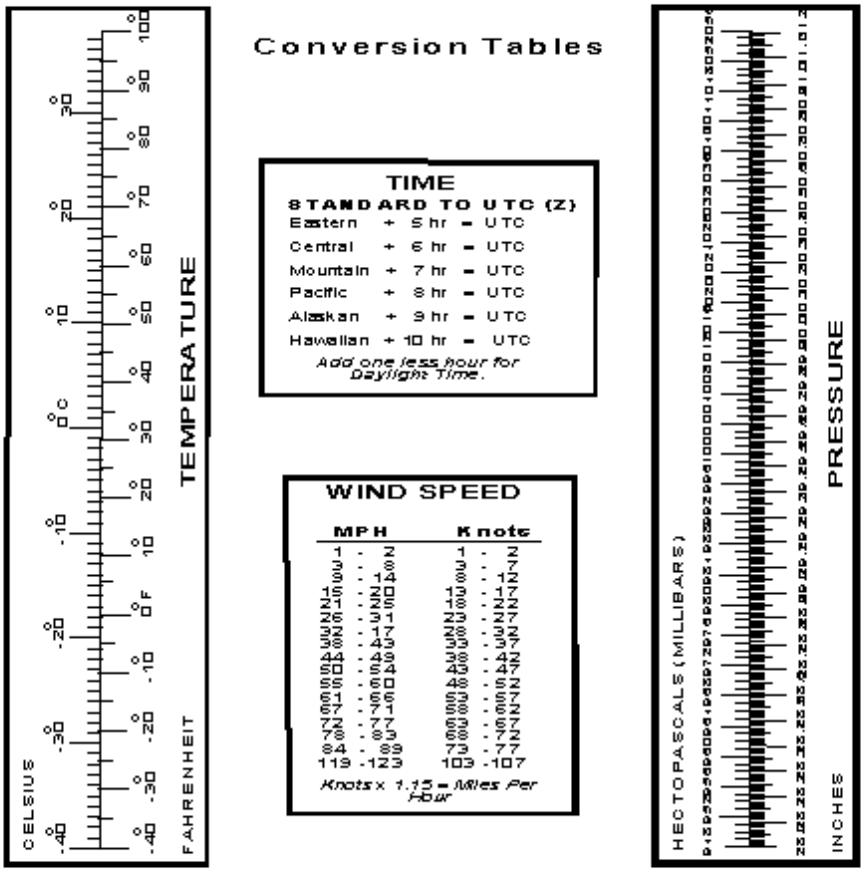
TWEBs, PATWAS, and TIBS are for preflight or inflight planning and should not be considered a substitute for formal preflight briefings.

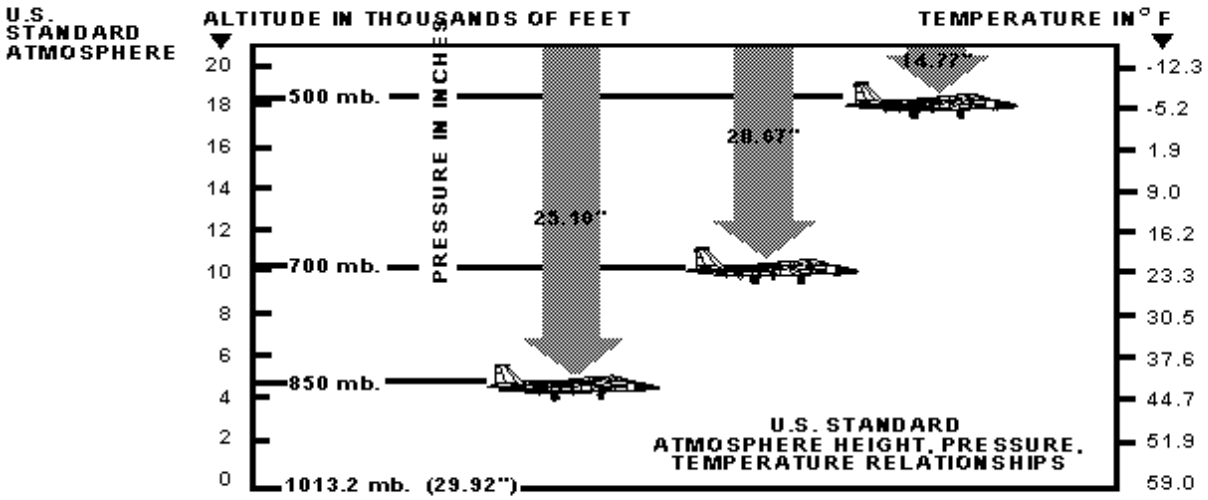
Contractions

Used in National Weather Service Aviation Products

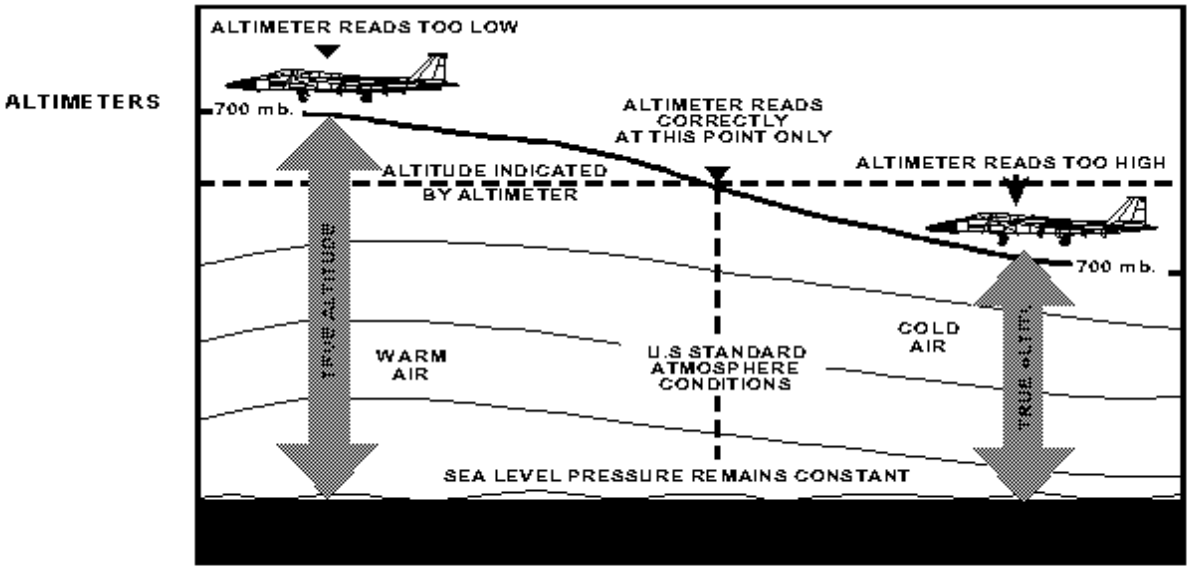
ALF	aloft	NM	nautical mile(s)
AMS	air mass	NMRS	numerous
ACFT	aircraft	MRTM	maritime
ACTV	active	MSL	mean sea level
AGL	above ground level	MXD	mixed
ARND	around	NOTAM	notice to airmen
ASL	above sea level	OBSC	obscure
BKN	broken	OCLN	occlusion
BLZD	blizzard	OCNL	occasional, occasionally
BRF	brief	OCR	occur
BTWN	between	OTLK	outlook
BTR	better	OTRW	otherwise
BYD	beyond	OVC	overcast
CAT	clear air turbulence	PCPN	precipitation
CAVOK	ceiling and visibility OK	PIREP	pilot report
CHG	change	PRST	persist
CIG	ceiling	PBL	probable

CONT	continue	PSBL	possible
CSDRBL	considerable	PSG	passing/passage
CVR	cover	PTLY	partly
DCR	decrease	PVL	prevail
DMSH	diminish	RA	rain
DNS	dense	RAREP	radar weather report
DRZL	drizzle	RESTR	restrict
DSIPT	dissipate	RDG	ridge
DVLP	develop	RGD	ragged
EMBDD	embedded	RMN	remain
EXTRM	extreme	RPD	rapid
EXTSV	extensive	RTE	route
FCST	forecast	RUF	rough
FLRY	flurry	SCT	scattered
FQT	frequent	SCTR	sector
FROPA	frontal passage	SHFT	shift
FROSFC	frontal surface	SHWR	shower
GNDFG	ground fog	SKC	sky clear
GRDL	gradual	SLGT	slight
HGT	height	SMK	smoke
HLSTO	hailstones	SNW	snow
HND	hundred	SQLN	squall line
HURCN	hurricane	STBL	stable
HVY	heavy	STG	strong
ICGIC	icing in clouds	SVR	severe
ICGIP	icing in preparation	THN	thin
IMDT	immediate	TSHWR	thundershower
INCR	increase	TSTM	thunderstorm
INDEF	indefinite	TURBC	turbulence
INTSFY	intensify	TWD	toward
ISOLD	isolated	UPSLP	up slope
JTSTR	jet stream	VRBL	variable
KT	knot(s)	VSBY	visibility
LGT	light	WDLY	widely
LMT	limit	WEA	weather
LVL	level	WK	weak
LWR	lower	WV	wave
LYR	layer	WX	weather





In this diagram of the U.S. Standard Atmosphere, note the uniform change of temperature with height as shown on the right margin. At 18,000 feet, air pressure is approximately half the sea-level pressure.



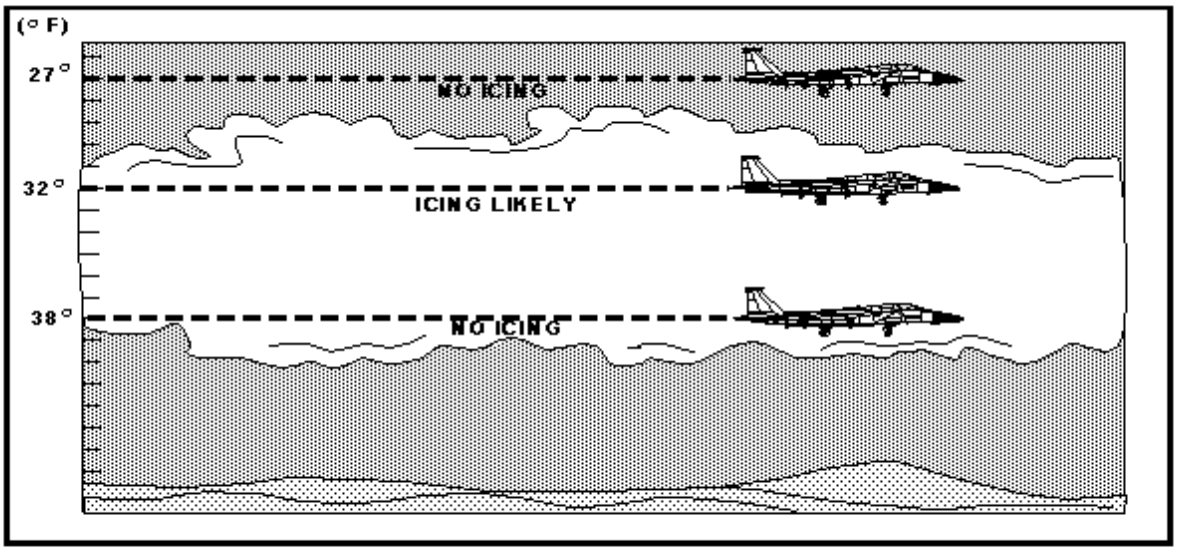
The uncorrected altimeter reads too high when the air is colder, and too low when the air is warmer than the U.S. Standard Atmosphere.

Icing/Turbulence Reports

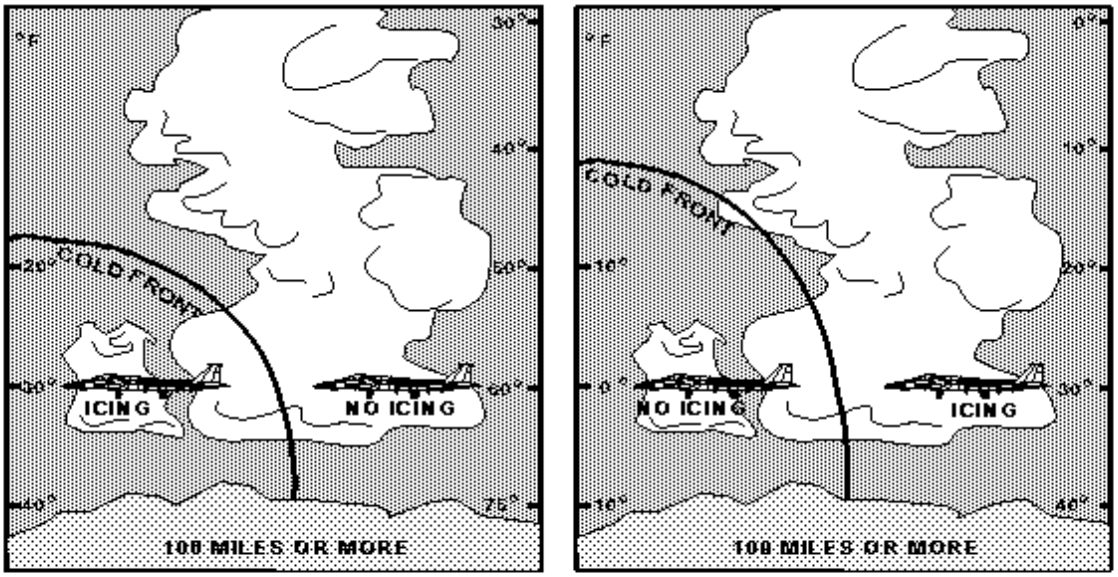
REPORTS INCLUDE:	Aircraft Identification
	Location
	Coordinated Universal Time (UTC) or Z
	Intensity and Type of Icing or Turbulence
	Altitude/Flight Level
	Aircraft Type
	Indicated Air Speed
	Duration of Icing or Turbulence
REPORTING DURATION:	Occasional - Less than 1/3 of the time.
	Intermittent - 1/3 to 2/3.
	Continuous - More than 2/3.

Reporting Airframe Icing

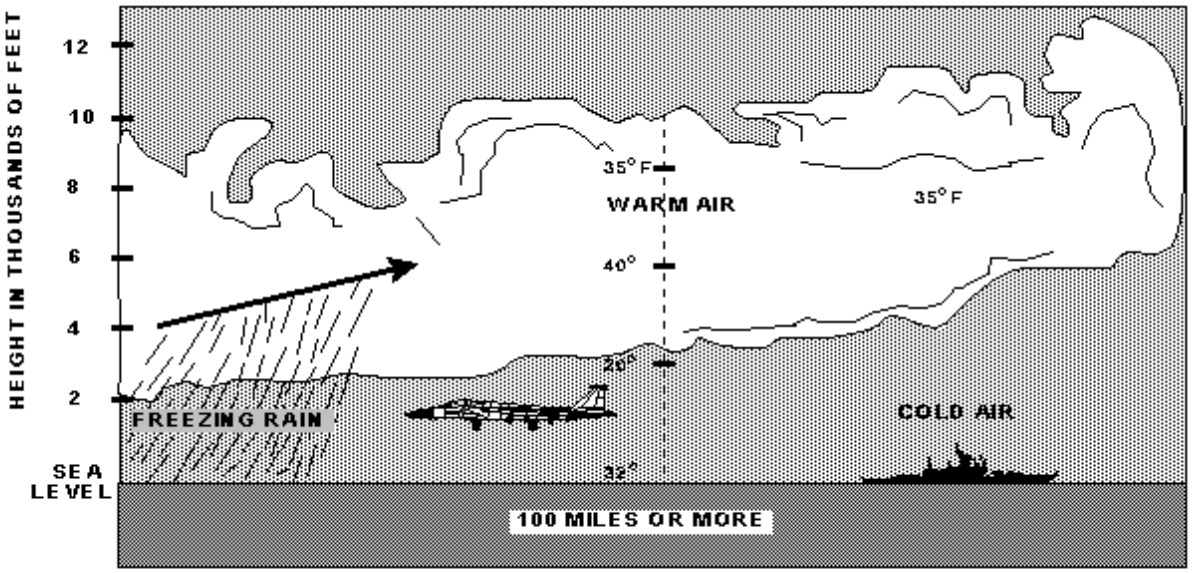
INTENSITY	ICE ACCUMULATION
Trace	Ice becomes perceptible. Rate of accumulation slightly greater than rate of sublimation. It is not hazardous even though deicing/anti-icing equipment is not utilized, unless encountered for an extended period of time (over 1 hour).
Light	The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.
Moderate	The rate of accumulation is such that even sort encounters become potentially hazardous and use of deicing/anti-icing or diversion is necessary.
Severe	The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.



Ice forms when temperature is below freezing and there is visible moisture.



Probable icing conditions in these two examples of cold fronts are dissimilar because of different air mass temperatures.



Example of freezing rain under a warm front.

ICING TYPES:

Rime Ice: Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.
Clear Ice: A glossy, clear, or translucent ice formed by the relatively slow freezing of large supercooled water droplets.

EXAMPLE OF ICING REPORT:

From 50 miles south of Albuquerque to 30 miles north of Phoenix, 1210Z to 1250Z, occasional Moderate Rime Ice, 10,000 feet, PA34.

INTENSITY	AIRCRAFT REACTION	REACTION IN AIRCRAFT
Light	Turbulence that momentarily causes slight erratic changes in altitude and/or attitude (pitch, roll, yaw). Report as Light Turbulence.* **OR** Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. Report as Light Chop.	Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service many be conducted and little or no difficulty is encountered when walking.
Moderate	Turbulence that is similar to Light Turbulence but of greater intensity. Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed. Report as Moderate Turbulence.* **OR** Turbulence that is similar to Light Chop but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude. Report as Moderate Chop.	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.
Severe	Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control. Report as Severe Turbulence.*	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food service and walking are impossible.
Extreme	Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage. Report as Extreme Turbulence.*	

**High level turbulence (normally above 15,000 feet MSL) not associated with cumuliform cloudiness, including thunderstorms, should be reported as CAT (Clear Air Turbulence) preceded by the appropriate intensity, or light or moderate chop.*

NOTE: Pilots should report location(s), time (UTC or Z), intensity, whether in or near clouds, altitude, type of aircraft and when applicable,

duration of turbulence. Duration may be based on time between two locations or over a single location. All locations should be readily identifiable.

EXAMPLE OF TURBULENCE REPORT:

Over Omaha, 1232Z, Moderate Turbulence, in cloud, Flight Level 310, B767.

KEY TO MANUAL AVIATION WEATHER OBSERVATIONS

LOCATION IDENTIFIER, TYPE AND TIME OF REPORT	SKY CONDITION AND CEILING	VISIBILITY, WEATHER, AND OBSTRUCTIONS TO VISION	SEA-LEVEL PRESSURE	TEMPERATURE AND DEW POINT	WIND DIRECTION, SPEED AND CHARACTER	ALTIMETER SETTING	REMARKS AND CODED DATA
MCI SA 0758	**15 SCT M15 OVC**	**1R-F**	**132**	**/58/56**	**/1807**	**/993/**	**R01VR20V40**

LOCATION IDENTIFIER:
3 or 4 alphanumeric characters (airport identifier).
TYPE OF REPORT:
SA = Scheduled record (hourly) observation.
SP = Special observation indicating a significant change in one or more of the observed elements.
RS = SA that also qualifies as an SP.
USP = Urgent special observation (tornado).
TIME OF REPORT:
Coordinated Universal Time (UTC or Z) using 24-hour clock. Example: 2255 = 10:55 PM.
SKY CONDITION AND CEILING:
Sky condition contractions are for each layer in ascending order. Numbers preceding contractions are base height in hundreds of feet above ground level (AGL). Sky condition contractions are: (-- = Thin).
CLR = Clear: Less than 0.1 sky cover.
SCT = Scattered: 0.1 to 0.5 sky cover.
BKN= Broken: 0.6 to 0.9 sky cover.
OVC = Overcast: More than 0.9 sky cover.
__ X = Partially obscured. 0.9 or less of sky hidden by precipitation or obstruction to vision (cloud bases at the surface).
X = Obscured: entire sky hidden.
A letter preceding height of a layer identifies a ceiling and indicates how ceiling was obtained.
E = Estimated. M = Measured.
W = Vertical visibility into obscured sky.
V following height = variable ceiling.

VISIBILITY:
Reported in statute miles and fractions.
V = Variable.
WEATHER & OBSTRUCTIONS TO VISION:
A Hail **GF** Ground fog
D Dust **ZR** Freezing rain
R Rain **BD** Blowing dust
F Fog **SP** Snow pellets
S Snow **BN** Blowing sand
H Haze **SW** Snow showers
K Smoke **BS** Blowing snow
IF Ice Fog **T** Thunderstorm
L Drizzle **T+** Severe thunderstorm
IP Ice Pellets **RW** Rain showers
IC Ice Crystals **IPW** Ice pellet showers
SG Snow grains **ZL** Freezing drizzle
__ = Light. (no sign) = Moderate. + = Heavy.
SEA-LEVEL PRESSURE:
Pressure in hectopascals millibars): Shown as 3 digits. Leading or 10 and decimal point is omitted. Examples: 150 = 1015.0 950 = 995.0
TEMPERATURE AND DEW POINT:
Reported in Degrees Fahrenheit (F).
WIND DIRECTION SPEED & CHARACTER:
Direction in tens of degrees from true north, speed in knots. 0000 = calm. G = gusty. Q = squall. Peak speed of gusts in the past ten minutes follows G or **Q.** WSHFT in Remarks = windshift occurred at time indicated. Example: 3627G40 = 360 at 27 peak gusts 40 knots.

ALTIMETER SETTING:
Actual altimeter setting with first digit omitted.
Examples: 005 = 30.05" 992 = 29.92"
RUNWAY VISUAL RANGE (RVR):
RVR is reported for some stations. Values) during 10 minutes prior to observation are given in hundreds of feet. Runway number precedes RVR report. V = Variable.
DECODED REPORT:
Kansas City Int'l Airport: Record observation completed at 0758Z. 1500 feet scattered clouds, measured ceiling 2500 feet overcast, visibility 1 mile, light rain, fog, sea level pressure 1013.2 hectopascals, temperature 58F, dewpoint 56F, wind 180, 7 knots, altimeter setting 29.93". Runway 01 visual range varying from 2000 to 4000 feet in the past 10 minutes.
PILOT REPORTS (PIREPS):
A PIREP describes actual in-flight conditions. Pilots are encouraged to provide PIREPS to an FAA facility.
Example: UA/OV FRR 275045/TM 1745 /FL330 /TP B727 /SK 185 BKN 220 280 BKN 310 /TA-53 /WV 290120 /TB LGT-MDT CAT ABAV 310. **Decoded:** Pilot report, Front Royal VORTAC, 275 radial 45nm, at 1745Z, flight level 330; Boeing 727; cloud base 18500 broken, tops 22000, second layer 28000 broken, tops 31000; air temperature minus 53 degrees Celsius; wind 290 degrees 120 knots; light to moderate clear air turbulence above 31000.

KEY TO ASOS (AUTOMATED SURFACE OBSERVING SYSTEM) WEATHER OBSERVATIONS

LOCATION IDENTIFIER, TYPE OF REPORT TIME OF REPORT STATION TYPE	SKY CONDITION AND CEILING BELOW 12,000'	VISIBILITY, WEATHER, AND OBSTRUCTIONS TO VISION	SEA-LEVEL PRESSURE/ TEMPERATURE/DEW POINT/WIND DIRECTION, SPEED AND CHARACTER/ ALTIMETER SETTING/	**REMARKS** **AUTOMATED** REMARKS GENERATED AUTOMATICALLY IF CONDITIONS EXIST. **AUGMENTED** REMARKS ADDED IF CONDITIONS EXIST AND CERTIFIED WEATHER OBSERVER IS ATTENDING THE SYSTEM	**STATUS REMARKS** SYSTEM GENERATED
HTM RS 1755 A02A	**M19V OVC**	**1R--F**	**125/36/34/2116G24/990**	**R29LVR10V50 CIG 16V22 TWR VSBY 2 PK WI\ND 2032/1732 PRESFR**	**ZRNO $**

LOCATION IDENTIFIER:
3 or 4 alphanumeric characters (usually airport identifier).
TYPE OF REPORT:
SA = Scheduled record (hourly) observation.
SP = Special observation indicating a significant change in one or more of the observed elements.
RS = SA that also qualifies as an SP.
USP = Urgent special observation to report tornado.
TIME OF REPORT:
Coordinated Universal Time (UTC or Z) using 24-hr. clock.
STATION TYPE:
AO2 = Unattended (no observer) ASOS.
AO2A = Attended (observer present) ASOS.
SKY CONDITION AND CEILING BELOW 12,000' AGL:
Sky condition contractions are for each layer in ascending order. Numbers preceding contractions are base height in hundreds of feet above ground level (AGL).
CLR BLO 120 = Less than 0.1 sky cover below 12,000'.
SCT = Scattered: 0.1 to 0.5 sky cover.
BKN = Broken: 0.6 to 0.9 sky cover.
OVC = Overcast: More than 0.9 sky cover.
A letter preceding the height of a base identifies a ceiling layer and indicates how ceiling height was determined.
M = Measured **W** = Indefinite
E = Estimated **X** = Obscured sky
The letter **V** is added immediately following the height of a base to indicate a variable ceiling: see Remarks.
VISIBILITY:
Reported in statute miles and fractions from **1/4** through **10+. V** = variable; see Remarks.

PRESENT WEATHER:

TORNADO (when augmented).

T = Thunder (when augmented): see Status Remarks.
R = Liquid precipitation that does not freeze (e.g. rain).
P -- = Light precipitation in unknown form.
ZR = Liquid precipitation that freezes on impact (e.g., freezing rain): see Status Remarks.
A = Hail (when augmented).
S = Frozen precipitation other than hail (e.g., snow).
+ = Heavy. No sign = Moderate. -- = Light.
OBSTRUCTIONS TO VISION:
Reported only when visibility is less than 7 statute miles.
F = Fog **H** = Haze
VOLCANIC ASH (when augmented).
SEA-LEVEL PRESSURE:
Tenths of Hectopascals (millibars). Shown as last 3 digits only without decimal point (e.g., 950 - 995.0).
TEMPERATURE AND DEW POINT:
Degrees Fahrenheit.
WIND DIRECTION SPEED AND CHARACTER:
Direction in tens of degrees from true north. Voice broadcast in degrees from magnetic. Speed in knots. **0000** = calm. **E** = estimated. **G** = gusts **Q** = squalls. Variable wind, peak wind, wind shift: see Remarks.
ALTIMETER SETTING:
Hundredths of inches of mercury. Shown as last 3 digits only without decimal point (e.g., 005 = 30.05 inches).
MISSING DATA: Reported as M.
DENSITY ALTITUDE: Included on voice broadcast only when 1000 more feet above airport elevation.

REMARKS: Can Include:
RVR (Runway Visual Range), **VOLCANIC ASH, VIRGA, TWR VSBY** (Tower visibility), **SFC VSBY** (surface visibility), **VSBY V** (Variable visibility), **CIG V** (Variable ceiling), **WSHF**T (Windshift), **PK WND** (Peak wind), *WND V* (Variable wind direction), **PCPN** (Precipitation amount), **PRESRR** (Pressure rising rapidly), **PRESFR** (Pressure falling rapidly), **PRJMP** (Pressure jump), **B** (Time weather began), **E** (Time weather ended).
STATUS REMARKS:
PWINO = Present weather information not available.
ZRNO = Freezing rain information not available.
TNO - Thunderstorm information not available.
$ = Maintenance check indicator.
DECODED REPORT: Hometown Municipal Airport, record special observation at 1755 UTC. ASOS with observer. Measured ceiling 1900 feet variable, overcast. Visibility 1 mile, light rain, fog. Sea-level pressure 1012.5 hectopascals, temperature 36°F, dew point 34°F, wind from 210° true at 16 knots gusting to 24 knots, altimeter 29.90 inches. Runway 29L visual range 1000 variable to 5000 feet. Ceiling 1600 variable to 2200 feet, tower visibility 2 miles, peak wind 200° true at 32 knots at 1732 UTC< pressure falling rapidly. Freezing rain information not available, maintenance check indicator.
NOTE: Refer to *ASOS Guide for Pilots* and the *Airman's Information Manual* for more information. Refer to the *Airport/Facility Directory*, aeronautical charts, and related publications for broadcast, telephone and location data. Check *Notices to Airmen* for ASOS system status.

KEY TO AWOS (AUTOMATED WEATHER OBSERVING SYSTEM) OBSERVATIONS

LOCATION IDENTIFIER TYPE OF REPORT TIME OF REPORT STATION TYPE	SKY CONDITION AND CEILING BELOW 12,000'	VISIBILITY	TEMPERATURE/DEW POINT/ WIND DIRECTION, SPEED AND CHARACTER/ ALTIMETER SETTING	**REMARKS: AUTOMATED** REMARKS GENERATED AUTOMATICALLY IF CONDITIONS EXIST, **AUGMENTED** REMARKS ADDED **IF** CONDITIONS EXIST **AND** CERTIFIED WEATHER OBSERVER IS ATTENDING THE SYSTEM
HTM SA 1755 AWOS	**M20 OVC**	**1V**	**36/34/2015G25/990/**	**P010/VSBY 1/2V2 WND 17V23/WEA: R--F**

LOCATION IDENTIFIER: 3 or 4 alphanumeric characters (usually the airport identifier).
TYPE OF REPORT: SA = Scheduled record (routine) observation. All observations identified as SA. Most are transmitted at 20-minute intervals (approximately 15, 35 and 55 minutes past each hour).
TIME OF REPORT: Coordinated Universal Time (UTC or Z) using 24-hour clock.
STATION TYPE: AWOS = Automated Weather Observing System site. Note: In the future, some systems will use "AO" designators.
SKY CONDITION AND CEILING: Sky condition contractions are for each layer in ascending order. Numbers preceding contractions are base heights in hundreds of fee above ground level (AGL).
CLR BLO 120 = No clouds below 12,000 ft.
SCT = Scattered: 0.1 to 0.5 sky cover.
BKN = Broken: 0.6 to 0.9 sky cover.
OVC = Overcast: More than 0.9 sky cover.
X = Obscured sky **--X** = Partially obscured
A letter preceding the height of a base identifies a ceiling layer and indicates how ceiling height was determined.
M = Measured **W** = Indefinite

VISIBILITY: Reported in statute miles and fractions. Visibility greater than 10 not reported. V = variable: see Automated Remarks
TEMPERATURE AND DEW POINT: Reported in degrees Fahrenheit.
WIND DIRECTION, SPEED & CHARACTER: Direction in tens of degrees from true north, except voice broadcast is in degrees magnetic. Speed in knots. **0000** = calm. **G** = gusts. See Automated Remarks for variable direction.
ALTIMETER SETTING: Hundredths of inches of mercury. Shown as last 3 digits only without decimal point (e.g., 30.05 inches = 005).
PRESENT WEATHER/OBSTRUCTIONS TO VISION: Reported only when observer is available. See Augmented Remarks. In the future, some systems will report precipitation, fog, and haze in the body of the observation.
AUTOMATED REMARKS: Precipitation accumulation reported in hundredth of inches (e.g., P110 - 1.10 inches; P010 - 0.10 inch). **WND V** = variable wind direction. **VSBY V** = variable visibility. **DENSITY ALTITUDE** is included in the voice broadcast when more than 1000 feet above airport elevation.
MISSING DATA: Reported as "M."

AUGMENTED REMARKS: "WEA: "Indicates manual observer data. Remarks include operationally significant weather conditions within a five mile radius of the airport (e.g., thunderstorms, precipitation, obstructions to vision when visibility is 3 miles or less, fog banks). Standard weather observation contractions are used.
DECODED REPORT: Hometown Municipal Airport, observation at 1755 UTC, AWOS report. Measured ceiling 2000 feet overcast. Visibility 1 mile variable. Temperature 36 degrees (F), dew point 34 degrees (F), wind from 200 degrees true at 15 knots gusting to 25 knots, altimeter setting 29.90 inches. Precipitation accumulation during past hour 0.10 inch. Visibility a\variable between ½ and 2 miles. Wind direction variable from 170 degrees to 230 degrees true. Observer reports light rain (R--) and fog (F).
NOTE: Refer to the *Airman's Information Manual* for more information. Refer to the *Airport/Facility Directory*, aeronautical charts, and related publications for broadcast, telephone and location data. Check for AWOS system status.

OBTAIN A PREFLIGHT WEATHER BRIEFING

FLIGHT PLAN

REMEMBER TO CLOSE YOUR VFR FLIGHT PLAN

1. TYPE	2. AIRCRAFT IDENTIFICATION	3. AIRCRAFT TYPE/ SPECIAL EQUIPMENT	4. TRUE AIRSPEED	5. DEPARTURE POINT	6. DEPARTURE TIME		7. CRUISING ALTITUDE
					PROPOSED (Z)	ACTUAL (Z)	
VFR							
IFR							
DVFR							

8. ROUTE OF FLIGHT

9. DESTINATION (Name of airport and city)	10. ESTIMATED TIME ENROUTE		11. REMARKS
	HOURS	MINUTES	

12. FUEL ON BOARD		13. ALTERNATE AIRPORT(S)	14. PILOT'S NAME, ADDRESS, PHONE NUMBER, AIRCRAFT HOME BASE	15. NUMBER ABOARD
HOURS	MINUTES			

16. COLOR OF AIRCRAFT

17. DESTINATION CONTACT/TELEPHONE (OPTIONAL)

SPECIAL EQUIPMENT SUFFIXES

/X - No Transponder
/T - Transponder no Altitude Encoding
/U - Transponder Altitude Encoding
/D - DME, No Transponder
/B - DME, Transponder no Altitude Encoding
/A - DME, Transponder Altitude Encoding
/C - RNAV, Transponder no Altitude Encoding
/R - RNAV, Transponder Altitude Encoding
/W - RNAV, no Transponder
/M - TACAN, no Transponder
/N - TACAN, Transponder no Altitude Encoding
/P - TAVAN, Transponder Altitude Encoding