

ERRATA SHEET

SUBJECT: Aeronautical Information Manual (AIM)

This errata sheet transmits a revised Page Control Chart and pages for AIM, Change 1, effective August 26, 2010.

REMOVE PAGES	DATED	INSERT PAGES	DATED
Page Control Chart 1 and 2	8/26/10	Page Control Chart 1 and 2	8/26/10
5-1-1 and 5-1-2	8/26/10	5-1-1 and 5-1-2	8/26/10
5-1-21 and 5-1-22	8/26/10	5-1-21 and 5-1-22	8/26/10
5-5-7	8/26/10	5-5-7	8/26/10
7-1-15 through 7-1-18	8/26/10	7-1-15 through 7-1-18	8/26/10
7-5-13 and 7-5-14	8/26/10	7-5-13 and 7-5-14	8/26/10

Attachment

AIM Change 1

Page Control Chart

August 26, 2010

REMOVE PAGES	DATED	INSERT PAGES	DATED
Checklist of Pages CK-1 through CK-6	2/11/10	Checklist of Pages CK-1 through CK-6 . . .	8/26/10
i through xi	2/11/10	i through xi	8/26/10
1-1-25	2/11/10	1-1-25	2/11/10
1-1-26 through 1-1-42	2/11/10	1-1-26 through 1-1-42	8/26/10
1-2-5 and 1-2-6	2/11/10	1-2-5 and 1-2-6	8/26/10
2-1-1	2/11/10	2-1-1	2/11/10
2-1-2 through 2-1-12	2/11/10	2-1-2 through 2-1-12	8/26/10
2-3-15	2/11/10	2-3-15	8/26/10
2-3-16	2/11/10	2-3-16	2/11/10
4-3-15 and 4-3-16	2/11/10	4-3-15 and 4-3-16	8/26/10
4-3-23	2/11/10	4-3-23	2/11/10
4-3-24	2/11/10	4-3-24	8/26/10
4-4-3	2/11/10	4-4-3	2/11/10
4-4-4	2/11/10	4-4-4	8/26/10
5-1-1 through 5-1-8	2/11/10	5-1-1 through 5-1-8	8/26/10
5-1-9	2/11/10	5-1-9	2/11/10
5-1-10 through 5-1-12	2/11/10	5-1-10 through 5-1-12	8/26/10
5-1-17 through 5-1-21	2/11/10	5-1-17 through 5-1-29	8/26/10
5-2-9	2/11/10	5-2-9	8/26/10
5-4-3	2/11/10	5-4-3	2/11/10
5-4-4 through 5-4-55	2/11/10	5-4-4 through 5-4-57	8/26/10
5-5-7	2/11/10	5-5-7	8/26/10
7-1-1	2/11/10	7-1-1	8/26/10
7-1-2	2/11/10	7-1-2	2/11/10
7-1-9	2/11/10	7-1-9	8/26/10
7-1-10	2/11/10	7-1-10	2/11/10
7-1-13	2/11/10	7-1-13	8/26/10
7-1-14	2/11/10	7-1-14	2/11/10
7-1-15 through 7-1-70	2/11/10	7-1-15 through 7-1-72	8/26/10
7-5-9	2/11/10	7-5-9	2/11/10
7-5-10	2/11/10	7-5-10	8/26/10
7-5-13	2/11/10	7-5-13 and 7-5-14	8/26/10
10-1-5 and 10-1-6	2/11/10	10-1-5 through 10-1-7	8/26/10
Appendix 3-1	2/11/10	Appendix 3-1	8/26/10
PCG-1	2/11/10	PCG-1	8/26/10
PCG A-15	2/11/10	PCG A-15	2/11/10
PCG A-16	2/11/10	PCG A-16	8/26/10
PCG B-1	2/11/10	PCG B-1	8/26/10
PCG L-1	2/11/10	PCG L-1	2/11/10
PCG L-2	2/11/10	PCG L-2	8/26/10

REMOVE PAGES	DATED	INSERT PAGES	DATED
PCG O-1	2/11/10	PCG O-1	2/11/10
PCG O-2	2/11/10	PCG O-2	8/26/10
PCG P-3 through P-5	2/11/10	PCG P-3 through P-5	8/26/10
PCG R-3	2/11/10	PCG R-3	2/11/10
PCG R-4	2/11/10	PCG R-4	8/26/10
PCG S-1 through S-8	2/11/10	PCG S-1 through S-8	8/26/10
PCG T-3	2/11/10	PCG T-3	2/11/10
PCG T-4	2/11/10	PCG T-4	8/26/10
Index I-1 through I-13	2/11/10	Index I-1 through I-13	8/26/10

Chapter 5. Air Traffic Procedures

Section 1. Preflight

5-1-1. Preflight Preparation

a. Every pilot is urged to receive a preflight briefing and to file a flight plan. This briefing should consist of the latest or most current weather, airport, and en route NAVAID information. Briefing service may be obtained from an FSS either by telephone or interphone, by radio when airborne, or by a personal visit to the station. Pilots with a current medical certificate in the 48 contiguous States may access toll-free the Direct User Access Terminal System (DUATS) through a personal computer. DUATS will provide alpha-numeric preflight weather data and allow pilots to file domestic VFR or IFR flight plans.

REFERENCE-

AIM, FAA Weather Services, Paragraph 7-1-2 lists DUATS vendors.

NOTE-

Pilots filing flight plans via “fast file” who desire to have their briefing recorded, should include a statement at the end of the recording as to the source of their weather briefing.

b. The information required by the FAA to process flight plans is contained on FAA Form 7233-1, Flight Plan, or FAA Form 7233-4, International Flight Plan. The forms are available at all flight service stations. Additional copies will be provided on request.

REFERENCE-

AIM, Flight Plan- VFR Flights, Paragraph 5-1-4

AIM, Flight Plan- IFR Flights, Paragraph 5-1-8

AIM, International Flight Plan- IFR Flights, Paragraph 5-1-9

c. Consult an FSS or a Weather Service Office (WSO) for preflight weather briefing. Supplemental Weather Service Locations (SWSLs) do not provide weather briefings.

d. FSSs are required to advise of pertinent NOTAMs if a *standard* briefing is requested, but if they are overlooked, don’t hesitate to remind the specialist that you have not received NOTAM information.

NOTE-

NOTAMs which are known in sufficient time for publication and are of 7 days duration or longer are normally incorporated into the Notices to Airmen Publication and carried there until cancellation time. FDC NOTAMs, which apply to instrument flight procedures, are

also included in the Notices to Airmen Publication up to and including the number indicated in the FDC NOTAM legend. Printed NOTAMs are not provided during a briefing unless specifically requested by the pilot since the FSS specialist has no way of knowing whether the pilot has already checked the Notices to Airmen Publication prior to calling. Remember to ask for NOTAMs in the Notices to Airmen Publication. This information is not normally furnished during your briefing.

REFERENCE-

AIM, Notice to Airmen (NOTAM) System, Paragraph 5-1-3

e. Pilots are urged to use only the latest issue of aeronautical charts in planning and conducting flight operations. Aeronautical charts are revised and reissued on a regular scheduled basis to ensure that depicted data are current and reliable. In the conterminous U.S., Sectional Charts are updated every 6 months, IFR En Route Charts every 56 days, and amendments to civil IFR Approach Charts are accomplished on a 56-day cycle with a change notice volume issued on the 28-day midcycle. Charts that have been superseded by those of a more recent date may contain obsolete or incomplete flight information.

REFERENCE-

AIM, General Description of Each Chart Series, Paragraph 9-1-4

f. When requesting a preflight briefing, identify yourself as a pilot and provide the following:

1. **Type of flight planned; e.g., VFR or IFR.**
2. **Aircraft’s number or pilot’s name.**
3. **Aircraft type.**
4. **Departure Airport.**
5. **Route of flight.**
6. **Destination.**
7. **Flight altitude(s).**
8. **ETD and ETE.**

g. Prior to conducting a briefing, briefers are required to have the background information listed above so that they may tailor the briefing to the needs of the proposed flight. The objective is to communicate a “picture” of meteorological and aeronautical information necessary for the conduct of

a safe and efficient flight. Briefers use all available weather and aeronautical information to summarize data applicable to the proposed flight. They do not read weather reports and forecasts verbatim unless specifically requested by the pilot. FSS briefers do not provide FDC NOTAM information for special instrument approach procedures unless specifically asked. Pilots authorized by the FAA to use special instrument approach procedures must specifically request FDC NOTAM information for these procedures. Pilots who receive the information electronically will receive NOTAMs for special IAPs automatically.

REFERENCE—

AIM, Preflight Briefings, Paragraph 7-1-4 contains those items of a weather briefing that should be expected or requested.

h. FAA by 14 CFR Part 93, Subpart K, has designated High Density Traffic Airports (HDTAs) and has prescribed air traffic rules and requirements for operating aircraft (excluding helicopter operations) to and from these airports.

REFERENCE—

*Airport/Facility Directory, Special Notices Section.
AIM, Airport Reservation Operations and Special Traffic Management Programs, Paragraph 4-1-22*

i. In addition to the filing of a flight plan, if the flight will traverse or land in one or more foreign countries, it is particularly important that pilots leave a complete itinerary with someone directly concerned and keep that person advised of the flight's progress. If serious doubt arises as to the safety of the flight, that person should first contact the FSS.

REFERENCE—

AIM, Flights Outside the U.S. and U.S. Territories, Paragraph 5-1-11

j. Pilots operating under provisions of 14 CFR Part 135 on a domestic flight and not having an FAA assigned 3-letter designator, are urged to prefix the normal registration (N) number with the letter "T" on flight plan filing; e.g., TN1234B.

REFERENCE—

AIM, Aircraft Call Signs, Paragraph 4-2-4

5-1-2. Follow IFR Procedures Even When Operating VFR

a. To maintain IFR proficiency, pilots are urged to practice IFR procedures whenever possible, even when operating VFR. Some suggested practices include:

1. Obtain a complete preflight and weather briefing. Check the NOTAMs.

2. File a flight plan. This is an excellent low cost insurance policy. The cost is the time it takes to fill it out. The insurance includes the knowledge that someone will be looking for you if you become overdue at your destination.

3. Use current charts.

4. Use the navigation aids. Practice maintaining a good course—keep the needle centered.

5. Maintain a constant altitude which is appropriate for the direction of flight.

6. Estimate en route position times.

7. Make accurate and frequent position reports to the FSSs along your route of flight.

b. Simulated IFR flight is recommended (under the hood); however, pilots are cautioned to review and adhere to the requirements specified in 14 CFR Section 91.109 before and during such flight.

c. When flying VFR at night, in addition to the altitude appropriate for the direction of flight, pilots should maintain an altitude which is at or above the minimum en route altitude as shown on charts. This is especially true in mountainous terrain, where there is usually very little ground reference. Do not depend on your eyes alone to avoid rising unlighted terrain, or even lighted obstructions such as TV towers.

5-1-3. Notice to Airmen (NOTAM) System

a. Time-critical aeronautical information which is of either a temporary nature or not sufficiently known in advance to permit publication on aeronautical charts or in other operational publications receives immediate dissemination via the National NOTAM System.

NOTE—

1. NOTAM information is that aeronautical information that could affect a pilot's decision to make a flight. It includes such information as airport or aerodrome primary runway closures, taxiways, ramps, obstructions, communications, airspace, changes in the status of navigational aids, ILSs, radar service availability, and other information essential to planned en route, terminal, or landing operations.

2. NOTAM information is transmitted using standard contractions to reduce transmission time. See TBL 5-1-1 for a listing of the most commonly used contractions. For a complete listing, see FAA Order JO 7340.2, Contractions.

b. NOTAM information is classified into four categories. These are NOTAM (D) or distant, Flight

TBL 5-1-3
Aircraft COM, NAV, and Approach Equipment Qualifiers

INSERT one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

(OR)

S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

(AND/OR)

INSERT one or more of the following letters to indicate the COM/NAV/approach aid equipment available and serviceable:

A	(Not allocated)		
B	(Not allocated)	O	VOR
C	LORAN C	P	(Not allocated)
D	DME	Q	(Not allocated)
E	(Not allocated)	R	RNP type certification – <i>see Note 5</i>
F	ADF	T	TACAN
G	(GNSS)	U	UHF RTF
H	HF RTF	V	VHF RTF
I	Inertial navigation	W	RVSM Certified
J	(Data link) – <i>see Note 3</i>	X	When prescribed by ATS
K	(MLS)	Y	When prescribed by ATS
L	ILS	Z	Other equipment carried – <i>see Note 2</i>

NOTE–

1. Standard equipment is considered to be VHF RTF, ADF, VOR, and ILS within U.S. domestic airspace.
2. If the letter Z is used, specify in Item 18 the other equipment carried, preceded by COM/ and/or NAV/, as appropriate.
3. If the letter J is used, specify in Item 18 the equipment carried, preceded by DAT/ followed by one or more letters as appropriate.
4. Information on navigation capability is provided to ATC for clearance and routing purposes.
5. Inclusion of letter R indicates that an aircraft meets the RNP type prescribed for the route segment(s), route(s), and/or area concerned.

TBL 5-1-4
Aircraft Surveillance Equipment

	<i>INSERT</i> one or two of the following letters to describe the serviceable surveillance equipment carried:
N	Nil
A	Transponder — Mode A (4 digits — 4 096 codes)
C	Transponder — Mode A (4 digits — 4 096 codes) and Mode C
X	Transponder — Mode S without both aircraft identification and pressure–altitude transmission
P	Transponder — Mode S, including pressure–altitude transmission, but no aircraft identification transmission
I	Transponder — Mode S, including aircraft identification transmission, but no pressure–altitude transmission
S	Transponder — Mode S, including both pressure–altitude and aircraft identification transmission
	<i>ADS equipment</i>
D	ADS capability

EXAMPLE–

1. *OFLV/C {VOR, ADF, ILS, VHF, Transponder, Mode C}*
2. *S/C {VOR, ADF, ILS, VHF, Transponder, Mode C}*
3. *OLVDGWZ/S {VOR, ILS, VHF, DME, GPS, RVSM, Other, Mode S w/ altitude reporting}*

NOTE–

The equipment qualifier Z indicates that additional equipment or capability information can be found in Item 18, following the NAV/ indicator. Operators requesting assignment of RNAV SIDs and/or STARs are required to include a Z in Item 10 and associated RNAV capabilities in Item 18 following the NAV/ indicator.

5. Item 13. Departure Aerodrome/Time

(a) Insert the ICAO four–letter location indicator of the departure aerodrome, or

NOTE–

ICAO location indicators must consist of 4 letters. Airport identifiers such as 51A7, 39LL and Z40 are not in ICAO standard format.

(b) If no four–letter location indicator has been assigned to the departure aerodrome, insert ZZZZ and specify the non–ICAO location identifier, or fix/radial/distance from a nearby navaid, followed by the name of the aerodrome, in Item 18, following characters DEP/.

(c) Then, without a space, insert the estimated off–block time.

EXAMPLE–

1. *KSMF2215*
2. *ZZZZ0330*

6. Item 15. Cruise Speed, Level and Route

(a) Cruise Speed (maximum 5 characters). Insert the true airspeed for the first or the whole cruising portion of the flight, in terms of knots, expressed as N followed by 4 digits (e.g. N0485), or Mach number to the nearest hundredth of unit Mach, expressed as M followed by 3 digits (for example, M082).

(b) Cruising level (maximum 5 characters). Insert the planned cruising level for the first or the whole portion of the route to be flown, in terms of flight level, expressed as F followed by 3 figures (for example, F180; F330), or altitude in hundreds of feet, expressed as A followed by 3 figures (for example, A040; A170).

(c) Route. Insert the requested route of flight in accordance with guidance below.

NOTE–

Speed and/or altitude changes en route will be accepted by FAA computer systems, but will not be processed or forwarded to controllers. Pilots are expected to maintain the last assigned altitude and request revised altitude clearances directly from ATC.

(d) Insert the desired route of flight using a combination of published routes and/or fixes in the following formats:

5. If the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, you should declare an emergency due to low fuel and report fuel remaining in minutes.

REFERENCE–

Pilot/Controller Glossary Item– Fuel Remaining.

b. Controller.

1. When an aircraft declares a state of minimum fuel, relay this information to the facility to whom control jurisdiction is transferred.

2. Be alert for any occurrence which might delay the aircraft.

5–5–16. RNAV and RNP Operations

a. Pilot.

1. If unable to comply with the requirements of an RNAV or RNP procedure, pilots must advise air traffic control as soon as possible. For example, “N1234, failure of GPS system, unable RNAV, request amended clearance.”

2. Pilots are not authorized to fly a published RNAV or RNP procedure (instrument approach, departure, or arrival procedure) unless it is retrievable by the procedure name from the current aircraft navigation database and conforms to the charted procedure. The system must be able to retrieve the procedure by name from the aircraft navigation database, not just as a manually entered series of waypoints.

3. Whenever possible, RNAV routes (Q- or T-route) should be extracted from the database in their entirety, rather than loading RNAV route waypoints from the database into the flight plan individually. However, selecting and inserting individual, named fixes from the database is permitted, provided all fixes along the published route to be flown are inserted.

4. Pilots must not change any database waypoint type from a fly-by to fly-over, or vice versa. No other modification of database waypoints or the creation of user-defined waypoints on published RNAV or RNP procedures is permitted, except to:

(a) Change altitude and/or airspeed waypoint constraints to comply with an ATC clearance/instruction.

(b) Insert a waypoint along the published route to assist in complying with ATC instruction, example, “Descend via the WILMS arrival except cross 30 north of BRUCE at/or below FL 210.” This is limited only to systems that allow along-track waypoint construction.

5. Pilots of FMS-equipped aircraft, who are assigned an RNAV DP or STAR procedure and subsequently receive a change of runway, transition or procedure, shall verify that the appropriate changes are loaded and available for navigation.

6. For RNAV 1 DPs and STARs, pilots must use a CDI, flight director and/or autopilot, in lateral navigation mode. Other methods providing an equivalent level of performance may also be acceptable.

7. For RNAV 1 DPs and STARs, pilots of aircraft without GPS, using DME/DME/IRU, must ensure the aircraft navigation system position is confirmed, within 1,000 feet, at the start point of take-off roll. The use of an automatic or manual runway update is an acceptable means of compliance with this requirement. Other methods providing an equivalent level of performance may also be acceptable.

8. For procedures or routes requiring the use of GPS, if the navigation system does not automatically alert the flight crew of a loss of GPS, the operator must develop procedures to verify correct GPS operation.

9. RNAV terminal procedures (DP and STAR) may be amended by ATC issuing radar vectors and/or clearances direct to a waypoint. Pilots should avoid premature manual deletion of waypoints from their active “legs” page to allow for rejoining procedures.

10. RAIM Prediction: If TSO-C129 equipment is used to solely satisfy the RNAV and RNP requirement, GPS RAIM availability must be confirmed for the intended route of flight (route and time). If RAIM is not available, pilots need an approved alternate means of navigation.

REFERENCE–

AIM, RNAV and RNP Operations, Paragraph 5–1–16.

c. SIGMET (WS)

1. A SIGMET advises of nonconvective weather that is potentially hazardous to all aircraft. SIGMETs are unscheduled products that are valid for 4 hours. However, conditions that are associated with hurricanes are valid for 6 hours. Unscheduled updates and corrections are issued as necessary. In the conterminous U.S., SIGMETs are issued when the following phenomena occur or are expected to occur:

(a) Severe icing not associated with thunderstorms.

(b) Severe or extreme turbulence or clear air turbulence (CAT) not associated with thunderstorms.

(c) Dust storms or sandstorms lowering surface or inflight visibilities to below 3 miles.

(d) Volcanic ash.

2. In Alaska and Hawaii, SIGMETs are also issued for:

(a) Tornadoes.

(b) Lines of thunderstorms.

(c) Embedded thunderstorms.

(d) Hail greater than or equal to $\frac{3}{4}$ inch in diameter.

3. SIGMETs are identified by an alphabetic designator from November through Yankee excluding Sierra and Tango. (Sierra, Tango, and Zulu are reserved for AIRMET text [WA] products; G-AIRMETS do not use the Sierra, Tango, or Zulu designators.) The first issuance of a SIGMET will be labeled as UWS (Urgent Weather SIGMET). Subsequent issuances are at the forecaster's discretion. Issuance for the same phenomenon will be sequentially numbered, using the original designator until the phenomenon ends. For example, the first issuance in the Chicago (CHI) FA area for phenomenon moving from the Salt Lake City (SLC) FA area will be SIGMET Papa 3, if the previous two issuances, Papa 1 and Papa 2, had been in the SLC FA area. Note that no two different phenomena across the country can have the same alphabetic designator at the same time.

EXAMPLE-

Example of a SIGMET:

BOSR WS 050600

SIGMET ROMEO 2 VALID UNTIL 051000

ME NH VT

FROM CAR TO YSJ TO CON TO MPV TO CAR

MOD TO OCNL SEV TURB BLW 080 EXP DUE TO STG

NWLY FLOW. CONDS CONTG BYD

1000Z.

d. Convective SIGMET (WST)

1. Convective SIGMETs are issued in the conterminous U.S. for any of the following:

(a) Severe thunderstorm due to:

(1) Surface winds greater than or equal to 50 knots.

(2) Hail at the surface greater than or equal to $\frac{3}{4}$ inches in diameter.

(3) Tornadoes.

(b) Embedded thunderstorms.

(c) A line of thunderstorms.

(d) Thunderstorms producing precipitation greater than or equal to heavy precipitation affecting 40 percent or more of an area at least 3,000 square miles.

2. Any convective SIGMET implies severe or greater turbulence, severe icing, and low-level wind shear. A convective SIGMET may be issued for any convective situation that the forecaster feels is hazardous to all categories of aircraft.

3. Convective SIGMET bulletins are issued for the western (W), central (C), and eastern (E) United States. (Convective SIGMETs are not issued for Alaska or Hawaii.) The areas are separated at 87 and 107 degrees west longitude with sufficient overlap to cover most cases when the phenomenon crosses the boundaries. Bulletins are issued hourly at H+55. Special bulletins are issued at any time as required and updated at H+55. If no criteria meeting convective SIGMET requirements are observed or forecasted, the message "CONVECTIVE SIGMET... NONE" will be issued for each area at H+55. Individual convective SIGMETs for each area (W, C, E) are numbered sequentially from number one each day, beginning at 00Z. A convective SIGMET for a continuing phenomenon will be reissued every hour at H+55 with a new number. The text of the bulletin consists of either an observation and a forecast or just a forecast. The forecast is valid for up to 2 hours.

EXAMPLE-**Example of a Convective SIGMET:**

*MKCC WST 251655
CONVECTIVE SIGMET 54C
VALID UNTIL 1855Z
WI IL
FROM 30E MSN-40ESE DBQ
DMSHG LINE TS 15 NM WIDE MOV FROM 30025KT.
TOPS TO FL450. WIND GUSTS TO 50 KT POSS.*

*CONVECTIVE SIGMET 55C
VALID UNTIL 1855Z
WI IA
FROM 30NNW MSN-30SSE MCW
DVLPG LINE TS 10 NM WIDE MOV FROM 30015KT.
TOPS TO FL300.
CONVECTIVE SIGMET 56C
VALID UNTIL 1855Z
MT ND SD MN IA MI
LINE TS 15 NM WIDE MOV FROM 27020KT. TOPS TO
FL380.
OUTLOOK VALID 151855-252255
FROM 60NW ISN-INL-TVC-SBN-BRL-FSD-
BIL-60NW ISN*

*IR STLT IMGRY SHOWS CNVTV CLD TOP TEMPS
OVER SRN WI HAVE BEEN WARMING STEADILY
INDCG A WKNG TREND. THIS ALSO REFLECTED BY
LTST RADAR AND LTNG DATA. WKNG TREND OF
PRESENT LN MAY CONT...HWVR NEW DVLPMT IS
PSBL ALG OUTFLOW BDRY AND/OR OVR NE IA/SW
WI BHD CURRENT ACT.
A SCND TS IS CONTG TO MOV EWD THRU ERN MT
WITH NEW DVLPMT OCRG OVR CNTRL ND. MT ACT
IS MOVG TWD MORE FVRBL AMS OVR THE WRN
DAKS WHERE DWPTS ARE IN THE UPR 60S WITH
LIFTED INDEX VALUES TO MS 6. TS EXPD TO INCR IN
COVERAGE AND INTSTY DURG AFTN HRS.
WST ISSUANCES EXPD TO BE RQRD THRUT AFTN
HRS WITH INCRG PTNTL FOR STGR CELLS TO
CONTAIN LRG HAIL AND PSBLY DMGG SFC WND.*

e. International SIGMET

1. Some NWS offices have been designated by the ICAO as Meteorological Watch Offices (MWOs). These offices are responsible for issuing International SIGMETs for designated areas that include Alaska, Hawaii, portions of the Atlantic and Pacific Oceans, and the Gulf of Mexico.

2. The offices which issue international SIGMETs are:

- (a) The AWC in Kansas City, Missouri.

- (b) The AAWU in Anchorage, Alaska.

- (c) The WFO in Honolulu, Hawaii.

3. These SIGMETs are considered “wide-spread” because they must be either affecting or be forecasted to affect an area of at least 3,000 square miles at any one time. The International SIGMET is issued for 6 hours for volcanic ash events, 6 hours for hurricanes and tropical storms, and 4 hours for all other events. Like the domestic SIGMETs, international SIGMETs are also identified by an alphabetic designator from Alpha through Mike and are numbered sequentially until that weather phenomenon ends. The criteria for an international SIGMET are:

- (a) Thunderstorms occurring in lines, embedded in clouds, or in large areas producing tornadoes or large hail.

- (b) Tropical cyclones.

- (c) Severe icing.

- (d) Severe or extreme turbulence.

- (e) Dust storms and sandstorms lowering visibilities to less than 3 miles.

- (f) Volcanic ash.

EXAMPLE-**Example of an International SIGMET:**

*WSNT06 KKCI 022014
SIGAOF
KZMA KZNY TJZS SIGMET FOXTROT 3 VALID
022015/030015 KKCI- MIAMI OCEANIC FIR NEW
YORK OCEANIC FIR SAN JUAN FIR FRQ TS WI AREA
BOUNDED BY 2711N6807W 2156N6654W 2220N7040W
2602N7208W 2711N6807W. TOPS TO FL470. MOV NE
15KT. WKN. BASED ON SAT AND LTG OBS.
MOSHER*

f. AIRMET

1. AIRMETs (WAs) are advisories of significant weather phenomena but describe conditions at intensities lower than those which require the issuance of SIGMETs. AIRMETs are intended for dissemination to all pilots in the preflight and en route phase of flight to enhance safety. AIRMET information is available in two formats: text bulletins (WA) and graphics (G-AIRMET). Both formats meet the criteria of paragraph 7-1-3i1 and are issued on a scheduled basis every 6 hours beginning at 0245 UTC. Unscheduled updates and corrections are issued as necessary. AIRMETs contain details about

IFR, extensive mountain obscuration, turbulence, strong surface winds, icing, and freezing levels.

2. There are three AIRMETs: Sierra, Tango, and Zulu. After the first issuance each day, scheduled or unscheduled bulletins are numbered sequentially for easier identification.

(a) AIRMET Sierra describes IFR conditions and/or extensive mountain obscurations.

(b) AIRMET Tango describes moderate turbulence, sustained surface winds of 30 knots or greater, and/or nonconvective low-level wind shear.

(c) AIRMET Zulu describes moderate icing and provides freezing level heights.

EXAMPLE-

Example of AIRMET Sierra issued for the Chicago FA area:

CHIS WA 131445
AIRMET SIERRA UPDT 2 FOR IFR AND MTN OBSCN
VALID UNTIL 132100.

AIRMET IFR...KY
FROM 20SSW HNN TO HMV TO 50ENE DYR TO 20SSW
HNN
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS
ENDG BY 18Z.

AIRMET IFR...MN LS
FROM INL TO 70W YQT TO 40ENE DLH TO
30WNW DLH TO 50SE GFK TO 20 ENE GFK TO
INL
CIG BLW 010/VIS BLW 3SM BR. CONDS ENDG 15-
18Z.

AIRMET IFR...KS
FROM 30N SLN TO 60E ICT TO 40S ICT TO 50W
LBL TO 30SSW GLD TO 30N SLN
CIG BLW 010/VIS BLW 3SM PCPN/BR/FG. CONDS
ENDG 15-18Z.

AIRMET MTN OBSCN...KY TN
FROM HNN TO HMV TO GQO TO LOZ TO HNN
MTN OBSC BY CLDS/PCPN/BR. CONDS CONTG
BYD 21Z THRU 03Z.

.....

EXAMPLE-

Example of AIRMET Tango issued for the Salt Lake City FA area:

SLCT WA 131445
AIRMET TANGO UPDT 2 FOR TURB VALID UNTIL
132100.

AIRMET TURB...MT
FROM 40NW HVR TO 50SE BIL TO 60E DLN TO
60SW YQL TO 40NW HVR

MOD TURB BLW 150. CONDS DVLPG 18-21Z.
CONDS CONTG BYD 21Z THRU 03Z.

AIRMET TURB...ID MT WY NV UT CO
FROM 100SE MLS TO 50SSW BFF TO 20SW BTY
TO 40SW BAM TO 100SE MLS
MOD TURB BTN FL310 AND FL410. CONDS
CONTG BYD 21Z ENDG 21-00Z.

AIRMET TURB...NV AZ NM CA AND CSTL WTRS
FROM 100WSW ENI TO 40W BTY TO 40S LAS TO
30ESE TBE TO INK TO ELP TO 50S TUS TO BZA
TO 20S MZB TO 150SW PYE TO 100WSW ENI
MOD TURB BTWN FL210 AND FL380. CONDS
CONTG BYD 21Z THRU 03Z.

....

EXAMPLE-

Example of AIRMET Zulu issued for the San Francisco FA area:

SFOZ WA 131445
AIRMET ZULU UPDT 2 FOR ICE AND FRZLVL VALID
UNTIL 132100.

NO SGFNT ICE EXP OUTSIDE OF CNVTV ACT.

FRZLVL...RANGING FROM SFC-105 ACRS AREA
MULT FRZLVL BLW 080 BOUNDED BY 40SE
YDC-60NNW GEG-60SW MLP-30WSW BKE-
20SW BAM-70W BAM-40SW YKM-40E HUH-
40SE YDC
SFC ALG 20NNW HUH-30SSE HUH-60S SEA
50NW LKV-60WNWOAL-30SW OAL
040 ALG 40W HUH-30W HUH-30NNW SEA-40N
PDX-20NNW DSD
080 ALG 160NW FOT-80SW ONP-50SSW EUG
40SSE OED-50SSE CZQ-60E EHF-40WSW LAS

....

3. **Graphical AIRMETs (G-AIRMETs)**, found on the Aviation Weather Center webpage at <http://aviationweather.gov>, are graphical forecasts of en-route weather hazards valid at discrete times no more than 3 hours apart for a period of up to 12 hours into the future (for example, 00, 03, 06, 09, and 12 hours). Additional forecasts may be inserted during the first 6 hours (for example, 01, 02, 04, and 05). 00 hour represents the initial conditions, and the subsequent graphics depict the area affected by the particular hazard at that valid time. Forecasts valid at 00 through 06 hours correspond to the text AIRMET bulletin. Forecasts valid at 06 through 12 hours correspond to the text bulletin outlook. G-AIRMET depicts the following en route aviation weather hazards:

- (a) Instrument flight rule conditions (ceiling < 1000' and/or surface visibility < 3 miles)
- (b) Mountain obscuration
- (c) Icing
- (d) Freezing level
- (e) Turbulence
- (f) Low level wind shear (LLWS)
- (g) Strong surface winds

G-AIRMETs are snap shots at discrete time intervals as defined above. The text AIRMET is the result of the production of the G-AIRMET but provided in a time smear for a 6hr valid period. G-AIRMETs provide a higher forecast resolution than text AIRMET products. Since G-AIRMETs and text AIRMETs are created from the same forecast "production" process, there exists perfect consistency between the two. Using the two together will provide clarity of the area impacted by the weather hazard and improve situational awareness and decision making.

Interpolation of time periods between G-AIRMET valid times: Users must keep in mind when using the G-AIRMET that if a 00 hour forecast shows no significant weather and a 03 hour forecast shows hazardous weather, they must assume a change is occurring during the period between the two forecasts. It should be taken into consideration that the hazardous weather starts immediately after the 00 hour forecast unless there is a defined initiation or ending time for the hazardous weather. The same would apply after the 03 hour forecast. The user should assume the hazardous weather condition is occurring between the snap shots unless informed otherwise. For example, if a 00 hour forecast shows no hazard, a 03 hour forecast shows the presence of hazardous weather, and a 06 hour forecast shows no hazard, the user should assume the hazard exists from the 0001 hour to the 0559 hour time period.

EXAMPLE-

See FIG 7-1-8 for an example of the G-AIRMET graphical product.

g. Severe Weather Watch Bulletins (WWs) and Alert Messages (AWWs)

1. WWs define areas of possible severe thunderstorms or tornado activity. The bulletins are issued by the Storm Prediction Center (SPC) in

Norman, OK. WWs are unscheduled and are issued as required.

2. A severe thunderstorm watch describes areas of expected severe thunderstorms. (Severe thunderstorm criteria are $\frac{3}{4}$ -inch hail or larger and/or wind gusts of 50 knots [58 mph] or greater.)

3. A tornado watch describes areas where the threat of tornadoes exists.

4. In order to alert the WFOs, CWSUs, FSSs, and other users, a preliminary notification of a watch called the Alert Severe Weather Watch bulletin (AWW) is sent before the WW. (WFOs know this product as a SAW).

EXAMPLE-

Example of an AWW:

MKC AWW 011734

WW 75 TORNADO TX OK AR 011800Z-020000Z

AXIS..80 STATUTE MILES EAST AND WEST OF A LINE..60ESE DAL/DALLAS TX/ - 30 NW ARG/WALNUT RIDGE AR/

..AVIATION COORDS.. 70NM E/W /58W GGG - 25NW ARG/

HAIL SURFACE AND ALOFT..1 $\frac{3}{4}$ INCHES. WIND GUSTS..70 KNOTS. MAX TOPS TO 450. MEAN WIND VECTOR 24045.

5. Soon after the AWW goes out, the actual watch bulletin itself is issued. A WW is in the following format:

(a) Type of severe weather watch, watch area, valid time period, type of severe weather possible, watch axis, meaning of a watch, and a statement that persons should be on the lookout for severe weather.

(b) Other watch information; i.e., references to previous watches.

(c) Phenomena, intensities, hail size, wind speed (knots), maximum cumulonimbus (CB) tops, and estimated cell movement (mean wind vector).

(d) Cause of severe weather.

(e) Information on updating Convective Outlook (AC) products.

EXAMPLE-

Example of a WW:

BULLETIN - IMMEDIATE BROADCAST REQUESTED TORNADO WATCH NUMBER 381

STORM PREDICTION CENTER NORMAN OK

556 PM CDT MON JUN 2 1997

THE STORM PREDICTON CENTER HAS ISSUED A

c. If you haven't already developed a set of Standard Operating Procedures for cold weather operations, they should include:

1. Procedures based on information that is applicable to the aircraft operated, such as AFM limitations and procedures;

2. Concise and easy to understand guidance that outlines best operational practices;

3. A systematic procedure for recognizing, evaluating and addressing the associated icing risk, and offer clear guidance to mitigate this risk;

4. An aid (such as a checklist or reference cards) that is readily available during normal day-to-day aircraft operations.

d. There are several sources for guidance relating to airframe icing, including:

1. <http://aircrafticing.grc.nasa.gov/index.html>

2. <http://www.ibac.org/is-bao/isbao.htm>

3. http://www.natasafety1st.org/bus_deice.htm

4. Advisory Circular (AC) 91-74, Pilot Guide, Flight in Icing Conditions.

5. AC 135-17, Pilot Guide Small Aircraft Ground Deicing.

6. AC 135-9, FAR Part 135 Icing Limitations.

7. AC 120-60, Ground Deicing and Anti-icing Program.

8. AC 135-16, Ground Deicing and Anti-icing Training and Checking.

The FAA Approved Deicing Program Updates is published annually as a Flight Standards Information Bulletin for Air Transportation and contains detailed information on deicing and anti-icing procedures and holdover times. It may be accessed at the following web site by selecting the current year's information bulletins:

http://www.faa.gov/library/manuals/examiners_inspectors/8400/fsat

7-5-15. Avoid Flight in the Vicinity of Thermal Plumes (Smoke Stacks and Cooling Towers)

a. Flight Hazards Exist Around Thermal Plumes. Thermal plumes are defined as visible or invisible emissions from power plants, industrial production facilities, or other industrial systems that release large amounts of vertically directed unstable gases. High temperature exhaust plumes may cause significant air disturbances such as turbulence and vertical shear. Other identified potential hazards include, but are not necessarily limited to, reduced visibility, oxygen depletion, engine particulate contamination, exposure to gaseous oxides, and/or icing. Results of encountering a plume may include airframe damage, aircraft upset, and/or engine damage/failure. These hazards are most critical during low altitude flight, especially during takeoff and landing.

b. When able, a pilot should fly upwind of possible thermal plumes. When a plume is visible via smoke or a condensation cloud, remain clear and realize a plume may have both visible and invisible characteristics. Exhaust stacks without visible plumes may still be in full operation, and airspace in the vicinity should be treated with caution. As with mountain wave turbulence or clear air turbulence, an invisible plume may be encountered unexpectedly. Cooling towers, power plant stacks, exhaust fans, and other similar structures are depicted in FIG 7-5-2. Whether plumes are visible or invisible, the total extent of their unstable air is difficult to ascertain. FAA studies are underway to further characterize the effects of thermal plumes as exhaust effluents. Until the results of these studies are known and possible changes to rules and policy are identified and/or published, pilots are encouraged to exercise caution when flying in the vicinity of thermal plumes. Pilots are encouraged to reference the Airport/Facility Directory where amplifying notes may caution pilots and identify the location of structure(s) emitting thermal plumes.

FIG 7-5-2
Plumes

