

## FLIGHT INFORMATION PUBLICATION

## PLANNING

## GENERAL INFORMATION

1 FEBRUARY 1967

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# PROCUREMENT AND DISTRIBUTION

General Information Section, I of the FLIP Planning is a joint USAF/USN/USA Publication, produced and distributed by the Aeronautical Chart and Information Center (ACIC), USAF. It contains general information applicable to all geographic area FLIPs. This publication will be revised as required.

New or amended textual information will be indicated by a solid vertical bar extending full length of the new or amended information. Blank pages in this publication have been intentionally left blank.

## I. PROCUREMENT

Brief justification is necessary to substantiate requirements.

### A. GENERAL

When submitting requisitions direct to ACIC or any of the ACIC Overseas Squadrons/Detachments, or through Major Command Channels, a minimum notice of thirty days is required for all changes to be effected on current automatic distribution list. Also, it is the responsibility of all activities receiving automatic distribution to notify the appropriate agency specified below (under the pertinent category of user), of all changes in shipping address, redesignations or reassessments to other geographical areas, cancellations and/or changes in quantity requirements.

### B. U. S. AIR FORCE & AIR NATIONAL GUARD

Requisition in accordance with AFR 96-3 and the DOD Catalog of Aeronautical Charts and Flight Information Publications. USAF and ANG activities located within the continental United States will submit requests for new distribution or changes to existing distribution to ACIC (ACDRR), 8900 South Broadway, St. Louis, Mo., 63125. USAF and ANG activities located outside the continental United States will submit requests to the ACIC Overseas Squadron/Detachment located in the same theater as that of the requesting activity. Requirements will be based on criteria and authorizations established in the Basis of Distribution.

### C. U. S. ARMY AND NATIONAL GUARD

Requisition in accordance with Army Regulation 95-14. Army and Army National Guard Aviation units located in CONUS, Alaska and Canada will submit requests to U.S. Army Aviation Flight Information & NavAids Office, Cameron Station, Alexandria, Va. 22314. Army and Army National Guard Aviation units in overseas areas will submit requests to the appropriate overseas Army Flight Information Detachment.

### D. U. S. NAVY AND U. S. MARINE CORPS

Requisition in accordance with current OPNAVINST 5604.4. Requests for automatic distribution will be submitted to supply source designated in the U.S. Navy Requisitioning Source Guide, Page 14-II, DOD Catalog of Aeronautical Charts and Flight Information Publications. "One-time" requests may be submitted to the nearest Air Navigation Office.

### E. U. S. COAST GUARD

Submit requests in accordance with existing U. S. Coast Guard directives to the U. S. Naval Oceanographic Office, Wash D C 20390.

## F. FEDERAL AVIATION AGENCY

FAA activities, both within and outside the CONUS, will submit requests to: FAA, (HQ-433), Wash D C 20553.

## G. U. S. GOVERNMENT AGENCIES (NON-MILITARY)

Submit requests to: ACIC (ACDRR), 8900 South Broadway, St. Louis, Mo., 63125. Emergency requests from U. S. Government Agencies in the Wash., D. C. area may be directed to: Det-1, ACIC (ACWPL), 1221 South Fern St., Arlington, Va., 22202.

## H. U. S. AND FOREIGN CIVILIANS, CIVIL ORGANIZATIONS AND NON-MILITARY FOREIGN GOVERNMENT AGENCIES

Submit requests to: Director, Coast & Geodetic Survey, Washington Science Center, ATTN: Distribution Division, Rockville, Maryland 20852.

## I. FOREIGN GOVERNMENTS

Military organization requests are to be submitted through the respective country's Embassy in Wash., D.C. to: ACIC(ACDBD), 2nd & Arsenal Street, St. Louis, Mo., 63118.

## J. INTERNATIONAL COMMANDS

Submit requests through the respective organization's authorized procurement channel direct to: ACIC (ACDBD), 2nd & Arsenal Street, St. Louis, Mo., 63118.

## II. BASIS OF DISTRIBUTION

### A. U. S. AIR FORCE AND U. S. NAVY

1. Per Base Operations Office.....4 copies.
2. Per Unit/Squadron Operations Office.....2 copies.
3. AF Training Units or other Air Force Operations Units on Civil Fields.....2 copies.
4. Other activity with Planning or Clearance responsibility.....1 copy.
5. Per Foreign Clearing Bases in other areas...2 copies.
6. Administrative (Command, Air Force, etc.)...2-10 copies.

### B. U. S. ARMY AND NATIONAL GUARD

As outlined in Army Regulation 95-14.

### USAF NOTE:

Hq USAF has delegated authority to each Major Command to determine the actual number of FLIPs required by subordinate organizations to accomplish their missions. However, quantities listed above are to be considered as maximum amounts authorized. Major Commands may state a requirement for carrying in aircraft by all or specific air crews under their jurisdiction. For further guidance refer to page 4, Section III, DOD Catalog of Aeronautical Charts and Flight Information Publications. It is recognized that this publication may be required for USAF ground training operations and requests indicating this justification will be accepted. However, wherever possible, obsolete copy should be utilized when available.

### III. LOCATION OF COPIES

#### A. U. S. AIR FORCE, AIR NATIONAL GUARD, AND U. S. NAVY

Copies made available to Base Operations are for location in the Flight Planning Room, at the Flight Clearance desk, and in the Base Operations Officer's office. Copies will be available in all instances both for planning and clearance purposes.

### IV. CORRECTIONS

#### A. U. S. AIR FORCE

Report all errors, omissions, or recommended changes directly to: ACIC (ACDAP), 8900 South Broadway, St. Louis, Mo. 63125, Tel ME 1-4800, Ext 657 or 700, AUTOVON 631-1590, Ext 8-657 or 8-700, Area Code 314. TWX: ACIC St. Louis, Mo., (in body of message mark: FOR ACDAP).

#### B. U. S. NAVY

Report all errors, omissions or recommended changes directly to: U. S. Naval Oceanographic Office, ATTN: Aeronautical Division, Wash., D. C., 20390. All Navy fleet commands and activities reporting will also send a copy to the nearest Air Navigation Office.

#### C. U. S. ARMY

Report all errors, omissions or recommended changes to:

1. Commanding Officer  
U.S. Army Aviation Flight Information and NavAids Office  
Cameron Station  
Alexandria, Va. 22314  
TWX address - USAAFINO, Alexandria, Va.  
Tel OX 88794, 88773

2. Commanding Officer  
U.S. Army Aviation Flight Information Detachment, EUROPE  
APO New York 09403  
TWX address - AAFIDE, Heidelberg, Germany  
Tel Heid Mil (213) 6426, 7687

3. Commanding Officer  
U.S. Army Flight Information Detachment USARPAC  
APO San Francisco 96343  
TWX address - USAFID (USARPAC), Camp Zama, Japan  
Tel 32372, 32571

4. Commanding Officer  
U.S. Army Flight Information Detachment (USARSO)  
APO New York 09834  
TWX address - USAFID (USARSO), Fort Amador, Canal Zone  
Tel 862245, 864140

#### D. U. S. COAST GUARD

Report all errors, omissions, or recommended changes directly to the Commandant (OAU), U. S. Coast Guard Headquarters, Wash., D. C., 20226.

# FLIP PROGRAM

## I. PLANNING

The FLIP Planning has been designed primarily for desk use and not for carrying in the aircraft. Authorization is granted, however, for its use aboard aircraft in instances where major commands state requirement for its use for specific missions, or for use by all or some aircrews under their jurisdiction in areas where the publication may not be readily available at Base Operations offices.

This publication was designed using the concept that there are three separate phases of flight — flight planning, enroute operations, and terminal operations. It is true that the document does not contain all the information published elsewhere which may be needed in planning of a flight. Planning charts, enroute charts and supplements, and instrument letdown procedures must be consulted prior to flight, as well as NOTAM files. In planning for international flights, reference must also be made to the Foreign Clearance Guide.

## A. ARRANGEMENT OF SECTIONS

A complete Planning FLIP for the entire area of coverage will be comprised of sections as listed below. An area of coverage chart will be found on the outside back cover of Section I, General Information. Separate divider cards are provided for convenience in filing and in use of the amendments. The following sequence may be used for filing of sections for the Planning FLIP in binders also, except that Planning Change Notices should be filed in front of the appropriate section.

ITEM	PUBLICATION CYCLE
Quarterly Check List	Jan, Apr, Jul, Oct
Planning Change Notice (PCN)	As required
Section I General Information	As required
Section II Planning Data and Procedures	
UNITED STATES	Every 8 weeks
Section II A Military Training Routes	Every 4 Weeks
UNITED STATES	
Section II Planning Data and Procedures	
ALASKA	Every 8 weeks
CANADA AND NORTH ATLANTIC	Every 70 days
CARIBBEAN AND SOUTH AMERICA	Every 2 months
EUROPE AND NORTH AFRICA	Every Month
AFRICA AND SOUTHWEST ASIA	Every 2 months
PACIFIC AND SOUTHEAST ASIA	Every 2 months
AUSTRALIA, NEW ZEALAND, AND	
ANTARCTICA	Every 2 months
Section III International Rules and Procedures	Every 6 months
Section IV Regulations	As required

Generally, the publication cycle listed will be adhered to. All Sections may be revised between publication dates by issuing replacement pages or a Planning Change Notice (PCN) on an "as required" basis. Updated pages will be issued as replacement pages when warranted by extensive changes or as otherwise appropriate. A PCN may contain a consolidation of various changes and/or corrections to several pages of a Section to preclude publishing individual replacement pages. Additionally, PCNs for Section II A U. S. are published between issues on a routine basis in accordance with a schedule which alternates with the publication date of the complete Section.

A Quarterly Check List will also be issued which covers the entire Planning FLIP. All holders of the Publication will receive this check list regardless of whether they require or receive entire coverage of the publication.

## B. PUBLICATION CONTENT

Generally the type of information found in Section III for one area will be the same as Section II for another area. There may, however, be slight deviations because the requirements for information may vary. An example is that enroute preferred routes are published for the U. S. area only. Generally, the following type of data will be found in these sections.

### 1. SECTION I, GENERAL INFORMATION

This Section contains general information on all FLIPs, a list of FLIP and NOTAM abbreviations, the ICAO NOTAM code, conversion tables, sunrise and sunset tables, and an area of coverage chart.

### 2. SECTION II, PLANNING DATA AND PROCEDURES

This Section contains planning and procedure information for a specific geographic area including index for aeronautical information, special use airspace, flight plans, clearance, etc.

### 3. SECTION II A, MILITARY TRAINING ROUTES UNITED STATES

This Section is published primarily for flight planning and contains detailed data covering VFR and IFR/VFR (Oil Burner) Low Altitude High Speed Training Routes, Chuck Wagon Low Level Routes, and Air Refueling Tracks.

An accompanying chart provides a graphic depiction of Low Altitude High Speed Training Routes.

### 4. SECTION III, INTERNATIONAL RULES AND PROCEDURES

This Section is provided for use in all areas of the world, and will be the same in all Planning FLIPs. It contains such detail as the following: Procedures covering international flights; international procedure charts showing ICAO FIR boundaries, communication frequencies available at Area Control Centers (ACCs); altimeter setting procedures (worldwide); Regional VOLMET Plans; communications procedures; and emergency signals.

### 5. SECTION IV, REGULATIONS

This Section contains a list of regulations recommended to be inserted by the Base Operations Officer for reference by aircrew personnel. One list is issued for use in all Planning FLIPs worldwide; this also lists, however, the regulations which are pertinent to any specific area.

Federal Aviation Regulation 91 is distributed to all holders of the Planning FLIP.

## C. FLIP PLANNING CHART LOW ALTITUDE — U. S.

The FLIP Planning Chart is in three sheets and covers the conterminous United States at a scale of 1"=25 NM (size approximately 65" x 100"). It contains that information required for preliminary flight planning.

Publication cycle — Every 3 months dated concurrently with the FLIP Enroute Low Altitude U.S.

## D. FLIP PLANNING CHART LOW ALTITUDE — EUROPE AND NORTH AFRICA

This chart is a single sheet, two part presentation, 35" x 45.5", at a scale of 1"=53 NM with a separate insert of heavily trafficked area at 1"=26 NM. It contains a limited amount of information necessary for preflight planning. Low altitude airways, radio navigational aids, special use airspace, primary aerodromes and an index to the low altitude FLIP enroute charts are portrayed.

Publication cycle — Semi-annual.

## I. PLANNING

### E. FLIP PLANNING CHART HIGH ALTITUDE — EUROPE AND NORTH AFRICA

This chart is a single sheet, two part presentation, 35" x 45.5", at a scale of 1" = 53 NM with a separate insert of heavily trafficked area at 1" = 30 NM. It contains a limited amount of information necessary for preflight planning. High altitude airways, radio navigational aids, special use airspace, primary aerodromes and an index to the high altitude FLIP enroute charts are portrayed.

Publication cycle - Semi-annual.

## II. ENROUTE AND TERMINAL PUBLICATIONS

FLIP Enroute and Terminal publications are designed to provide airway structure, radio navigation, letdown, approach, and landing information for use during the in-flight phase of IFR operations. The FLIP Supplements support these publications with supplemental aerodrome, facility, communication and procedural information. A brief description is given below of enroute and terminal publications for all areas of the world.

### A. STANDARD INSTRUMENT DEPARTURES (SID)

SID charts are published either as individual charts or as a booklet approximately 5" x 8" containing air traffic control departure clearances in a pictorial form, for departure from an individual aerodrome.

Publication cycle — As required.

### B. UNITED STATES

#### 1. FLIP ENROUTE LOW ALTITUDE — U. S.

These charts portray the airway system and related data required for IFR operations at altitudes below 18,000 ft MSL. Twenty six variable scale charts are printed on thirteen sheets, L-1 thru L-26, covering the entire United States. An additional sheet, Charts L-27 and L-28 duplicating data shown on L-20, L-22, L-24 and L-25, is available for those who frequently plan flights north and south along the East Coast within the area of coverage.

The effective date and the expiration date are shown on the cover of each item. Major changes to the airway structure and procedures are scheduled by the FAA to become effective on a specific date once every four weeks. Charts are revised accordingly and show the date this information is effective. Charts, therefore, should not be used prior to the "effective date" — Other information i.e., frequencies, hours of operation, etc., is not scheduled and changes occur daily. Action is taken to up-date this data during the revision cycle but it has to be terminated, i.e., "cut-off" fifteen days before the projected "effective date" of the issue under revision to permit printing and timely distribution to users. NOTAMs must be consulted for latest information on data changing after the "cut-off" date and during the life of the current charts.

Publication cycle — Every 4 weeks.

#### 2. FLIP AREA CHARTS — U. S.

These charts portray the airway system and related data required for IFR operations in selected Terminal Areas at altitudes below 18,000 ft MSL. Ten variable scale charts are printed on two sheets.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 3. FLIP ENROUTE HIGH ALTITUDE — U. S.

These charts portray the airway system and related data required for IFR operations at altitudes at and above 18,000 ft MSL. Four constant scale charts (1" = 38.5 NM) are printed on two sheets. These charts may be assembled to form a wall planning chart.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### a. INSTRUCTIONS FOR ASSEMBLY OF WALL PLANNING CHART

(1.) Obtain two copies of each chart.

(2.) Assemble charts by matching airplane silhouettes in the following sequence: H-3, H-1, H-2, H-4.

#### 4. FLIP ENROUTE IFR — SUPPLEMENT — U. S.

This supplement is a 5" x 10" bound booklet, of approximately 320 pages, containing an alphabetical listing of all IFR aerodromes, integrated with an alphabetical listing of all navaids and ARTCC facilities. Also published are brief presentations of such items as ADIZ, direction finding, IFR emergency, position reporting, two-way radio failure and other information.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 5. FLIP ENROUTE VFR — SUPPLEMENT — U. S.

This supplement is a 5" x 10" bound booklet, of approximately 485 pages, containing an alphabetical listing of selected VFR aerodromes and cross references to IFR aerodromes as published in the Enroute IFR-Supplement. Also published are a City/Aerodrome Cross Reference Listing, VFR Special Notices, and Visual Air/Ground Emergency Procedures.

Publication cycle — Every 2 months.

#### 6. FLIP TERMINAL HIGH ALTITUDE — NORTHEAST, NORTHWEST, SOUTHEAST, SOUTHWEST U. S.

Four bound booklets, approximately 5" x 8", containing instrument approach procedures for high performance aircraft. Transitional information from the high altitude route structure to the terminal facility has been added to charts servicing the U.S. area.

Publication cycle — Every month.

#### 7. FLIP TERMINAL LOW ALTITUDE — NORTHWEST, WEST, CENTRAL, SOUTHWEST, NORTH MID-WEST, SOUTH MID-WEST, NORTHEAST, EAST CENTRAL, SOUTHEAST U. S.

Nine bound booklets, approximately 5" x 8" containing low altitude instrument approach procedures.

Publication cycle — Every month.

#### 8. FLIP TERMINAL AERODROME SKETCHES — U. S.

A 5.5" x 8" bound booklet, of approximately 360 pages, containing IFR and VFR aerodrome sketches arranged in alphabetical order by aerodrome name. Sketches are designed as an aid to visual identification of aerodromes.

Publication cycle — Every 3 months.

## C. ALASKA

#### 1. FLIP ENROUTE LOW ALTITUDE — ALASKA

These charts portray the airway system and related data required for IFR operations at altitudes below 18,000 ft MSL. Four constant scale charts (1" = 30 NM) are printed on two sheets. Blow-ups are provided for the Vancouver, Juneau, Anchorage and Fairbanks areas.

Publication cycle — Every 4 weeks.

#### 2. FLIP ENROUTE HIGH ALTITUDE — ALASKA

This single chart portrays the airway system and related data required for IFR operations at altitudes at and above 18,000 ft MSL. The scale is 1" = 45 NM. This chart also

## II. ENROUTE AND TERMINAL PUBLICATIONS

serves to facilitate transition of high altitude flights between CONUS and Alaska.

Publication cycle — Same as FLIP Enroute Low Altitude.

### 3. FLIP SUPPLEMENT — ALASKA

The supplement is a 5" x 10" bound booklet, salmon pink cover, of approximately 110 pages, containing an alphabetical aerodrome/facility directory, aerodrome sketches and brief presentations of such items as ADIZ, direction finding, emergency, position reporting, two-way radio failure, and other information.

Publication cycle — Same as FLIP Enroute Low Altitude.

### 4. FLIP TERMINAL HIGH ALTITUDE — ALASKA

A bound booklet, approximately 5" x 8", containing instrument approach procedures and civil instrument departure procedures for high performance aircraft.

Publication cycle — Every 8 weeks.

### 5. FLIP TERMINAL LOW ALTITUDE — ALASKA

A bound booklet, approximately 5" x 8", containing instrument approach procedures and civil instrument departure procedures.

Publication cycle — Every 8 weeks.

### 6. TACAN FACILITY CHART

The TACAN Facility Chart — Alaska, consisting of two 1:2,000,000 scale charts printed on one sheet, represents a new concept in the portrayal of the TACAN Rho Theta grid in conjunction with selected Jet Navigation Chart base detail. Only TACAN/VORTAC facilities are shown since the chart is designed for TACAN equipped aircraft only.

Publication cycle — Normally the chart will be revised and issued annually.

## D. CANADA AND NORTH ATLANTIC

### 1. FLIP ENROUTE LOW ALTITUDE — CANADA AND NORTH ATLANTIC

These charts portray the airway system and related data required for IFR operations at altitudes of and below 23,000 ft MSL. Ten variable scale charts are printed on five sheets. These charts include coverage on Bermuda, Iceland, and the Azores. Supporting charts T-1 and T-2 contain blow-ups of Terminal Areas.

Publication cycle — Every 35 days.

### 2. FLIP ENROUTE HIGH ALTITUDE — CANADA

These charts portray the airway system and related data required for IFR operations at altitudes above but not including FL 230. Four charts of variable scale are printed on two sheets.

Publication cycle — Same as FLIP Enroute Low Altitude.

### 3. FLIP SUPPLEMENT — CANADA AND NORTH ATLANTIC

The supplement is a 5" x 10" bound booklet, gray cover, of approximately 190 pages, containing an alphabetical listing of aerodromes available for military use, integrated with an alphabetical listing of radio navigational facilities. Also published are brief presentations of such items as ADIZ, direction finding, emergency, position reporting, two-way radio failure, and other information.

Publication cycle — Same as FLIP Enroute Low Altitude.

### 4. FLIP TERMINAL HIGH ALTITUDE — CANADA AND NORTH ATLANTIC

A bound booklet, approximately 5" x 8", containing instru-

ment approach procedures and aerodrome sketches for high performance aircraft.

Publication cycle — Every month.

### 5. FLIP TERMINAL LOW ALTITUDE — CANADA AND NORTH ATLANTIC

Two bound booklets, East Canada and North Atlantic and West Canada, approximately 5" x 8", of instrument approach procedures and aerodrome sketches.

Publication cycle — Every month.

## E. CARIBBEAN AND SOUTH AMERICA

### 1. FLIP ENROUTE LOW ALTITUDE — CARIBBEAN AND SOUTH AMERICA

These charts portray the airways system and related data required for IFR operations at flight levels as designated in the area for this route structure. Twelve variable scale charts are printed on six sheets. Supporting charts T-1 and T-2 contain arrival and departure, and/or blow-up charts, for the Bogota, Buenos Aires, Panama Canal Zone, Rio de Janeiro and San Juan areas.

Publication cycle — Every 2 months.

### 2. FLIP ENROUTE HIGH ALTITUDE — CARIBBEAN AND SOUTH AMERICA

These charts portray the airway system and related data required for IFR operations at flight levels as designated in the area for this route structure and also for direct flights at high altitude. Six charts at a constant scale of 1" = 55 NM are printed on three sheets of paper. An inset for Galapagos and Easter Islands are shown. Charts may be joined or overlapped for a wall planning chart, if desired.

Publication cycle — Every 2 months.

### 3. FLIP SUPPLEMENT — CARIBBEAN AND SOUTH AMERICA

The supplement is a bound booklet, 5" x 10 1/2", blue cover, of approximately 230 pages, containing an alphabetical aerodrome/facility directory, aerodrome sketches and VFR data to meet DOD requirements. Also published are brief presentations of such items as cruising altitudes/flight levels, emergency procedures, position reporting, two-way radio failure, and other information.

Publication cycle — Same as FLIP Enroute.

### 4. FLIP TERMINAL HIGH ALTITUDE — CARIBBEAN AND SOUTH AMERICA

A bound booklet, approximately 5" x 8", containing instrument approach and departure procedures, with aerodrome sketches, for high performance aircraft.

Publication cycle — Every 2 months.

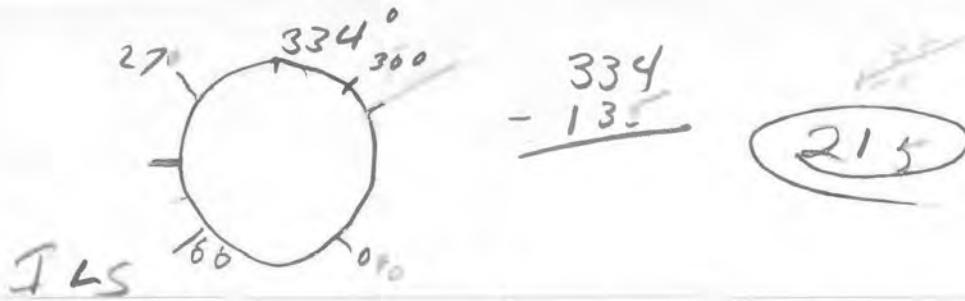
### 5. FLIP TERMINAL LOW ALTITUDE — CARIBBEAN AND SOUTH AMERICA

A bound booklet, approximately 5" x 8", containing instrument approach and departure procedures, with aerodrome sketches.

Publication cycle — Every 2 months.

### 6. INSTRUMENT DEPARTURE CHARTS — CARIBBEAN AND SOUTH AMERICA

These charts, containing air traffic control departure clearances and routings in pictorial form, are included in the FLIP Terminal High and low altitude bound publications. They are in the back of the respective books under a separate Table of Contents.



1 ~~After you have flown your route at your minimum without sighting the field perform a missed approach.~~

2 ~~229°~~ <sup>at the Beaufort</sup>  $RA + RB = MB$   
TO STATION

3 215

4  $4^{\circ} E.$

5 ~~D.~~ 255.4 156.7

6 ~~322.4~~ 291.0, 279.0

7 111.0 VOT PLANNING POSITION  $+ - 4^{\circ}$

8 ~~111.0~~ <sup>left</sup> - 655°

Published flying routes as per lot com  
or designated to field & town

## II. ENROUTE AND TERMINAL PUBLICATIONS

### F. EUROPE AND NORTH AFRICA

#### 1. FLIP ENROUTE LOW ALTITUDE — EUROPE AND NORTH AFRICA

These charts portray the airway system and related data required for IFR operations at flight levels as designated in the area for this route structure. Sixteen variable scale charts are printed on eight sheets. Supporting charts T-1 thru T-4, comprising four charts on two sheets, contain arrival and departure routes for selected Terminal Areas. Publication cycle — Every month.

#### 2. FLIP ENROUTE HIGH ALTITUDE — EUROPE AND NORTH AFRICA

These charts portray the airway system and related data required for IFR operations at flight levels as designated in the area for this route structure and also for direct flights at high altitude. Ten variable scale charts are printed on five sheets. Insets for the Azores and Iceland areas are shown on Chart 1. Chart 4 contains a blow-up of the central portion of Chart 3 which includes the London, Frankfort, and Paris areas.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 3. FLIP SUPPLEMENT — EUROPE AND NORTH AFRICA

The supplement is a 5" x 10" bound booklet, green cover, of approximately 300 pages, containing an alphabetical aerodrome/facility directory, aerodrome sketches and brief presentations of such items as ADIZ, emergency procedures, position reporting, two-way radio failure, and other information.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 4. FLIP TERMINAL HIGH ALTITUDE — EUROPE AND NORTH AFRICA

A bound booklet, approximately 5" x 8", containing instrument approach procedures and aerodrome sketches for high performance aircraft.

Publication cycle — Every month.

#### 5. FLIP TERMINAL LOW ALTITUDE — EUROPE AND NORTH AFRICA

Two bound booklets, approximately 5" x 8", containing instrument approach procedures and aerodrome sketches. Publication cycle — Every month.

### G. AFRICA AND SOUTHWEST ASIA

#### 1. FLIP ENROUTE — AFRICA AND SOUTHWEST ASIA

These charts portray the airway system and related data required for IFR operations at all altitudes. Ten variable scale charts are printed on five sheets. Supporting chart T-1 contains blow-ups of congested terminal areas.

Publication cycle — Every 2 months.

#### 2. FLIP SUPPLEMENT — AFRICA AND SOUTHWEST ASIA

The supplement is a 5" x 10" bound booklet, brown cover, of approximately 200 pages, containing an alphabetical aerodrome/facility directory and brief presentations of such items as cruising altitudes, emergency procedures, position reporting, two-way radio failure, and other information. Publication cycle — Same as FLIP Enroute.

#### 3. FLIP TERMINAL HIGH AND LOW ALTITUDE — AFRICA AND SOUTHWEST ASIA

A bound booklet, approximately 5" x 8", containing instrument approach procedures and aerodrome sketches. Publication cycle — Same as FLIP Enroute.

### H. PACIFIC AND SOUTHEAST ASIA

#### 1. FLIP ENROUTE — PACIFIC AND SOUTHEAST ASIA

These charts portray the airway system and related data required for IFR operations at altitudes as designated for the structure within the area. Ten variable scale charts are printed on five sheets. Chart 1 covers the entire Pacific and SE Asia and contains both planning and enroute information for the Hawaii area. Charts 3 through 8 contain enroute information for SE Asia and the far west Pacific area. Supporting Charts T-1 and T-2 contain blow-ups of congested terminal areas.

Publication cycle — Every month.

#### 2. FLIP ENROUTE HIGH ALTITUDE — PACIFIC AND SOUTHEAST ASIA, JAPAN, KOREA, PHILIPPINES, TAIWAN

These charts portray the airway system and related data required for IFR operation at altitudes at and above 24,000 ft MSL. Two variable scale charts are printed on one sheet.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 3. FLIP IFR SUPPLEMENT — PACIFIC AND SOUTHEAST ASIA

This supplement is a 5" x 10" bound booklet, yellow cover, of approximately 130 pages, containing an alphabetical aerodrome/facility directory and brief presentations of such items as cruising altitudes, emergency procedures, position reporting, two-way radio failure, and other information. Publication cycle — Same as FLIP Enroute Low Altitude.

#### 4. FLIP VFR SUPPLEMENT — PACIFIC AREA

This supplement is a 5" x 10" bound booklet, yellow cover, of approximately 120 pages, containing alphabetical aerodrome/facility and heliport/facility directories, aerodrome sketches, special notices and procedures.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 5. FLIP VFR SUPPLEMENT — SOUTHEAST ASIA

This supplement is a 5" x 10" bound booklet, yellow cover, of approximately 120 pages, containing alphabetical aerodrome/facility and heliport/facility directories, aerodrome sketches, special notices and procedures. It also includes duplicated IFR aerodromes as presented in the IFR SUPPLEMENT P & SEA.

Publication cycle — Same as FLIP Enroute Low Altitude.

#### 6. FLIP TERMINAL HIGH ALTITUDE — PACIFIC AND SOUTHEAST ASIA

A spiral bound booklet, approximately 5" x 8", containing instrument approach procedures and aerodrome sketches for high performance aircraft.

Publication cycle — Every month.

#### 7. FLIP TERMINAL LOW ALTITUDE — PACIFIC AND SOUTHEAST ASIA

A spiral bound booklet, approximately 5" x 8", containing instrument approach procedures and aerodrome sketches. Publication cycle — Every month.

## II. ENROUTE AND TERMINAL PUBLICATIONS

### I. AUSTRALIA, NEW ZEALAND AND ANTARCTICA

#### 1. FLIP ENROUTE—AUSTRALIA, NEW ZEALAND AND ANTARCTICA

These charts portray the airway system and related data required for IFR operations at all altitudes. Eleven variable scale charts are printed on six sheets.

Chart 1 contains both planning and enroute information. Charts 2 thru 8 contain enroute information.

Chart 9 will represent a special operation Deep Freeze Chart of Antarctica. Distribution of Chart 9 will be on a limited special order basis and therefore may not be included in the package.

Charts T-1 and T-2 contain blow-ups of congested terminal areas.

Publication cycle — Every 2 months. Chart 9 is published Jan, Jul, Sep, and Nov only.

#### 2. FLIP SUPPLEMENT — AUSTRALIA, NEW ZEALAND AND ANTARCTICA

The supplement is a 5" x 10" bound booklet, purple cover, of approximately 100 pages, containing an alphabetical aerodrome/facility directory and brief presentations of such items as emergency procedures, position reporting, two-way radio failure, and other information.

Publication cycle — Same as FLIP Enroute.

#### 3. FLIP TERMINAL HIGH AND LOW ALTITUDE — AUSTRALIA, NEW ZEALAND AND ANTARCTICA

A spiral bound booklet, approximately 5" x 8", containing

instrument approach procedures and aerodrome sketches. Publication cycle — Same as FLIP Enroute.

## III. FOREIGN CLEARANCE GUIDE

The Foreign Clearance Guide is a group of bound booklets, including a General Information Section, Country Index to Area Booklets, Area Booklets and an Index of Associated Publications. The Foreign Clearance Guide is the official publication for disseminating USAF worldwide foreign clearance requirements and information on personnel travel; aircraft movements to, from, and between foreign areas; and transport of material aboard aircraft. It is also used by the U.S. Navy and the U.S. Army. General Information Section and indexes are issued as required. Revised area booklets are issued on a semi-annual or quarterly basis. The Foreign Clearance Change Notices (FCCN) are issued monthly. These notices contain a cumulative listing of all permanent and temporary changes not yet incorporated in the booklets. A classified supplement is issued quarterly.

Teletype interim Change Notices (ICNs) are dispatched as required to selected addressees who require immediate notification of changes to the FCG.

## IV. DOD CATALOG OF AERONAUTICAL CHARTS AND FLIGHT INFORMATION PUBLICATIONS

This catalog is a looseleaf publication, which provides a complete listing of DOD/USAF/USN aeronautical charts, flight information publications, and miscellaneous items available to DOD users. It includes indices of available items together with descriptive information for each item and requisitioning procedures. In this publication will be found added detail regarding publications produced by other agencies, and available for DOD usage (such as ICAO Documents).

# FLIP & NOTAM ABBREVIATIONS

This listing provides a ready reference for decoding of abbreviations used in Flight Information Publications (FLIPs). Abbreviations marked with an asterisk are the only abbreviations authorized by USAF, USN, and US Army for use in the USAF/USN NOTAM system. All other words and phrases used in this NOTAM system will be completely spelled out.

*A	Amber	*APO	Air Force or Army Post Office
A	Army	*app(s)	approach(es)
*AAC	Alaskan Air Command	*APP CON	Approach Control
*AAF	Army Air Field	*appr	approve, approval
AAI	Angle of Approach Indicator	*Apr	April
AAL	Aircraft Approach Limitations	*aprt	airport
AB	Airbase	*aprx	approximately
abm	abeam	*APU	Auxiliary Power Unit
ABn	Aerodrome Beacon	AR	Air Receive
*ACC	Area Control Center	ARAA	Aerodrome Radar Approach Aid
*accom	accommodate, accommodation	ARB	Air Reserve Base
*acft	aircraft	ARC	Area of Responsibility Center
*ACIC	Aeronautical Chart and Information Center	ARFOR	Area Forecast
ACIO	Aeronautical Chart and Information Office	*ARINC	Aeronautical Radio Inc.
ACISQ	Aeronautical Chart and Information Squadron	*arrng	arrange, arrangement, arranging
ACP	Airlift Command Post	*arr	arrive, arrival
ACR	Approach Control Radar	*ARS	Air Rescue Service
*ACW	Aircraft Control and Warning	*ARSR	Air Route Surveillance Radar
A/D	Aerodrome	*ARTC	Air Route Traffic Control
ADA	Advisory Area	*ARTCC	Air Route Traffic Control Center
*ADC	Air Defense Command	ASAP	as soon as possible
ADCC	Air Defense Control Center	*ASDE	Air Surface Detection Equipment
ADDC	Air Defense Direction Center	*asgd	assigned
*addn	addition, additional	*asgn	assign
*ADF	Automatic Direction Finding Equipment	*ASL	Above Sea Level
*ADIZ	Air Defense Identification Zone	*ASR	Air Surveillance Radar
*admin	administration	ASRgn	Altimeter Setting Region
*ADR	Advisory Route	ASU	Aircraft Starting Unit
*advs	advise, advised	AT	Air Transmit
*advsy	advisory	*ATA	Actual Time of Arrival
AEC	Atomic Energy Commission	*ATC	Air Traffic Control
AERO	Surface Meteorological Report for Aviation	*ATC	Air Training Command
*AF	Air Force	*ATCC	Air Traffic Control Center
AFIA	Army Flight Activity	*ATCRBS	Air Traffic Control Radar Beacon System
*AFB	Air Force Base	ATCRU	Air Traffic Control Radar Unit
*AFCS	Air Force Communication Service	*ATD	Actual Time of Departure
AFI	African-Indian Ocean Regional Area	*ATIS	Automatic Terminal Information Service
AFIO	Agreement for Fighter Interceptor Operations	*ATS	Air Traffic Services
*AFLC	Air Force Logistic Command	*attn	attention
*afld	airfield	*Aug	August
*AFM	Air Force Manual	*auth	authorized, authority
*AFR	Air Force Regulation	*auto	automatic
*AFRS	Armed Forces Radio Service	AUW	All Up Weight (gross weight)
*AFSC	Air Force Systems Command	*aux	auxiliary
*A/G	Air/Ground (Communication)	*aval	available
A-G	Arresting Gear	*AvOil	Aviation Oil
*A-GEAR	Arresting Gear	AWSta	All Weather Air Station
*AGL	Above Ground Level	*awy(s)	airway(s)
AHP	Army heliport	*az	azimuth
AIP	Aeronautical Information Publication	B	Blue
*AIREP	Air Reports (Metro) in Plain Language	*B/A	Braking Action
AIRNAVO	Air Navigation Office	BABS	Beam Approach Beacon System
AIS	Aeronautical Information Service	*Base Ops	Base Operations
*aja	adjacent	*bcn	beacon
*AL	Approach and Landing Charts	*bcst	broadcast
ALF	Auxiliary Landing Field	*bdry	boundary
*alt	altitude	*bldg(s)	building(s)
*altn	alternate	*blkd	blocked — indicates approaches where glide angle to runway is 3:1 or less
AM	amplitude modulation	BM	Back Marker
*AM	Midnight to noon	BOA	Break-Off Altitude
*AMSL	Above Mean Sea Level	BOH	Break Off Height
*ANG	Air National Guard	*brg	bearing
ANO	Air Navigation Order	BS	Broadcast Station
*ant	antenna	*btwn	between
AOE	Aerodrome Of Entry	*bus	business
*APCS	Air Photographic and Charting Service		

\*Authorized for use in the USAF/USN NOTAM system.

## I-8 FLIP & NOTAM ABBREVIATIONS

C	Caution Area (followed by identification)	DM	Double Master (Loran Stations)
*—°C	Centigrade (degrees)	*DME	TACAN compatible Distance Measuring Equipment
CADIZ	Canadian Air Defense Identification Zone	DM&TS	Department of Mines and Technical Surveys
CAR	Caribbean Regional Area	DOD	Department of Defense
*CARF	Central Altitude Reservation Facility	*DOT	Department of Transport
*CAT	Clear-Air-Turbulence	*drct	direct
*CAVU	Ceiling and Visibility Unlimited	DS	Double Slave (Loran Stations)
CB	Crash Boat	DT	Daylight Saving Time
*ceil	ceiling	*dur	during
*cen	center	*DVFR	Defense Visual Flight Rules
*CGAS	Coast Guard Air Station	*E	East, Eastern
*CH	channel	*ea	each
Chan	Channel	*EAT	Expected Approach Time
*chg	change	*eff	effect, effected, effective
*CIRVIS	Communications Instructions Reporting Visual Intelligence Sightings	*E-HA	Enroute High Altitude
*civ	civil, civilian	*E-LA	Enroute Low Altitude
*ck	checked, check	*elev	elevation
*cl	class	Em	Emission
*clkwz	clockwise	*emerg	emergency
*clc	clearance	*eng	engine
*clsd	closed	EPD	Earliest Practicable Date
*CNF	Central NOTAM Facility	EPI	Expanded Position Indicator
*cnl	cancel, cancellation, cancelled	eqpt	equipment
*cntclkwz	counterclockwise	*E-S	Enroute Supplement
CO	Commanding Officer	*est	estimate, estimated
*Co	Company or County	*estb	established
*comd	command	*ETA	Estimated Time of Arrival
Comdr	Commander	*ETD	Estimated Time of Departure
comdt	commandant	*ETE	Estimated Time Enroute
coml	commercial	Eu	Europe
comm	communication(s)	EUM	Europe and Mediterranean Regional Area
comsn	commission, commissioned	Eur	Eureka
*con	control, controls, controlled	ev	every
*CONAC	Continental Air Command	*evac	evacuate
*cond	condition(s)	*ex	except
*const	construction	*extn	extension
*conf	continue, continued, continuous	*extv	extensive
*convl	conventional	*—°F	Fahrenheit (degrees)
*corr	correction, correct	*FAA	Federal Aviation Agency
CPS	cycles per second	*fac	facility, facilities
CRDF	Cathode Ray Direction Finding	FBAA	Flying Boat Alighting Area
*crs	course	FCB	Foreign Clearance Base
CS	Communication Station	FCG	Foreign Clearance Guide
*C/S	Call Sign	FCLP	field carrier landing practice
ctsm	customs	*Feb	February
*CTA	Control Area	*FIC	Flight Information Center
*clc	contact	FIFOR	Flight Forecast
cn	caution	*FIR	Flight Information Region
*CTZ	Control Zone	*FIS	Flight Information Service
*cvg	coverage	*FL	Flight Level
*CW	Continuous Wave/Carrier Wave	*Fld	Field
CWT	hundred weight	*FIP	Flight Information Publication
*CZ	Canal Zone	*flt(s)	flight(s)
*D	Danger area (followed by identification)	FLT CON	Flight Control
*daylt	daylight	*FM	Fan Marker
*Dec	December	FM	frequency modulation
*DECCA	Deco Navigator	*fol	follow, following, follows
*decom	decommissioned, decommission	FPM	feet per minute
*deg	degrees of arc	*fr	from
DEMIZ	Dew East Military Identification Zone	*freq	frequency, frequent, frequently
*dep	departure, depart	*Fri	Friday
*DEP CON	Departure Control	*FS	Flight Service
*destn	destination	*FSCen	Flight Service Center
*det	detachment	*FSS	Flight Service Station
DEW	Distant Early Warning	*ft	feet, foot
DEWIZ	Distant Early Warning Identification Zone	*ltr	fighter
*DF	Direction Finding (Finder)	*furn	furnish
dirac	directional	*G	Green
disc	discontinue, discontinued	G	Grid
disem	disseminate	*GA	glide angle
*dist	district, distance		
div	division		
*dly	daily		

\*Authorized for use in the USAF/USN NOTAM system.

*G/A	Ground-to-Air	intsv	intensive
*gal (sl)	gallons	*intxn	intersection
*G-, A-, R-, B-	Low Frequency Airways (green, amber, red, blue)	ISJTA	Intensive Student Jet Training Area
*GCA	Ground Controlled Approach	IXR	Intersection of Runways
*GCI	Ground Control Interception		
GCT	Greenwich Civil Time		
*GMT	Greenwich Mean Time (when not a figure of time)	*J	USAF Jet Fuel
*gnd	ground	*JAL	Jet Approach Landing Charts
*GND CON	Ground Control	*Jan	January
*govt	government	*JASU	Jet Aircraft Starting Unit
*GP	Glide Path	*JATO	Jet Assisted Take-Off
*grad	gradient	J-B	Jet Barrier
*grd	guard	*J-BAR	Jet Barrier
Griv	Gravitation	jng	joining
*gr wt	gross weight	J-OO	Jet Route
*GS	glide slope	*Jul	July
GV	Grid variation	*Jun	June
H+	Hours/hours plus . . . minutes past the hour	*kc	kilocycles
*H24	continuous operation	*kg	kilogrammes
HDF	High Frequency Direction Finder	*km	kilometers
*hdg	heading	*Kt or K	Knots
*heli	helicopter	*kw	kilowatt
*HF	High Frequency		
*Hg	Mercury		
*hgr(s)	hangar(s)	L	Compass locator
*hi	high	*lat	latitude
*Hi ALT or HA	High Altitude	latrl	lateral
HIFOR	High Level Forecast	*lb(s)	pound(s) (weight)
*Hi Int	High Intensity Lights	*lctd	located
*hol	holiday	Lctr or L	Locator Beacon
HOLF	Helicopter Outlying Field	*lczr	localizer beacon
*horiz	horizontal	*ldg	landing
*hosp	hospital	*LF	Low Frequency
*HPOX	High pressure oxygen	LFR	Low Frequency Range
*HQ	Headquarters	*lgtd	lighted
*hr	hours(s)	*LHOX	Low and High Pressure Oxygen
HS	service available during hours of scheduled operations	*LIM	Compass locator when installed at inner marker site
hsg	housing	*LMM	Compass locator station when installed at middle marker site
HTA	Heavier Than Air	LMT	Local Mean Time
HVDF	Direction Finder (High and Very High Frequency at same location)	*lo	low
hvy	heavy	*LoALT or LA	Low Altitude
		*Lo Int	Low Intensity Lights
		*LOM	Compass locator station when installed at outer marker site
IAW	in accordance with	*long	longitude
IBn	Identification Beacon	*Loran	Loran Stations
*ICAO	International Civil Aviation Organization	Loran DM	Loran Double Master
*ident	identification	Loran DS	Loran Double Slave
*IFF	Identification, Friend or Foe	Loran M	Loran Master
*IFR	Instrument Flight Rules	Loran S	Loran Slave
*IFR-S	FLIP IFR Supplement	*LOX	Liquid Oxygen
*IFSS	International Flight Service Station	LP	Low Power
ILA	Instrument Landing Aid	*LPOX	Low Pressure Oxygen
*ILS	Instrument Landing System	*LR	Long Range
*IM	Inner Marker	LRCO	Limited Remote Communications Outlet
IMC	Instrument Meteorological Conditions	LR/RT	Radio Telephone (Long Range)
Img	Immigration	*lt	light
*imed	immediate	LTA	Lighter Than Air
*IN	Facility unrestricted, or can fulfill its intended use in spite of limitations-limitations explained	*ltd	limited
*in	inch	ltr	letter (s)
*inactv	inactive, inactivate	ltrs	liters
inad	inadequate	*lv	leave
*inbd	inbound	lvg	leaving
*indef	indefinite		
*info	information	M	Master
*inop	inoperative	m or mtrs	meters
*inst	instrument	MAA	Maximum Authorized Altitude
instl	installation	*MAC	Military Airlift Command
*instr	instruction(s)	*mag	magnetic
*intl	international	*mag brg	magnetic bearing
*intmed	intermediate	*maint	maintenance
ints	intensity		

## I-10 FLIP & NOTAM ABBREVIATIONS

*maj	major	NOF	International NOTAM Office
MAN	Military Aviation Notice	Nordo	Non-radio aircraft
*Mar	March	*NOTAM	Notices to Airmen
*max	maximum	*not fl ck	not flight checked
*May	May	NOTUN	Notice of Unreliability
*MB	Mooring Buoys	*Nov	November
mb	millibars	*Nr or No	number
MBOH	Minimum Break Off Height	NS	Naval Station
*mc	megacycles	*ntc	notice
MCA	Minimum Crossing Altitude	*NW	Northwest
MCAAF	Marine Corps Auxiliary Air Facility	OACC	Oceanic Area Control Center
MCAAS	Marine Corps Auxiliary Air Station	*ObsHt	obstacle height
MCAB	Marine Corps Air Base	*obsn	observation
MCAC	Military Common Area Control	*obst	obstruction(s)
MCAF	Marine Corps Air Facility	OCA	Oceanic Control Area
MCALF	Marine Corps Auxiliary Landing Field	OCL	Obstacle Clearance Limits
MCAS	Marine Corps Air Station	*OCon US	Outside Continental Limits of U. S.
MCC	Military Climb Corridor	*oct	octane
*MCOLF	Marine Corps Outlying Field	*Oct	October
MDF	Medium Frequency Direction Finder	*offl	official
*MEA	Minimum Enroute Altitude	*OFFL BUS	Official business only
*med	medium	ONLY	Outlying Field
Mem	Memorial	*OLF	Optical Landing System
MET	Meteorological or Meteorology	*OLS	Outer Marker
MF	Medium Frequency	*OM	Operational Navigational Chart
MFS	Military Flight Service	ONC	operating authority
*mgr	manager	*op by	Chief of Naval Operations
MHDF	Direction Finder (Medium and High Frequency at same location)	*OPNAV	operate, operator, operated, operates
MHVDF	Direction Finder (Medium, high and very high at same location)	*opr	operating
MID	Middle East Regional Area	*oprg	Flight Operations (coordinated)
*mid alt	mid-altitude	*Ops	On Request
MIDIZ	Mid-Canada Identification Zone	*O/R	Out of Service
*mil	military	O/S	Ocean Station Vessel
*min	minimum	*OSV	Other Times
*min	minutes	*OT	Facility off the air, or operational but not suitable for IFR operations—limitations explained.
mkr	marker	*OUT	outbound
*MM	Middle Marker	*ovrn	overrun
MOCA	Minimum Obstruction Clearance Altitude	*OX	Oxygen
*Mon	Monday	OXRB	Oxygen Replacement Bottles
MP	Maintenance Period	*P	Civil Aerodrome available to transient military aircraft
*mph	miles per hour (statute)	*P	Planning
MR	Medium Range	PAC	Prohibited area (followed by identification)
*MRA	Minimum Reception Altitude	*PACAF	Pacific Regional Area
*msg	message	*PAR	Pacific Air Force
*MSL	Mean Sea Level	para	Precision Approach Radar
*mt(s)	mountain(s) or mount	*pent	paragraph
MTA	Minimum Terrain Clearance Altitude	*perm	penetration
MTC	Military Terminal Control	perms	permanent
MTCA	Military Terminal Control Area	pers	permission
mtrs, M or m	meters	*PFSV	personnel
*muni	municipal	*PIREP	Pilot to Forecaster Service
MVDF	Direction Finder (Medium and Very High Frequency at same location)	P/L	Mandatory pilot reports
N	Navy	p-line(s)	Plain Language
*N	North or Northern	*PM	pole/power line(s)
*NAAS	Naval Auxiliary Air Station	POL	Noon till Midnight
*NAF	Naval Air Facility	*POMAR	Petrol, Oils and Lubricants
*NALF	Naval Auxiliary Landing Field	*posn	Position Operational Meteorological Aircraft Report
*NARF	Naval Air Reserve Facility	PPI	position
*NAS	Naval Air Station	*PPR	Plan Position Indicator
*NASA	National Aeronautics and Space Administration	pps	Prior Permission Required
NAT	North Atlantic Regional Area	*prcht	pulse per second
*nav	navigation	*precip	parachute
NAVOCEANO	U.S. Naval Oceanographic Office	*pref	precipitation
*NDB	Non Directional Beacon	*PRESAIR	preferred
*NE	Northeast	prev	Air Compressors
*nec	necessary, necessity	*prim	previous
*NG	National Guard	*prkg	primary
*ngt	night		parking
*NM	nautical miles		
No or Nr	number		

\*Authorized for use in the USAF/USN NOTAM system.

pro	procedure		
*proh	prohibited	*Sat	Saturday
*pt(s)	point(s)	*satisfy	satisfactory
PTD	Pilot to Dispatcher	SBA	Standard Beam Approach
ptn	pattern	sby	standby
*pub	publication	SCATANA	Security Control of Air Traffic and Air Navigation Aids
*publ	published	Sched	scheduled services
*pvt	private	*S/D	Seadrome
QFE	altitude in height above station	*SE	Southeast
QNE	Standard Altimeter setting 29.92 ins.	SEA	South East Asia Regional Area
QNH	Altitude indicated above mean sea level	*sec	second(s)
*qtrs	quarters	sec	section
*quad(s)	quadrant(s)	*secd	secondary
R	Ground Receive	*SELCAL	Selective Calling System
*R	Red	*SEng	Single Engine
*R	Restricted Area (followed by identification)	*Sep	September
*RACON	Radar Beacon	SFA	Single Frequency Approach
*rad	radius, radial	*SID	Standard Instrument Departure
*RAF	Royal Air Force	*SIF	Selective Identification Feature
RAOB	Meteorological Radar Observation (or Radiosonde Observatory)	SIZ	Security Identification Zone
*RAPCON	Radar Approach Control Center	*sked	schedule
*RATCC	Radar Air Traffic Control Center	*SM	statute miles
RB	Rescue Boat	SR	Short Range
*RBn	Radio Beacon	SR	Sunrise
RBS	Radar Bomb Scoring	SRS	Substitute Route Structure
*RCAF	Royal Canadian Air Force	*SS	Sunset
RCC	Rescue Coordination Center	SSB	Single Side Band
*RCN	Royal Canadian Navy	*std	standard
rcpt	reception	*stn	station
RCR	runway condition reading	*stor	storage
*rcv	receive	*stu	student
*rcvr	receiver	sum	summer
*rdo	radio	*Sun	Sunday
*recog	recognition	sur	surround(ing)
*reg	regular	surv	survival, surveillance
*rel	reliable	*susp	suspended
repl	replace	*svc	service
reps	repairs	*svcg	servicing
*req	request	*SW	Southwest
RESP	Responder beacon	T	Ground Transmit
*Rgn	Region	*—T	True (degrees)
*rgt	right	TA	Transition Altitude
*rlcd	relocated	*TAC	Tactical Air Command
*rmks	remarks	*TACAN	Tactical Air Navigation Equipment
*rng	range, radio range	TAF	Terminal Aerodrome Forecast (abbreviated form)
ROFOR	Route Forecast	TAFOR	Terminal Aerodrome Forecast (full form)
*RON	Remain Overnight	TAFOT	Aerodrome Forecast in Units of English System
*Rot Lt or Bcn	Rotating Light or Beacon	TAMET	Aerodrome Forecast in Units of Metric System
*rpt	report, reporting	*TAS	True Airspeed
*rpt pt	reporting point	TBA	To Be Activated
*rqrd	required	TBI	To Be Inactivated
RSC	Rescue Sub-Center	TCA	Terminal Control Area
RSDU	Radar Storm Detection Unit	*ffc	traffic
RSR	Route Surveillance Radar	*T-HA	Terminal High Altitude (FLIP)
*rstd	restricted	*thld	threshold
R/T	Radiotelephony	*thou	thousand
*rte	route	*thru	through
ruf	rough	*Thu	Thursday
rufness	roughness	*til	until
RV	Rescue Vessel	*T-LA	Terminal Low Altitude (FLIP)
RVR	runway visual range	TLa	Transition Layer
*rwy	runway	TLv	Transition Level
S	Slave (Loran Stations)	*tmpy	temporary
*S	South or Southern	*tng	training
S	Storage and Repair	t/off	take-off
*SAC	Strategic Air Command	tp	telephone
SAFE-BAR	Safeland Barrier	*tran	transient
SAM/SAT	South America/South Atlantic Regional Area	trans	transport
SAR	Search and Rescue	*trns	transition
SARA	Search and Rescue Aid	TRSA	Terminal Radar Service Area
		T-S	Terminal Seaplane (FLIP)
		*Tue	Tuesday
		*TV	Television

## I-12 FLIP & NOTAM ABBREVIATIONS

*twd	toward	VOLMET	Meteorological Information for Aircraft in Flight
*twr	lower	*VOR	Very High Frequency Omni Range
*twy	taxiway	*VORTAC	Very High Frequency Omni Range and Tactical Air Navigation
UACC	Upper Area Control Center	VRB	Voice Rotating Beacon
UAR	Upper Air Route	*W	Warning Area (followed by identification)
UC	Under Construction	W	Watts
*UDF	Ultra High Frequency Direction Finder	*W	West or Western
*UFA	Until Further Advised	*W	White
*UFN	Until Further Notice	WAC	World Aeronautical Chart
*UHF	Ultra High Frequency	*WB	Weather Bureau
*UIR	Upper Flight Information Region	*Wed	Wednesday
*unauthd	unauthorized	*WIE	With Immediate Effect
*unaval	unavailable	win	winter
*unk	unknown	WIP	Work in Progress
*unlgtd	unlighted	*wk(s)	week(s)
*unltd	unlimited	*wkd(s)	weekday(s)
*unrel	unreliable	wng	warning
*unsat	unsatisfactory	wt	weight
unsvc	unserviceable	W/T	Wireless Telegraphy
*USAFAF	United States Air Force	*wx	weather
*USAFAFE	United States Air Force Europe	WxR	Weather Radar
USBER	US Mission Berlin	*xmit	transmit (See also Ground Transmit)
*USCG	United States Coast Guard	xmsn	transmission
*USN	United States Navy	*Y	Yellow
UTA	Upper Control Area	*yd	yard(s)
V	Very High/Ultra High Frequency Air Routes (followed by identification)	YG	Yellow-Green Beacon
*var	variation	*yr(s)	year(s)
VASI	Visual Approach Slope Indicator	*Z	Greenwich Mean Time When Preceded by a Figure Group
*VDF	Very High Frequency Direction Finder	*Z	VHF Station Location Marker
*vert	vertical	*ZI	Zone of Interior
*VFR	Visual Flight Rules	*ZMkr	Z-Marker
*VFR-S	FLIP VFR Supplement		
VHF	Very High Frequency		
vic	vicinity		
VIP	Very Important Person		
*vis	visibility, visible		
VMC	Visual Meteorological Conditions		

\*Authorized for use in the USAF/USN NOTAM system.

# EXPLANATION OF TERMS

**Absolute Altitude** — The altitude above the terrain directly below the aircraft.

**Advisory Area** — A designated area within a flight information region where air traffic advisory service is available.

**Advisory Route (ADR)** — A route within a flight information region along which air traffic advisory service is available.

**NOTE:** Air traffic control service provides a much more complete service than air traffic advisory service; advisory areas and routes are therefore not established within controlled airspace, but air traffic advisory service may be provided below and above control areas.

**Aerodrome** — A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and movement and servicing of aircraft.

**Aerodrome Control Service** — Air traffic control service for aerodrome traffic.

**Aerodrome Control Tower (TWR)** — A unit established to provide air traffic control service to aerodrome traffic. The term "airport traffic control tower" is normally used in areas under FAA control.

**Aerodrome Traffic** — All traffic on the maneuvering area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.

**NOTE:** An aircraft is in the vicinity of an aerodrome when it is in, entering or leaving an aerodrome traffic circuit.

**Aerodrome Traffic Circuit** — The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

**Aerodrome Traffic Zone** — An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.

**Air Defense Identification Zone (ADIZ)** — Airspace of defined dimension within which the ready identification, location and control of aircraft is required.

**Air-Ground Communication** — Two-way communication between aircraft and stations or locations on the surface of the earth.

**Air-Ground Control Radio Station** — An aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

**Air-To-Ground Communication** — One-way communication from aircraft to stations or locations on the surface of the earth.

**Airport Advisory Area (U.S.)** — The area within five statute miles of an uncontrolled airport on which is located a Flight Service Station so depicted on the appropriate Sectional Aeronautical Chart.

**Airport Advisory Service (U.S.)** — A service provided by a Flight Service Station to enhance the safety of terminal operations at airports where a station is operating but where there is no control tower.

**Airport Surface Detection Equipment (ASDE)** — A short range radar for a panoramic presentation of all aircraft and vehicles, moving or stationary, on an aerodrome for use by air traffic controllers for expeditious movement of surface aircraft on the ramp, taxiway and runway.

**Airport Surveillance Radar (ASR)** — Radar providing position of aircraft by azimuth and range data without elevation data.

**Airport Traffic Area (U.S.)** — The airspace within a circular limit defined by a five statute mile horizontal radius from the geographical center of an airport at which an operative airport traffic control tower is located and extending upwards from the surface to, but not including, 2000 feet above the surface.

**Air-Report** — A report during the course of a flight in conformity with requirements for position, operational, or meteorological reporting in the AIREP or POMAR forms.

**Air Route Surveillance Radar (ARSR)** — Long Range radar which increases the capability of ATC for handling heavy enroute traffic.

**Air Route Traffic Control Center (ARTCC)** — A facility established to provide traffic control service to Instrument Flight Rules (IFR) flights operating within controlled airspace and principally during the enroute phase of flight.

**Airspace Reservation (CANADA)** — An airspace of specified dimensions within a control area, reserved for the sole use of an agency during a specified period.

**Air Traffic Advisory Service** — Service provided to ensure separation in so far as possible between aircraft which are operating on an IFR flight plan, outside control areas, but within advisory routes or advisory areas.

**Air Traffic Control Clearance** — Authorization by air traffic control facilities for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.

**Air Traffic Control Center** — (See Air Route Traffic Control Center).

**Air Traffic Control Service** — A service provided for the purpose of:

1. preventing collisions: (a) between aircraft, and (b) on the maneuvering area between aircraft and obstruction; and
2. expediting and maintaining an orderly flow of air traffic.

**Airway (AWY)** — A control area or portion thereof established in the form of a corridor equipped with radio navigational aids.

**NOTE:** An airway is defined by the projection of its lateral limits on the surface of the earth, generally in relation to radio aids and fixes.

**Alerting Service** — A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

**Alternate Aerodrome** — An aerodrome specified in the flight plan to which a flight may proceed when landing at the intended destination becomes inadvisable.

**Altitude** — The vertical distance of a level, a point or an object considered as a point, measured from mean sea level.

**Altitude Reservation (ALTRV)** — The prior approval by the appropriate air traffic control agencies of flight plans, requesting use of certain airspace for the purpose of expediting mass movement of aircraft or other special air operations.

**Approach Control** — A term used to indicate an air traffic control unit providing approach control service, without specifying the unit.

**NOTE:** Approach control service at a given location may be provided by an aerodrome control tower or by an area control center, in which case the unit combines under its responsibilities the functions of the approach control service with those of the aerodrome control service or of the area control service. Approach control service may also be provided by a separate unit which is then called an approach control office.

**Approach Control Service** — Air traffic control service, provided by a terminal area traffic control facility, for arriving and/or departing IFR flights and, on occasion, VFR flights.

**Approach Sequence** — That order in which aircraft are positioned while awaiting approach clearance or while on approach.

**Area Control Center (ACC)** — A unit established to provide air traffic control service to IFR flights. This term is applicable within ICAO Regions.

**Arrival Control (CANADA)** — Air traffic control service provided to pilots who wish to land within the terminal control area and who have been cleared by another controlling agency (such as Terminal Control or an Area Control Center) to contact "Arrival Control" on a specified frequency.

## I-14 EXPLANATION OF TERMS

**Brass Monkey (EUROPE)** — A nickname transmitted by ground radar units to warn aircrews of an impending border violation and which requires immediate positive actions by all aircrews receiving the transmission.

**Buffer Zone (EUROPE)** — An area in which flying operations by U.S. military aircraft are restricted to specific categories of flights and for which special flight approval, clearance and operating procedures are directed.

**Caution Area** — An area of defined dimensions within which the military training activities conducted, though not hazardous, are of interest to non-participating pilots.

**Ceiling** — The height above the earth's surface of the lowest layer of clouds or obscuration phenomena that is reported as "broken", "overcast", or "obscuration" and not classified as "thin" or "partial".

**Central Altitude Reservation Facility (ICARF) (U.S.)** — An air traffic control facility established for the purpose of obtaining maximum utilization of available airspace and reducing the amount of coordination required in the planning phase of mass movements of aircraft and special air operations.

**Clearance Limit** — The fix to which an aircraft is issued an air traffic clearance.

**Codes** — The numbers assigned to the multiple pulse reply signals transmitted by air traffic control radar beacon system (ATCRBS) and SIF transponders. (See Mode and Radar Beacon).

**Contact Approach** — An approach wherein an aircraft on an IFR flight plan, operating clear of clouds with at least one mile flight visibility and having received an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination by visual reference to the surface.

**Conterminous United States** — The 48 states and the District of Columbia, i.e., the United States before January 3, 1959, (excluding Alaska and Hawaii).

**Continental Control Area (U.S.)** — Airspace at and above 14,500 feet MSL of the conterminous U.S. and Alaska south of Lat. 68°00'00"N, excluding the Alaska peninsula west of Long. 160°00'00"W; airspace less than 1,500 feet above the surface of the earth, and prohibited and restricted areas (except certain specified restricted areas).

**Continental U. S.** — United States territory, including the adjacent territorial waters, located within the North American continent between Canada and Mexico.

**Control Area** — A controlled airspace extending upwards from a specified height above the surface of the earth to unlimited unless otherwise indicated. In the continental United States and Alaska unless otherwise provided in appropriate cases, control areas extend upward from 700 ft above the surface (until designated from 1200 ft above the surface or from at least 500 ft below the MEA, whichever is higher) to the base of the continental control area.

**Control Area Extension (CANADA)** — A controlled airspace of defined dimensions extending upwards from 700 feet above the surface of the earth within the continental limits of Canada and extending upwards from 5500 feet above the surface outside the continental limits of Canada over the Atlantic Ocean and from 5000 feet above the surface over the Pacific Ocean, excepting Control Area Extension #11, which extends upward from 23,000 ft above the surface.

**Controlled Aerodrome** — An aerodrome of which air traffic control service is provided to aerodrome traffic.

**NOTE:** The term controlled aerodrome indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists, since a control zone is required at aerodromes where air traffic control service will be provided to IFR flights, but not at aerodromes where it will be provided only to VFR flights.

**Controlled Airspace** — Airspace of defined dimensions within which air traffic control service is provided to IFR flights.

**Control Zone** — A controlled airspace extending upwards from the surface of the earth. Control zones may include one or more airports and are normally circular areas with extension where necessary to include instrument approach and departure paths.

**Cruise** — The term "cruise" used instead of "maintain" in a clearance indicates that climb to, or descent from, the altitude specified in the clearance may be commenced at the pilot's discretion without further clearance. The term cruise is normally used, in a clearance, only on relatively short flights at low altitudes in uncongested areas.

**Cruise Climb (AUSTRALIA)** — A band of levels nominated by air traffic control between which an aircraft may drift up (or down) within the limits of those levels.

**Cruising Level** — A level maintained during a significant portion of a flight.

**NOTE:** In this publication the word "level", except in the expression "flight level", designates the vertical position of an aircraft regardless of the reference data or the units of vertical distance used. In air-ground communications a cruising level will be expressed in terms of "altitude", "height" or a "flight level" depending upon the reference datum and the altimeter setting in use in a particular area.

**Current Flight Plan** — The flight plan, including changes, if any, brought about by subsequent clearances.

**Danger Area** — A specified area within or over which there may exist activities constituting a potential danger to aircraft flying over it.

**Defense Visual Flight Rules (DVFR)** — Special visual flight rules applicable to those flights which operate within or penetrate an ADIZ.

**Departure Control** — Air traffic control service provided to pilots departing an aerodrome.

**Discrete Frequency** — A frequency assigned a particular function.

**DME Fix** — A geographical position determined by reference to a navigational aid which provides distance and azimuth information and defined by a specified distance in nautical miles and a radial in degrees magnetic from said aid.

**Emergency Phases (ICAO)** —

**ALERT PHASE:** A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

**UNCERTAINTY PHASE:** A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

**DISTRESS PHASE:** A situation wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

**Emergency Safe Altitude** — An altitude expressed in 100 foot increments providing 1000 feet of clearance (2000 feet in designated mountainous areas) over all obstructions/terrain within 100 miles of the navigational aid on which the instrument approach (AL/JAL) chart is centered.

**Expected Approach Clearance Time (EAC)** — The time at which it is expected that an arriving aircraft will be cleared to commence approach for a landing.

**Final Approach - IFR** — The flight path of an aircraft which is inbound to the airport on an approved final instrument approach course, beginning at the point of interception of that course and extending to the airport or the point where circling for landing or missed approach is executed.

**Final Approach-VFR** — A flight path of a landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

**Flight Information Center (FIC)** — A unit established to provide flight information service and alerting service.

**Flight Information Region (FIR)** — An airspace of defined dimensions within which flight information service and alerting service are provided.

**Flight Information Service (FIS)** — A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

**Flight Level** — A surface of constant atmosphere pressure which is related to the standard pressure datum.

**Flight Plan** — Specified information provided to air traffic service units, relative to the intended flight of an aircraft.

**Flight Service Station (FSS)** — A facility operated by the FAA to provide flight assistance service.

**General Air Traffic (EUROPE-AFRICA AREAS)** — Traffic in the Upper Information Region that can file an instrument flight plan, follow air traffic control instructions, communicate with the air traffic control centers concerned and has the necessary equipment to follow the prescribed routes.

**NOTE:** In France, the term "General Air Traffic" applies to both the lower airspace FIR and upper airspace UIR.

**Ground Controlled Approach (GCA)** — The technique or procedure for talking down an aircraft during its approach so as to place it in a position for landing during conditions of poor visibility and low ceiling through the use of radar.

**Ground to Air Communication** — One-way communication from stations or locations on the surface of the earth to aircraft.

**Heading** — The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic or compass).

**Hemispherical Cruising Levels** — Specified cruising levels determined in relationship to magnetic or true track within 180° segments (North-South or East-West) of the compass.

**High-Level Air Route (CANADA)** — A high-level air route includes the navigable airspace of Canada above 23,000 ft ASL within 20 miles each side of the centerline prescribed for each high-level air route and within which air traffic control service is not provided.

**High-Level Airway (CANADA)** — A high level airway includes the navigable airspace of Canada above 23,000 ft ASL within 20 miles each side of the direct track between the facilities on which it is predicated and within which air traffic control service is provided.

**Holding Fix** — A specified fix used as a reference point in establishing and maintaining the position of an aircraft while holding. The term "Holding Point" is used in some instances; this is defined by ICAO as "A specified location, identified by visual or other means, in the vicinity of which the position of an aircraft in flight is maintained in accordance with air traffic control clearances."

**Holding Procedure** — A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

**IFR Conditions** — Weather conditions below the minimums prescribed for flights under VFR.

**IFR Flight** — Flight conducted in accordance with the instrument flight rules.

**Initial Approach** — That part of an instrument approach procedure consisting of the first approach to the first navigational facility associated with the procedure, or to a predetermined fix.

**Instrument Meteorological Conditions (IMC)** — Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minimum specified for visual meteorological conditions.

**NOTE:** This terminology is not used in areas under FAA control.

**Interrogator** — The ground based surveillance radar beacon transmitter/receiver which scans in synchronism with a primary radar, transmitting discrete radio signals which repetitively request all transponders on the mode being used to reply. The replies received are then mixed with the primary radar video to be displayed on the same plan position indicators.

**Jet Routes** — A high altitude route system, at and above a specific altitude or flight level, predicated on a network of designated VOR, TACAN, VORTAC or L/MF facilities. (Jet routes in the Continental United States are at and above 18,000 ft MSL, in the Europe area at and above FL 200, and in the Japan-Philippines-Taiwan area at and above FL 240; in the Caribbean and South American area, jet routes as established by National Governments are not necessarily for use at or above a specific altitude, although in some instances these may be designated and shown on charts, and in some instances such routes may be designed for use in Upper Information Regions.)

**Joint Use Restricted Area** — An area wherein an aircraft may operate if prior permission has been granted by either the restricted area "using agency" or the "controlling agency." (1) The using agency organization, or military command whose activity within a restricted area necessitated the area being so designated; except that, in the case of those Restricted Area/Military Climb Corridors which do not have a designated controlling agency, the using agency is a military air traffic control facility which may be contacted for transit through the climb corridor. The using agency notifies the controlling agency whenever permission may be granted by the controlling agency for transit of, or flight within a restricted area. (2) The controlling agency is a designated ATC facility which may authorize transit of a restricted area.

**Low-Altitude Air Route (CANADA)** — A low-altitude air route includes the navigable airspace of Canada above all that area on the surface of the earth extending upwards to 23,000 ft ASL and within 5 miles each side of the center line prescribed for each low-level air route, and within which air traffic control service is not provided.

**Low-Altitude Airway (CANADA)** — A low-altitude airway includes the navigable airspace of Canada extending upwards from 700 feet above the surface of the earth to 23,000 ft ASL and within 5 miles each side of the center line prescribed for such airway and within which air traffic control is provided.

**Maintain** — The altitude/flight level instructions in an ATC clearance normally require that a pilot "maintain" the altitude/flight level at which the flight will operate when in controlled airspace. Altitude/flight level changes while enroute should be requested prior to the time the change is desired.

**Mandatory Altitude (INSTRUMENT APPROACH)** — The MSL altitude vertical to a geographic location which an aircraft must maintain during a portion of an instrument approach. The requirement for such may be created by airspace separation criteria or airspace separation criteria in conjunction with obstruction clearance criteria. A mandatory altitude will be depicted as an underlined number with a line above it.

**Maneuvering Area** — The part of an aerodrome to be used for aircraft take-off and landing and for the aircraft movement associated with take-off and landing.

**Maximum Altitude (INSTRUMENT APPROACH)** — The MSL altitude vertical to a geographic location above which an aircraft may not be flown during an instrument approach until after passing the location. The requirement for a maximum altitude may be created by airspace separation criteria. On the approach plate, a maximum altitude will be depicted as a number with a line above it.

**Maximum Authorized Altitude (MAA)** —

(CONTINENTAL U.S.) — An MAA is the highest altitude at which adequate reception of navigational aid signals is assured. The establishment of an MAA at 40,000 ft MSL means that adequate reception on a jet route so designated is assured up to, and including 40,000 ft MSL.

(CARIBBEAN AND SOUTH AMERICAN AREA) — Maximum authorized altitudes denote the highest altitude allowed along an airway, air route, corridor, etc. In this area, MAAs are established by national states for various reasons to restrict flight above designated altitudes. MAAs are not published in other areas of the world.

## I-16 EXPLANATION OF TERMS

**Minimum Altitude (INSTRUMENT APPROACH)** — MSL altitude vertical to a geographic location below which an aircraft may not descend during an instrument approach until after passing the location. The requirement for a minimum altitude may be created by obstruction clearance criteria or airspace separation criteria. On the approach plates, a minimum altitude will be depicted as an underlined number.

**Minimum Crossing Altitudes (MCAs)** — The lowest altitudes at certain radio fixes at which an aircraft must cross when proceeding in the direction of a higher minimum enroute IFR altitude.

**Minimum Enroute Altitudes (MEAs)** — The altitudes established between navigational aids or reporting points on airways, air routes, or advisory routes, which will meet obstruction clearance requirements, and which will also in some areas assure acceptable navigational signal coverage. United States and Canada MEAs meet both navigational signal coverage and obstruction clearance criteria. In other areas, navigational signal coverage cannot be assured in all cases due to terrain and signal output of the facilities. Terminology "Minimum Enroute IFR Altitude" is sometimes used, but for charting purposes, only "MEAs" are used. Definitions for specific areas will be found in the Enroute Supplement.

### Minimum Obstruction Clearance Altitude (MOCA) —

(U.S./ALL STATES OR AREAS UNDER FAA JURISDICTION) (CANADA) — The specified altitude in effect between radio fixes on VOR airways, off-airway routes or route segments, which meet obstruction clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 22 NM of a VOR.

(CARIBBEAN AND SOUTH AMERICAN AREA) — MOCAs when published are those altitudes determined in accordance with AFR 60-16 criteria which requires 1000 ft clearance of obstacles in non-mountainous and 2000 ft clearance in mountainous terrain within 25 NM of any point on the intended flight path. These are shown in non-controlled airspace and may be shown in controlled airspace if established MEAs are not available. MOCAs may be shown in conjunction with MEAs, in controlled airspace to call attention to a requirement for caution if flying under IMC at the MEA. The MOCAs are based upon elevation data contained in current USAFWAC/ONCcharts.

NOTE: On VOR airways in San Juan and Bahama areas the FAA MOCA criteria applies.

**Minimum Reception Altitude (MRA)** — The lowest altitude required to receive adequate signals to determine specific VOR/VORTAC/TACAN fixes. These are normally established only in areas under FAA jurisdiction, i.e., Continental United States, Alaska, Hawaii, Canal Zone, Puerto Rico, etc.

**Minimum Safe Altitude** — An altitude expressed in 100 foot increments providing 1000 feet of clearance over all obstructions/terrain within 25 miles of the navigational aid on which the instrument approach (AL/JAL) chart is centered.

**Mode** — The number or letter referring to the specific pulse spacing of the signal transmitted by an interrogator. (See Radar Beacon).

**Operational Traffic (EUROPE-AFRICA AREA)** — Traffic in the Upper Information Region that cannot comply with the provisions of general traffic. During IMC or nights, Operational Traffic must file an IFR flight plan and be controlled by either a military radar station or military ACC.

In certain countries, Operational Traffic will be under the control of military ACC or radar units, while in other areas both General and Operational Traffic are controlled by a single civil control or advisory unit.

NOTE: In France, the term "Operational Traffic" applies to both the lower airspace FIR and upper airspace UIR.

**Penetration** — That portion of a published high altitude terminal instrument approach procedure which prescribes a descent path from the fix on which the procedure is based to a fix or altitude from which an approach to the airport is made.

**Precautionary Approach-USN** — A procedure designed to afford a pilot experiencing flight difficulties a means of landing safely and expeditiously while providing a safe ejection altitude if he elects to discontinue the approach.

**Precision Approach** — An instrument approach conducted in accordance with directions issued by a controller referring to the surveillance radar display until the aircraft is turned onto final approach and thereafter to a precision approach radar display.

**Predetermined Routes (EUROPE-AFRICA AREA)** — Routes established within the UIR which, within the capabilities of ATC, provide for the routing of general air traffic, provide for the required operational flexibility of all air traffic, and eliminate the need for the permanent reservation of airspace for a specific type of operation.

**Pressure Altitude** — The altitude above the standard datum plane.

**Prohibited Area** — A specified area within the land areas of a state, or territorial waters adjacent thereto, over which the flight of aircraft is prohibited.

**QFE Setting** — A pressure type altimeter with a QFE setting indicates altitude above the aerodrome providing the setting (Absolute Altitude).

**QNE Setting** — The QNE setting is the Standard Altimeter Setting. It shows the altitude above the standard datum plane (Pressure Altitude).

**QNH Setting** — A pressure type altimeter with a QNH setting indicates altitude above mean sea level (True Altitude).

**Quadrantal Cruising Levels** — Specified cruising levels determined in relation to magnetic track within quadrants of the compass.

**Radar Beacon** — A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radio pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This latter transmission, rather than a reflected signal, is then received back at the transmitter/receiver site.

**Radar Monitoring** — Continuous tracking and reporting of aircraft in flight by a ground based radar either by radar skin paint or IFF/SIF interrogation. The radar controller is responsible for correlating the flight track and flight plan and warning the pilot by radio of in-flight hazards. The mission and flight conditions may require the pilot to have radio contact with other agencies while being radar monitored.

**Radial** — A radial is a magnetic bearing extending from a VOR, VORTAC, or TACAN.

**Reporting Point** — A specified geographic location in relation to which the position of an aircraft can be reported.

**Rescue Coordination Center** — A center established within an assigned search and rescue area to promote efficient organization of search and rescue.

**Restricted Area** — A specified area within the land areas of a State or territorial waters adjacent thereto, designated for other than air traffic control purposes, over which the flight of aircraft is restricted in accordance with certain specified conditions.

**Runway Condition Readings (RCRs)** — Numerical decelerometer readings provided by air traffic controllers at USAF bases for use by the pilot in determining runway braking action. The Enroute Supplement provides a suggested table of equivalents for use by Naval Aviators in converting these readings to a comparable braking action description.

**Runway Visual Range (RVR)** — An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end; it is based on the sighting of either high intensity runway lights or on the visual contrast of other targets — whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal, and not slant, visual range. It is based

on the measurement of a transmissometer made near the touchdown point of the instrument runway and is **reported in hundreds of feet**. RVR observations are automatically furnished to tower controllers at locations from readout equipment connected to the remote transmissometer installation. At facilities where RVR is given in addition to, or in lieu of, runway visibility, the values received will be treated as runway visibility values. The pilot must convert RVR values expressed in feet, yards or meters to fractions of miles to insure that they meet published minimums.

**SIGMET Information** — Information prepared by a meteorological watch office regarding the occurrence or expected occurrence of one of the following phenomena:

- Active thunderstorm area
- Tropical revolving storm
- Severe line squall
- Heavy hail
- Severe turbulence
- Severe icing
- Marked mountain waves
- Widespread sandstorm/duststorm

**Single Frequency Approach (SFA)** — A service provided to single-piloted jet aircraft during the hours of darkness or when the aircraft is in instrument weather conditions, which permits use of a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from beginning of penetration to touchdown except that pilots conducting an enroute penetration are required to change frequency when control is transferred from the Air Route Traffic Control Center to the terminal facility. The abbreviation "SFA" in the Enroute Supplement under Communications indicates service is available at an aerodrome.

**Special Use Airspace** — Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature, and/or wherein limitations are imposed upon aircraft operations that are not a part of those activities.

**Special VFR Flight** — A VFR flight authorized by air traffic control to operate within a control zone under meteorological conditions below the visual meteorological conditions.

**Straight-in Approach-IFR** — An instrument approach wherein final approach is begun without first having executed procedure turn.

**Straight-in Approach-VFR** — Entry of the traffic pattern by interception of the extended runway centerline without executing any other portion of the traffic pattern.

**Surveillance Approach** — An instrument approach conducted in accordance with directions issued by a controller referring only to the surveillance radar display.

**Surveillance Radar** — Primary radar equipment used to establish the distance and azimuth of all aircraft within its range.

**Step Climb (AUSTRALIA)** — A vertical sequence of levels to separate aircraft during a change of altitude.

**TACAN Gate** — A TACAN fix located on the final approach course or approach arc of a TACAN instrument approach procedure. It is normally established between 5 and 9 miles from the approach end of the runway (or airport area for a circling approach) and is the point at which a transition is normally made to a landing configuration. It is also a compulsory reporting point.

**TACAN-only Aircraft** — An aircraft possessing TACAN but no VOR navigational system capability.

**Terminal Control (CANADA)** — Air traffic control service provided to pilots wishing to fly through terminal control areas. Terminal Control also acts in a coordinating capacity between arrival and departure control for other IFR flights, as required.

**Terminal Control Area (TCA)** — A portion of a control area normally situated at the intersection of airways in the vicinity of one or more major aerodromes. This designation is not applicable in areas under FAA control.

**Track** — The projection on the earth's surface of the path of an aircraft, the direction of which at any point is usually expressed in degrees from North (true or magnetic).

**Transition Altitude** — The altitude in the vicinity of an aerodrome at or below which the vertical position of an aircraft is controlled by reference to altitudes.

**Transition Area (U.S.)** — An area extending upward from 1200 ft or higher above the surface when designated to complement control zones; from 700 ft above the surface when designated in conjunction with an airport with no control zone but for which an instrument approach procedure has been prescribed; or from 1200 ft or higher above the surface when designated in conjunction with airway route structures or segments. Unless otherwise limited, transition areas terminate at the base of the overlying area or continental control area.

**Transition Layer** — The airspace between the transition altitude and the transition level.

**Transition Level** — The lowest flight level available for use above the transition altitude.

**Transponder** — The airborne radar beacon receiver/transmitter which automatically receives radio signals from all interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those "interrogations" being received on the mode to which it is set to respond.

**Turbo Jet Enroute Descent** — A turbojet enroute descent is a descent from an enroute altitude to the final approach without execution of the penetration maneuvers prescribed in the FLIP High Altitude Terminal Instrument Approach Procedures Publication. Its purpose is to expedite the movement of air traffic.

**Upper Control Area (UTA)** — Controlled airspace within an Upper Information Region.

**Upper Information Region (UIR)** — An airspace of defined dimensions above Flight Information Region(s) within which flight information service and alerting service are provided for aircraft operating at high altitudes.

**VFR Flight** — A flight conducted in accordance with the visual flight rules. When operating in accordance with the visual flight rules, aircraft shall be flown with visual reference to the ground or water unless otherwise authorized by the appropriate air traffic control unit.

**Visibility** — The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.

**Visibility, Flight** — The average horizontal distance that prominent objects may be seen from the cockpit.

**Visibility, Ground** — The average range of vision in the vicinity of an airport, as reported by an accredited observer.

**Visibility, Prevailing** — The horizontal distance at which targets of known distance are visible over at least half of the horizon. It is normally determined by an observer on or close to the ground viewing buildings or other similar objects during the day and ordinary city lights at night. Under low visibility conditions the observations are usually made at the control tower. Visibility is **reported in miles and fractions of miles** in the Aviation Weather Report. If a single value does not adequately describe the visibility additional information is reported in the "Remarks" section of the report.

**Visibility, Runway** — The horizontal distance at which a stationary observer near the end of the runway can see an ordinary light (about 25 candlepower) at night or a dark object against the horizon sky in the daytime. In practice, the human observer is used very little for this observation. Instead, runway visibility is normally determined by a transmissometer (a photoelectric device calibrated in terms of a human observer). A meter in the control tower gives the traffic controller a continuous indication of the runway visibility at transmissometer locations. Runway visibility, where available, may be used in place of prevailing visibility for the determination of minimums on a transmissometer runway. This program is gradually being replaced by runway visual range at transmissometer locations.

## I-18 EXPLANATION OF TERMS

**Visual Approach** — An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions and having received an air traffic control authorization, may deviate from the prescribed instrument approach procedures and proceed to the airport of destination by visual reference to the surface.

**Visual Approach Slope Indicator (VASI)** — A lighting system usable at night or in limited visibility which aids the pilot in maintaining a predetermined glide path on final approach. The lights are visible up to 15 miles at night and 5 miles by day. Each unit is equipped with a high beam white light and a low beam red filter that enables the pilot, when on the proper glide path, to see the front row of lights as white and the back row of lights as red on both sides of the runway. If glide path is too high, both rows of lights show white, if too low, they show red.

**Visual Flight (CANADA)** — The term used to indicate that an IFR flight is in continuous sight of the ground but with less than the visibility or cloud separation minima specified for VFR flight.

**VMC Clearance** — An ATC clearance authorizing an IFR flight to proceed subject to maintaining visual meteorological conditions. This terminology is not used in areas under FAA control.

**Visual Meteorological Conditions** — Meteorological conditions expressed in terms of visibility, cloud distance, and ceiling, equal to or better than specified minima.

**Warning Area** — A specified area over international waters within or over which there may exist activities constituting a potential danger to aircraft.

# NOTAM CODE

The ICAO NOTAM Code is published here to enable the decoding of information regarding the establishment, condition or change of radio aids, aerodromes and lighting facilities, dangers to aircraft in flight, or search and rescue facilities. Encoding facilitates the dissemination of NOTAMs by reducing the transmission time over telecommunications channels.

All NOTAM Code groups contain a total of five letters. The first letter of the Code group is always the letter Q to indicate that it is a Code abbreviation for use in the composition of NOTAMs. The letter Q has been chosen to avoid conflict with any assigned call sign.

The significations assigned to NOTAM Code groups are amplified or completed where necessary by the addition of appropriate contractions, frequencies, location identifiers, place names or figures. Authorized contractions are used in preference to plain language wherever possible.

In those significations where the expression "on . . . Kc for . . . Mc" appears, the figures groups used alone will indicate the frequency in kilocycles. To express a frequency in megacycles, the figures group is immediately followed by the abbreviation MC, meaning megacycles.

Five letter NOTAM Code groups are formed in the following manner:

**First Letter — The Letter Q.**

**Second and Third Letters** — The appropriate combination of two letters selected from the "Second and Third Letters" section of the Code to identify the facility, service or danger to aircraft in flight being reported upon. It should be noted that the second letter has been restricted to A, E, I, O or U.

**Fourth and Fifth Letters** — The appropriate combination of two letters selected from the "Fourth and Fifth Letters" section of the Code to denote the status of operation of the facility, service or danger to aircraft in flight reported upon. It should be noted that the fourth letter has been restricted to A, E, I, O or U.

Examples are as follows:

KIND QAQES 116.9 MC 210800

Meaning: The VHF omnidirectional radio range on frequency 116.9 mc at Indianapolis will be out of service from 0800 hours GMT on the 21st day of the present month for an unknown duration.

ESSS QOMAO TREES

Meaning: All runways at Stockholm (Bromma) are marked by trees

## SECOND AND THIRD LETTERS

### RADIO AIDS

- AA Ispecify TWR, APP, ACC or FCI . . . air traffic services receiver . . . Kc for . . . Mc.
- AB Inner marker, Instrument Landing System.
- AC Ispecify TWR, APP, ACC or FCI . . . air traffic services transmitter . . . Kc for . . . Mc.
- AD Middle marker, Instrument Landing System.
- AE Outer marker, Instrument Landing System.
- AF Fan-type marker.
- AG Glide path, Instrument Landing System.
- AH Non-directional beacon (NDB).
- AI Instrument Landing System (ILS).
- AJ Radio range (other than VOR) and associated voice communications.
- AK Radio receiving facilities.
- AL Localizer, Instrument Landing System.
- AM Compass locator, inner, Instrument Landing System.
- AN TACAN.
- AO Compass locator, outer, Instrument Landing System.
- AP VOR (VHF Omnidirectional Radio Range) and associated voice communications.
- AQ VOR (VHF Omnidirectional Radio Range).
- AR Radio range (other than VOR).
- AS Radio range leg.
- AT Attention signal.
- AU Meteorological communications . . . Kc for . . . Mc.
- AV Voice communications . . . Kc for . . . Mc.
- AW

AX Non-directional beacon (NDB) and voice facility.

AY 200 mc Distance Measuring Equipment (DME).

AZ Station location marker VHF.

EA Enroute Surveillance Radar.

EB Broadcasting station (public).

EC CONSOL or CONSOLAN station.

ED DECCA or DECTRA.

EE Ground Controlled Approach System (GCA).

EF Terminal Area Surveillance Radar.

EG GEE.

EH Elevation element of the Precision Approach Radar (PAR).

EI Monitoring Device associated with . . . (specify) radio aid.

EJ All air-ground facilities (except . . .).

EK Precision Approach Radar (PAR).

EL LORAN.

EM Azimuth element of the Precision Approach Radar (PAR).

EN 1000 mc Distance Measuring Equipment (DME).\*

EO

EP Radar responder beacon.

EQ Surveillance Radar Element (SRE) of GCA.

ER Radio transmitting facilities.

ES All radio-navigation facilities (except . . .).

ET Teletypewriter transmitting facility (ies).

EU Radio direction finding station . . . (frequency or type).

EV VORTAC (the combination of VOR and TACAN).

EW Ground interrogator, SSR system.

EX

EY Ground movement radar.

EZ

\*Where more than one DME is installed at the same location, the type of associated facility (e.g., ILS, VOR, TACAN or VORTAC) should be indicated.

### LIGHTING FACILITIES

IA Boundary lights.

IB Aerodrome beacon.

IC Channel lights.

ID Light beacon.

IE Flood lights.

IG Angle-of-approach lights.

IH Taxiway lights.

II Hazard beacon.

IJ Threshold lights (for runway number . . .).

IK Flares.

IL All landing area lighting facilities.

IM Identification beacon.

IN

IO Obstruction lights.

IP Approach light system (type . . . (specify LSA (low intensity) or LSB (high intensity)) (for runway number . . .)).

IQ Runway alignment beacon.

IR Runway lights (type . . . (specify LSA (low intensity) or LSB (high intensity)) (for runway number . . .)).

IS Strip lights (for strip . . . (number or magnetic direction)).

IT

IU

IV

IW

## I-20 NOTAM CODE

IX Flashing sequence lights.

IY Airway course lights.

### AERODROMES SEARCH AND RESCUE: DANGERS TO AIRCRAFT IN FLIGHT

OA Land aerodrome.

OB Beaching facilities.

OC Water aerodrome.

OD Meteorological forecast service.

OE Meteorological observation service.

OF Meteorological watch service.

OG Runway arresting gear.

OH Helicopter landing area.

OI

OJ

OK

OL

OM All runways (except number(s) . . .).

ON Stopway for runway number . . .

OO Taxiway(s).

OP Rescue vessel.

OQ Ocean Station Vessel.

OR Refueling ( . . . type fuel(s) or octane).

OS Search and rescue aircraft (specify VLR, LRG, MRG, SRG or HEL).

OT Crash or fire fighting facilities.

OU

OV . . . (specify TWR, APP, ACC or FIC) air traffic service.

OW

OX

OY

OZ Warship.

UA Alighting area.

UB Mooring buoys.

UC

UD Prohibited, restricted, or danger area designated as . . . (name or reference number).

UE Aircraft.

UF Fixed balloons.

UG Bombing or aerial depth charge dropping.

UH Air exercises (or flying displays).

UI Gun or missile firing.

UJ Glider flying.

UK Demolition of explosives.

UL Landing direction indicator.

UM Mooring and docking facilities.

UN Parachute jumping exercises.

UO

UP

UQ Apron.

UR Runway(s) number(s) . . .

US Strip . . . (number or magnetic direction).

UT Grass landing area.

UV Fog dispersal equipment.

UW

UX

UY

UZ Runway threshold (number . . .).

## FOURTH AND FIFTH LETTERS

### HAZARD OR STATUS OF OPERATION OR CONDITION OF FACILITIES

AA Usable for length of . . . and width of . . .

AC Covered by snow to a depth of . . .

Note. This snow is not compacted.

AD Cleared of soft snow, full length and width.

AE Totally free of snow and ice.

AF Covered by ( . . . type) ice to a depth of . . .

AG

AH Operating without tone modulation.

AI Operating without coding or without flashing.

AK Covered by compacted snow to a depth of . . .

AL Operating on reduced power.

AM Snow clearance in progress (estimated time of completion is . . . (date/time)).

AN Grass cutting in progress (estimated time of completion is . . . (date/time)).

AO Marked by . . .

AP Work is in progress (estimated time of completion is . . . (date/time)).

AQ Work completed.

AR Snow clearance completed.

AS Grass cutting completed.

AT Sanding is in progress (estimated time of completion is . . . (date/time)).

AU Apparatus unreliable.

AV Covered by ice patches.

AW Height of snowbanks is . . . (figures and units).

AX Braking action is . . . (A—good, B—medium, C—poor).

AY Are to avoid area, radius of danger being . . . (about the point . . .).

AZ Will take place from . . . (date/time).

for an unknown duration (or until . . . (date/time)) (on the days of . . . between the hours of . . . and . . .) at . . . (location) (within the sector of . . . and a radius of . . .) at . . . height above . . . (datum).

EA

EB Location change to . . . effective . . . (date/time).

EC

Characteristics or identification or radio call sign changed to . . .

ED

Operating frequency(ies) will be changed to . . . kc (or . . . mc) effective . . . (date/time).

EE

EF

EG

EH Not heard.

EI

EJ

EK

EL

EM

EN

Military operations only.

Not available due to . . . (specify reason) from . . . (date/time) for an unknown duration (or until . . . (date/time)).

EO

EP Available on prior permission (or . . .) only.

EQ

ER

ES

Out of service from . . . (date/time) for an unknown duration (or until . . . (date/time)) due to the following condition(s) . . .

ET

Test operation only, NOT for operational use.

EU

EV

EW

Completely withdrawn.

EX

EY Is outside the limits of its assigned ocean station.

EZ Is within the limits of its assigned ocean station.

IA

IB

IC Report of apparent unreliability or track displacement hereby is cancelled.

ID

IE Available on request to . . .

IF

Flight checked and found reliable.

IG

IH

II

IJ

IK Available on request (to . . .) immediately (or at . . . (time period) notice).

IL

IM Hours of service are now . . .

IN

Operative (or re-operative), activated (or re-activated) from . . . (date/time) for an unknown duration (or until . . . (date/time)).

IO

IP Tracks(s) reported to be displaced ( . . . degrees) ( . . . direction) of published bearing(s), other tracks probably have shifted.

IQ

IR To be used as radio beacon only. Magnetic track(s) towards station is (are) now . . . (will be . . . at . . . (date/time)).

IS

Operative (or re-operative) subject to conditions/limitations already published.

IT

Aircraft restricted to runways and taxiways. Unserviceable for aircraft heavier than . . . tons.

IU

IV	Unsafe from . . . (date/time) for an unknown duration (or until . . . (date/time)).	OQ		UG	Closed for an unknown duration (or until . . . (date/time)) due to ice or snow.
IW		OR	Previously promulgated shutdown has been cancelled.	UH	Closed for an unknown duration (or until . . . (date/time)) due to thaw.
IX		OS		UI	Closed from . . . (date/time) for an unknown duration (or until . . . (date/time)) for maintenance.
IY		OT	New facility in operation.	UJ	
IZ		OU	Operating without interruption for voice transmissions from . . . (date/time) for an unknown duration (or until . . . (date/time)).	UK	
OA		OV		UL	
OB		OW		UM	Operating in an unmonitored status.
OC		OX	Exercising at . . . (date/time, location and height above the specified datum).	UN	
OD		OY		UO	
OE		OZ		UP	
OF		UA	Closed to all operations from . . . (date/time) for an unknown duration (or until . . . (date/time)).	UQ	
OG	Operative but ground checked only, awaiting flight check.	UB		UR	
OH		UC		US	
OI		UD	Closed to all night operations from . . . (date/time) for an unknown duration (or until . . . (date/time)).	UT	Operative but caution advised due to following condition(s).
OJ		UE		UU	Suitable for . . . (specify) equipped aircraft only.
OK	Resumed normal operation.	UF	Closed for an unknown duration due to flood.	UV	Covered by slush to a depth of . . .
OL	Track(s) ground checked, approved for instrument flying.			UW	Covered by water to a depth of . . .
OM	Shut down for maintenance from . . . (date/time) for an unknown duration (or until . . . (date/time)) — disregard all signals.			UX	
ON				UY	
OO				UZ	
OP					

# CONVERSION TABLES

## DISTANCES

METERS FEET		
MTR.	FT-MTR.	FT.
0.305	1	3.281
0.610	2	6.562
0.914	3	9.842
1.219	4	13.123
1.524	5	16.404
1.829	6	19.685
2.134	7	22.966
2.438	8	26.247
2.743	9	29.528
3.048	10	32.809
6.096	20	65.617
9.144	30	98.426
12.192	40	131.234
15.240	50	164.043
18.290	60	196.852
21.340	70	229.660
24.380	80	262.469
27.430	90	295.278
30.480	100	328.087
60.960	200	656.1
91.440	300	984.3
121.920	400	1312.3
152.400	500	1640.4
304.800	1000	3280.9
609.600	2000	6561.7
914.400	3000	9842.6
1219.200	4000	13123.5
1524.000	5000	16404.3

KILOMETERS TO		
ST. MI	KM	N.M.
0.62	1	0.54
1.24	2	1.08
1.86	3	1.62
2.49	4	2.16
3.11	5	2.70
3.73	6	3.24
4.35	7	3.78
4.97	8	4.32
5.59	9	4.86
6.21	10	5.40
12.43	20	10.79
18.64	30	16.19
24.86	40	21.58
31.07	50	26.98
37.28	60	32.38
43.50	70	37.77
49.71	80	43.17
55.93	90	48.56
62.14	100	53.96
124.28	200	107.92
186.42	300	161.88
248.56	400	215.84
310.70	500	269.80
372.84	600	323.76
434.98	700	377.72
497.12	800	431.68
559.26	900	485.64
621.40	1000	539.6

STATUTE MILES TO		
KM	ST. MI	N.M.
1.61	1	0.87
3.22	2	1.74
4.83	3	2.61
6.44	4	3.47
8.05	5	4.34
9.66	6	5.21
11.27	7	6.08
12.88	8	6.95
14.49	9	7.82
16.09	10	8.68
32.19	20	17.37
48.28	30	26.05
64.38	40	34.74
80.47	50	43.42
96.56	60	52.10
112.66	70	60.79
128.75	80	69.47
144.85	90	78.16
160.94	100	86.84
321.88	200	173.7
482.82	300	260.5
643.76	400	347.4
804.70	500	432.2
965.64	600	521.0
1126.6	700	607.9
1287.5	800	694.7
1448.5	900	781.6
1609.4	1000	866.4

NAUTICAL MILES TO		
KM	N.M.	ST. MI
1.85	1	1.15
3.71	2	2.30
5.56	3	3.46
7.41	4	4.61
9.27	5	5.76
11.12	6	6.91
12.97	7	8.06
14.83	8	9.21
16.68	9	10.36
18.53	10	11.52
37.06	20	23.03
55.60	30	34.55
74.13	40	46.06
92.66	50	57.58
111.19	60	69.10
129.72	70	80.61
148.26	80	92.13
166.79	90	103.64
185.32	100	115.2
370.64	200	230.3
555.96	300	345.5
741.28	400	460.6
926.60	500	575.8
1111.92	600	691.0
1297.24	700	806.1
1482.56	800	921.3
1667.88	900	1036.4
1853.2	1000	1151.6

YARDS TO METERS	
100	91
200	183
300	274
400	366
500	457
600	549
700	640
800	732
900	823
1000	914
1100	1006
1200	1097
1300	1189
1400	1280
1500	1372
1600	1463
1700	1554
1800	1646
1900	1737
2000	1828
3000	2742
4000	3656
5000	4570
6000	5484
7000	6398
8000	7312
9000	8226

METERS TO YARDS	
100	109
200	219
300	328
400	437
500	547
600	656
700	766
800	875
900	984
1000	1094
1100	1203
1200	1312
1300	1422
1400	1531
1500	1640
1600	1750
1700	1860
1800	1969
1900	2078
2000	2188
3000	3282
4000	4376
5000	5470
6000	6564
7000	7658
8000	8752
9000	9846

NAUTICAL MILES TO METERS	
0.1	185
0.2	370
¼	463
0.3	556
0.4	741
½	926
0.6	1111
0.7	1296
¾	1389
0.8	1482
0.9	1667
1	1852
1¼	2315
1½	2778
1¾	3241
2	3704
2¼	4167
2½	4630
2¾	5093
3	5556
3¼	6019
3½	6482
3¾	6945
4	7408
5	9260

U.S. GALS.	LTRS.	IMP. GALS.
0.264	1	0.220
0.528	2	0.440
0.793	3	0.660
1.057	4	0.880
1.321	5	1.100
1.585	6	1.320
1.849	7	1.540
2.113	8	1.760
2.378	9	1.980
2.642	10	2.200
5.283	20	4.399
7.925	30	6.599
10.567	40	8.799
13.209	50	10.999
15.850	60	13.198
18.492	70	15.398
21.134	80	17.598
23.775	90	19.797
26.417	100	21.997

U.S. GALS.	IMP./U.S. GALS.	IMP. GALS.
1.220	1	0.833
2.401	2	1.666
3.601	3	2.499
4.802	4	3.332
6.002	5	4.165
7.203	6	4.998
8.403	7	5.831
9.603	8	6.664
10.804	9	7.479
12.004	10	8.330
24.009	20	16.661
36.013	30	24.991
48.017	40	33.321
60.002	50	41.652
72.020	60	49.982
84.030	70	58.312
96.034	80	66.642
108.039	90	74.973
120.043	100	83.303

U.S. GALLONS*		
TO LBS. AVIATION FUEL	TO LBS. TURBINE FUEL	
6	1	6.7
60	10	66.8
120	20	133.5
180	30	200.3
240	40	267.0
300	50	333.8
360	60	400.6
420	70	467.3
480	80	534.1
540	90	600.9
600	100	667.6
1200	200	1335
1800	300	2003
2400	400	2670
3000	500	3338
3600	600	4006
4200	700	4673
4800	800	5341
5400	900	6009
6000	1000	6676
12000	2000	13352
18000	3000	20028
24000	4000	26705
30000	5000	33382
60000	10000	66763

LITERS*		
TO KGS. AVIATION FUEL	TO KGS. TURBINE FUEL	
0.7	1	0.8
7.2	10	8
14.4	20	16
21.6	30	24
28.8	40	32
35.9	50	40
43.1	60	48
50.3	70	56
57.5	80	64
64.7	90	72
71.9	100	80
143.8	200	160
215.7	300	240
287.6	400	320
359.4	500	400
431.3	600	480
503.2	700	560
575.1	800	640
647.0	900	720
718.9	1000	800
1438	2000	1600
2157	3000	2400
2876	4000	3200
3595	5000	4000
7189	10000	8000

\* NOTE: These figures are approximate only, as temperature of octane will change volume/weight ratio.

KGS.	LBS./KGS.	LBS.
0.454	1	2.205
0.907	2	4.409
1.361	3	6.614
1.814	4	8.818
2.268	5	11.023
2.722	6	13.228
3.175	7	15.432
3.629	8	17.637
4.082	9	19.842
4.536	10	22.043
9.072	20	44.092
13.068	30	66.139
18.144	40	88.185
22.680	50	110.23
27.216	60	132.28
31.751	70	154.32
36.287	80	176.37
40.823	90	198.42
45.359	100	220.46

LITERS	to	KGS.OIL	U.S. GALLONS to LBS. OIL
1		0.9	1
2		1.8	2
3		2.7	3
4		3.6	4
5		4.5	5
6		5.4	6
7		6.3	7
8		7.2	8
9		8.1	9
10		9.0	10
20		18.0	20
30		27.0	30
40		36.0	40
50		45.0	50
60		54.0	60
70		63.0	70
80		72.0	80
90		81.0	90
100		90.0	100
			7.5
			15.0
			22.5
			30.0
			37.5
			45.0
			52.5
			60.0
			67.5
			75.0
			150.0
			225.0
			300.0
			375.0
			450.0
			525.0
			600.0
			675.0
			750.0

## CROSSWIND COMPONENT TABLE

		Angle Between Wind Direction and Runway Heading								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
W	5	5	1	2	2	3	4	4	5	5
W	10	10	2	3	5	6	7	8	9	10
i	15	15	3	5	7	9	11	13	14	15
n	20	20	3	7	10	13	15	17	18	20
d	25	25	4	8	12	16	19	22	23	25
	30	30	5	10	15	19	23	26	28	30
S	35	35	6	12	17	22	26	30	32	35
p	40	40	7	14	20	25	30	35	37	40
e	45	45	8	15	22	29	34	39	42	45
e	50	50	9	17	25	32	38	43	47	50
d	55	55	10	19	27	35	42	48	52	54
	60	60	10	20	30	38	46	52	65	
K	65	65	11	22	32	42	50	56		
n	70	70	12	24	35	45	54			
o	75	75	13	26	37	48				
t	80	80	14	27	40					
s	85	85	15	29						
	90	90	16							

WIND ANGLE TABLE — ENROUTE  
WIND ANGLE (LEFT OR RIGHT)

Wind Angle Degrees	10	20	30	40	50	60	70	80	100	110	120	130	140	150	160	170
	Head Wind Component								Tail Wind Component							
W	5	-5	-5	-4	-4	-3	-3	-2	-1	+1	+2	+3	+3	+4	+4	+5
i	10	-10	-9	-9	-8	-6	-5	-3	-2	+2	+3	+5	+6	+8	+9	+10
n	15	-15	-14	-13	-11	-10	-8	-5	-3	+3	+5	+8	+10	+11	+13	+15
d	20	-20	-19	-17	-15	-13	-10	-7	-3	+3	+7	+10	+13	+15	+17	+20
S	25	-25	-23	-22	-19	-16	-13	-9	-4	+4	+9	+13	+16	+19	+22	+25
p	30	-29	-28	-26	-23	-19	-15	-10	-5	+5	+10	+15	+19	+23	+26	+29
e	35	-34	-33	-30	-27	-22	-18	-12	-6	+6	+12	+18	+22	+27	+30	+34
e	40	-39	-38	-35	-31	-26	-20	-14	-7	+7	+14	+20	+26	+31	+35	+39
d	45	-44	-42	-39	-34	-29	-23	-15	-8	+8	+15	+23	+29	+34	+39	+44
K	50	-49	-47	-43	-38	-32	-25	-17	-9	+9	+17	+25	+32	+38	+43	+49
n	55	-54	-52	-48	-42	-35	-28	-19	-9	+9	+19	+28	+35	+42	+48	+54
o	60	-59	-56	-52	-46	-39	-30	-21	-10	+10	+21	+30	+39	+46	+52	+59
t	65	-64	-61	-56	-50	-42	-33	-22	-11	+11	+22	+33	+42	+50	+56	+61
s	70	-69	-66	-61	-54	-45	-35	-24	-12	+12	+24	+35	+45	+54	+61	+69

## TEMPERATURES

Cent.	Fahr.														
-40	-40.0	-28	-18.4	-16	3.2	-4	24.8	8	46.4	20	58.0	32	89.6	44	111.2
-39	-38.2	-27	-16.6	-15	5.0	-3	26.6	9	48.2	21	69.8	33	91.4	45	113.0
-38	-36.4	-26	-14.8	-14	6.8	-2	28.4	10	50.0	22	71.6	34	93.2	46	114.8
-37	-34.6	-25	-13.0	-13	8.6	-1	30.2	11	51.8	23	73.4	35	95.0	47	116.6
-36	-32.8	-24	-11.2	-12	10.4	0	32.0	12	53.6	24	75.2	36	96.8	48	118.4
-35	-31.0	-23	-9.4	-11	12.2	1	33.8	13	55.4	25	77.0	37	98.6	49	120.2
-34	-29.2	-22	-7.6	-10	14.0	2	35.6	14	57.2	26	78.8	38	100.4	50	122.0
-33	-27.4	-21	-5.8	-8	15.8	3	37.4	15	59.0	27	80.6	39	102.2		
-32	-25.6	-20	-4.0	-9	17.6	4	39.2	16	60.8	28	82.4	40	104.0		
-31	-23.8	-19	-2.0	-7	19.4	5	41.0	17	62.6	29	84.2	41	105.8		
-30	-22.0	-18	-0.4	-6	21.2	6	42.8	18	64.4	30	86.0	42	107.6		
-29	-20.2	-17	1.4	-5	23.0	7	44.6	19	66.2	31	87.8	43	109.4		

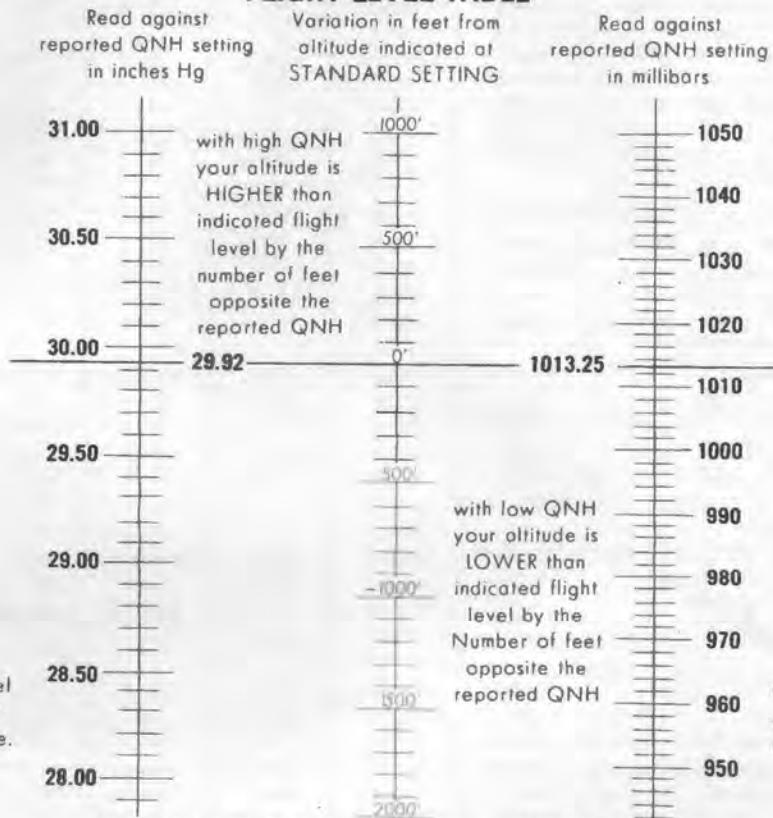
## CONVERSION OF ARC TO TIME

h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0° 0-0	3° 0-12	6° 0-24	9° 0-36	12° 0-48	15° 1-00	18° 4-00	21° 7-00	24° 10-00	27° 13-00	30° 16-00	33° 19-00	36° 2-00	39° 5-00	42° 8-00	45° 11-00
1° 0-04	4° 0-16	7° 0-28	10° 0-40	13° 0-52	16° 2-00	19° 5-00	22° 8-00	25° 11-00	28° 14-00	31° 17-00	34° 20-00	37° 2-00	40° 5-00	43° 8-00	46° 11-00
2° 0-08	5° 0-20	8° 0-32	11° 0-44	14° 0-56	45° 3-00	90° 6-00	135° 9-00	180° 12-00	45° 4-00	60° 4-00					

## ALTIMETER SETTING

SETTING	AT AIRPORT	IN THE AIR
Standard 29.92 Hg - 1013.25 mb	Variable elevation reading above or below actual elevation	Positive separation by pressure level but at varying actual altitudes
QNH	Actual elevation reading when aircraft on ground	Altitude indicated (without consideration of temperature)
QFE	Zero elevation reading when aircraft on ground	Height above ground indicated (without consideration of temperature)

## FLIGHT LEVEL TABLE



Example: With reported QNH 995.1 mb or 29.38 inches (Hg), your flight level is 500' lower than altimeter set at Standard will indicate.

## ALTITUDE PRESSURE TABLE - INCHES FEET

Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
28.0	1824	1814	1805	1795	1785	1776	1766	1756	1746	1737
28.1	1727	1717	1707	1698	1688	1678	1668	1659	1649	1639
28.2	1630	1620	1610	1601	1591	1581	1572	1562	1552	1542
28.3	1533	1523	1513	1504	1494	1484	1475	1465	1456	1446
28.4	1436	1427	1417	1407	1398	1388	1378	1369	1359	1350
28.5	1340	1330	1321	1311	1302	1292	1282	1273	1263	1254
28.6	1244	1234	1225	1215	1206	1196	1186	1177	1167	1158
28.7	1148	1139	1129	1120	1110	1100	1091	1081	1072	1062
28.8	1053	1043	1034	1024	1015	1005	995	986	976	967
28.9	957	948	938	929	919	910	900	891	881	872
29.0	863	853	844	834	825	815	806	796	787	777
29.1	768	758	749	739	730	721	711	702	692	683
29.2	673	664	655	645	636	626	617	607	598	589
29.3	579	570	560	551	542	532	523	514	504	495
29.4	485	476	467	457	448	439	429	420	410	401
29.5	392	382	373	364	354	345	336	326	318	308
29.6	298	289	280	270	261	252	242	233	224	215
29.7	205	196	187	177	168	159	149	140	131	122
29.8	112	103	94	85	75	66	57	47	38	29
29.9	20	10	+1	-8	-17	-26	-36	-45	-54	-63
30.0	-73	-82	-91	-100	-110	-119	-128	-137	-146	-156
30.1	-165	-174	-183	-192	-202	-211	-220	-229	-238	-248
30.2	-257	-266	-275	-284	-293	-303	-312	-321	-330	-339
30.3	-348	-358	-367	-376	-385	-394	-403	-412	-421	-431
30.4	-440	-449	-458	-467	-476	-485	-494	-504	-513	-522
30.5	-531	-540	-549	-558	-567	-576	-585	-594	-604	-613
30.6	-622	-631	-640	-649	-658	-667	-676	-685	-694	-703
30.7	-712	-721	-730	-740	-749	-758	-767	-776	-785	-794
30.8	-803	-812	-821	-830	-839	-848	-857	-866	-875	-884
30.9	-893	-902	-911	-920	-929	-938	-947	-956	-965	-974
31.0	-983	-992	-1001	-1010	-1019	-1028	-1037	-1046	-1055	-1064

## BAROMETRIC READINGS FROM INCHES TO MILLIBARS

Mercury	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
Inches	Millibars									
28.0	948.2	948.5	948.9	949.2	949.5	949.9	950.2	950.6	950.9	951.2
28.1	951.6	951.9	952.3	952.6	952.9	953.3	953.6	953.9	954.3	954.6
28.2	955.0	955.3	955.6	956.0	956.3	956.7	957.0	957.3	957.7	958.0
28.3	958.3	958.7	959.0	959.4	959.7	960.0	960.4	960.7	961.1	961.4
28.4	961.7	962.1	962.4	962.8	963.1	963.4	963.8	964.1	964.4	964.8
28.5	965.1	965.5	965.8	966.1	966.5	966.8	967.2	967.5	967.8	968.2
28.6	968.5	968.8	969.2	969.5	969.9	970.2	970.5	970.9	971.2	971.6
28.7	971.9	972.2	972.6	972.9	973.2	973.6	973.9	974.3	974.6	974.9
28.8	975.3	975.6	976.0	976.3	976.6	977.0	977.3	977.7	978.0	978.3
28.9	978.7	979.0	979.3	979.7	980.0	980.4	980.7	981.0	981.4	981.7
29.0	982.1	982.4	982.7	983.1	983.4	983.7	984.1	984.4	984.8	985.1
29.1	985.4	985.8	986.1	986.5	986.8	987.1	987.5	987.8	988.2	988.5
29.2	988.8	989.2	989.5	989.8	990.2	990.5	990.9	991.2	991.5	991.9
29.3	992.2	992.6	992.9	993.2	993.6	993.9	994.2	994.6	994.9	995.3
29.4	995.6	995.9	996.3	996.6	997.0	997.3	997.6	998.0	998.3	998.6
29.5	999.0	999.3	999.7	1000.0	1000.4	1000.7	1001.0	1001.4	1001.7	1002.0
29.6	1002.4	1002.7	1003.1	1003.4	1003.7	1004.1	1004.4	1004.7	1005.1	1005.4
29.7	1005.8	1006.1	1006.4	1006.8	1007.1	1007.5	1007.8	1008.1	1008.5	1008.8
29.8	1009.1	1009.5	1009.8	1010.2	1010.5	1010.8	1011.2	1011.5	1011.9	1012.2
29.9	1012.5	1012.9	1013.2	1013.5	1013.9	1014.2	1014.6	1014.9	1015.2	1015.6
30.0	1015.9	1016.3	1016.6	1016.9	1017.3	1017.6	1018.0	1018.3	1018.6	1019.0
30.1	1019.3	1019.6	1020.0	1020.3	1020.7	1021.0	1021.3	1021.7	1022.0	1022.4
30.2	1022.7	1023.0	1023.4	1023.7	1024.0	1024.4	1024.7	1025.1	1025.4	1025.7
30.3	1026.1	1026.4	1026.7	1027.1	1027.4	1027.8	1028.1	1028.4	1028.8	1029.1
30.4	1029.5	1029.8	1030.1	1030.5	1030.8	1031.2	1031.5	1031.8	1032.2	1032.5
30.5	1032.9	1033.2	1033.5	1033.9	1034.2	1034.5	1034.9	1035.2	1035.5	1035.9
30.6	1036.2	1036.6	1036.9	1037.3	1037.6	1037.9	1038.3	1038.6	1038.9	1039.3
30.7	1039.6	1040.0	1040.3	1040.6	1041.0	1041.3	1041.7	1042.0	1042.3	1042.7
30.8	1043.0	1043.3	1043.7	1044.0	1044.4	1044.7	1045.0	1045.4	1045.7	1046.1
30.9	1046.4	1046.7	1047.1	1047.4	1047.8	1048.1	1048.4	1048.8	1049.1	1049.5

## Thousands of an inch

Inches of Mercury	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
Millibars	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3

## MILLIBARS TO INCHES

Millibars	0	1	2	3	4	5	6	7	8	9
	Inches									
940	27.76	27.79	27.82	27.85	27.88	27.91	27.94	27.96	27.99	28.02
950	28.05	28.08	28.11	28.14	28.17	28.20	28.23	28.26	28.29	28.32
960	28.35	28.38	28.41	28.44	28.47	28.50	28.53	28.56	28.58	28.61
970	28.64	28.67	28.70	28.73	28.76	28.79	28.82	28.85	28.88	28.91
980	28.94	28.97	29.00	29.03	29.06	29.09	29.12	29.15	29.18	29.20
990	29.23	29.26	29.29	29.32	29.35	29.38	29.41	29.44	29.47	29.50
1000	29.53	29.56	29.59	29.62	29.65	29.68	29.71	29.74	29.77	29.80
1010	29.83	29.85	29.88	29.91	29.94	29.97	30.00	30.03	30.06	30.09
1020	30.12	30.15	30.18	30.21	30.24	30.27	30.30	30.33	30.36	30.39
1030	30.42	30.45	30.47	30.50	30.53	30.56	30.59	30.62	30.65	30.68
1040	30.71	30.74	30.77	30.80	30.83	30.86	30.89	30.92	30.95	30.98
1050	31.01	31.04	31.07	31.09	31.12	31.15	31.18	31.21	31.24	31.27

## SUNRISE TABLES

LAT.	2 JAN	14 JAN	1 FEB	16 FEB	28 FEB	15 MAR	2 APR	14 APR	2 MAY	14 MAY	1 JUN	16 JUN
72°N			1033	0852	0746	0628	0455	0349	0150			
70°N			0949	0832	0735	0626	0502	0405	0229	0102		
68°N		1041	0920	0817	0727	0624	0508	0417	0256	0157		
66°N	1027	0958	0859	0805	0720	0623	0514	0427	0317	0229	0115	
64°N	0949	0929	0842	0754	0714	0621	0518	0435	0333	0253	0200	0133
62°N	0922	0907	0827	0745	0708	0620	0522	0443	0346	0311	0228	0210
60°N	0902	0850	0815	0737	0703	0619	0525	0449	0357	0326	0250	0236
58°N	0845	0836	0805	0731	0700	0618	0528	0454	0407	0339	0308	0256
56°N	0831	0823	0756	0725	0656	0617	0530	0459	0416	0350	0323	0313
54°N	0819	0812	0748	0719	0653	0617	0532	0503	0423	0400	0335	0327
52°N	0808	0802	0741	0715	0650	0616	0534	0507	0430	0409	0346	0339
50°N	0758	0754	0735	0710	0647	0615	0536	0511	0436	0417	0356	0350
45°N	0738	0736	0721	0701	0641	0614	0540	0519	0449	0433	0417	0412
40°N	0722	0721	0709	0653	0636	0613	0544	0525	0500	0446	0433	0430
35°N	0708	0708	0659	0646	0632	0612	0547	0530	0509	0458	0447	0445
30°N	0656	0657	0651	0640	0628	0611	0549	0535	0517	0508	0459	0458
20°N	0635	0638	0636	0629	0621	0609	0553	0543	0531	0525	0520	0520
10°N	0617	0621	0623	0620	0615	0608	0557	0551	0543	0539	0538	0539
0°	0600	0605	0610	0611	0609	0606	0601	0557	0554	0553	0554	0557
10°S	0543	0549	0557	0602	0603	0604	0604	0604	0604	0606	0610	0614
20°S	0524	0532	0544	0552	0557	0602	0607	0610	0616	0620	0627	0633
30°S	0503	0512	0528	0541	0550	0600	0611	0618	0629	0637	0647	0654
35°S	0450	0500	0519	0534	0545	0558	0613	0622	0637	0646	0659	0706
40°S	0435	0447	0508	0526	0540	0557	0615	0627	0645	0657	0712	0720
45°S	0418	0431	0456	0518	0535	0555	0618	0633	0655	0709	0727	0737
50°S	0356	0411	0440	0507	0528	0553	0621	0640	0707	0724	0746	0758
52°S	0345	0401	0433	0502	0525	0551	0622	0643	0712	0731	0755	0807
54°S	0333	0351	0425	0457	0521	0550	0624	0646	0719	0739	0805	0818
56°S	0319	0338	0416	0450	0517	0549	0626	0650	0725	0748	0817	0831
58°S	0303	0324	0406	0443	0513	0547	0628	0654	0733	0758	0830	0846
60°S	0244	0307	0354	0436	0508	0546	0630	0658	0741	0809	0845	0903

LAT.	1 JUL	16 JUL	31 JUL	15 AUG	2 SEP	14 SEP	2 OCT	14 OCT	1 NOV	16 NOV	1 DEC	16 DEC
72°N				0219	0403	0459	0620	0716	0852	1108		
70°N			0109	0252	0416	0505	0617	0706	0827	0951		
68°N			0206	0316	0427	0510	0614	0657	0808	0914	1032	
66°N	0003	0136	0238	0335	0436	0514	0612	0650	0753	0848	0944	1028
64°N	0140	0216	0302	0349	0443	0518	0609	0645	0740	0828	0914	0946
62°N	0216	0243	0321	0402	0450	0521	0608	0639	0729	0812	0851	0919
60°N	0241	0304	0336	0412	0455	0524	0606	0635	0720	0759	0833	0857
58°N	0301	0321	0349	0421	0500	0526	0605	0631	0712	0747	0818	0840
56°N	0318	0335	0400	0429	0505	0528	0603	0628	0705	0737	0806	0825
54°N	0332	0347	0410	0436	0508	0530	0602	0624	0659	0728	0754	0813
52°N	0344	0358	0419	0443	0512	0531	0601	0622	0654	0720	0744	0802
50°N	0354	0408	0427	0448	0515	0533	0600	0619	0648	0713	0736	0752
45°N	0417	0428	0443	0501	0522	0536	0558	0613	0637	0658	0717	0732
40°N	0434	0444	0456	0511	0528	0539	0556	0609	0628	0645	0702	0715
35°N	0449	0457	0508	0519	0533	0541	0555	0604	0620	0635	0649	0701
30°N	0502	0509	0518	0527	0537	0543	0553	0601	0613	0625	0638	0648
20°N	0524	0529	0535	0540	0544	0547	0551	0554	0601	0609	0618	0627
10°N	0543	0546	0549	0551	0551	0550	0549	0548	0550	0555	0601	0609
0°	0600	0602	0603	0601	0557	0553	0546	0543	0540	0541	0545	0552
10°S	0617	0618	0616	0611	0602	0555	0544	0537	0530	0528	0529	0534
20°S	0635	0635	0631	0622	0608	0558	0541	0531	0519	0513	0512	0515
30°S	0656	0654	0647	0634	0615	0601	0538	0524	0506	0456	0451	0453
35°S	0709	0705	0656	0641	0619	0602	0536	0520	0458	0446	0440	0440
40°S	0723	0718	0706	0649	0623	0604	0534	0515	0450	0434	0426	0425
45°S	0739	0733	0719	0658	0628	0606	0532	0510	0440	0421	0409	0407
50°S	0800	0751	0734	0709	0634	0608	0529	0503	0428	0404	0349	0345
52°S	0809	0800	0741	0715	0637	0609	0527	0500	0422	0357	0340	0334
54°S	0820	0810	0749	0720	0640	0610	0526	0457	0416	0348	0329	0322
56°S	0833	0821	0758	0726	0643	0612	0524	0453	0409	0338	0316	0308
58°S	0847	0833	0807	0733	0646	0613	0522	0449	0401	0327	0302	0252
60°S	0904	0848	0819	0741	0650	0615	0520	0444	0352	0314	0245	0231

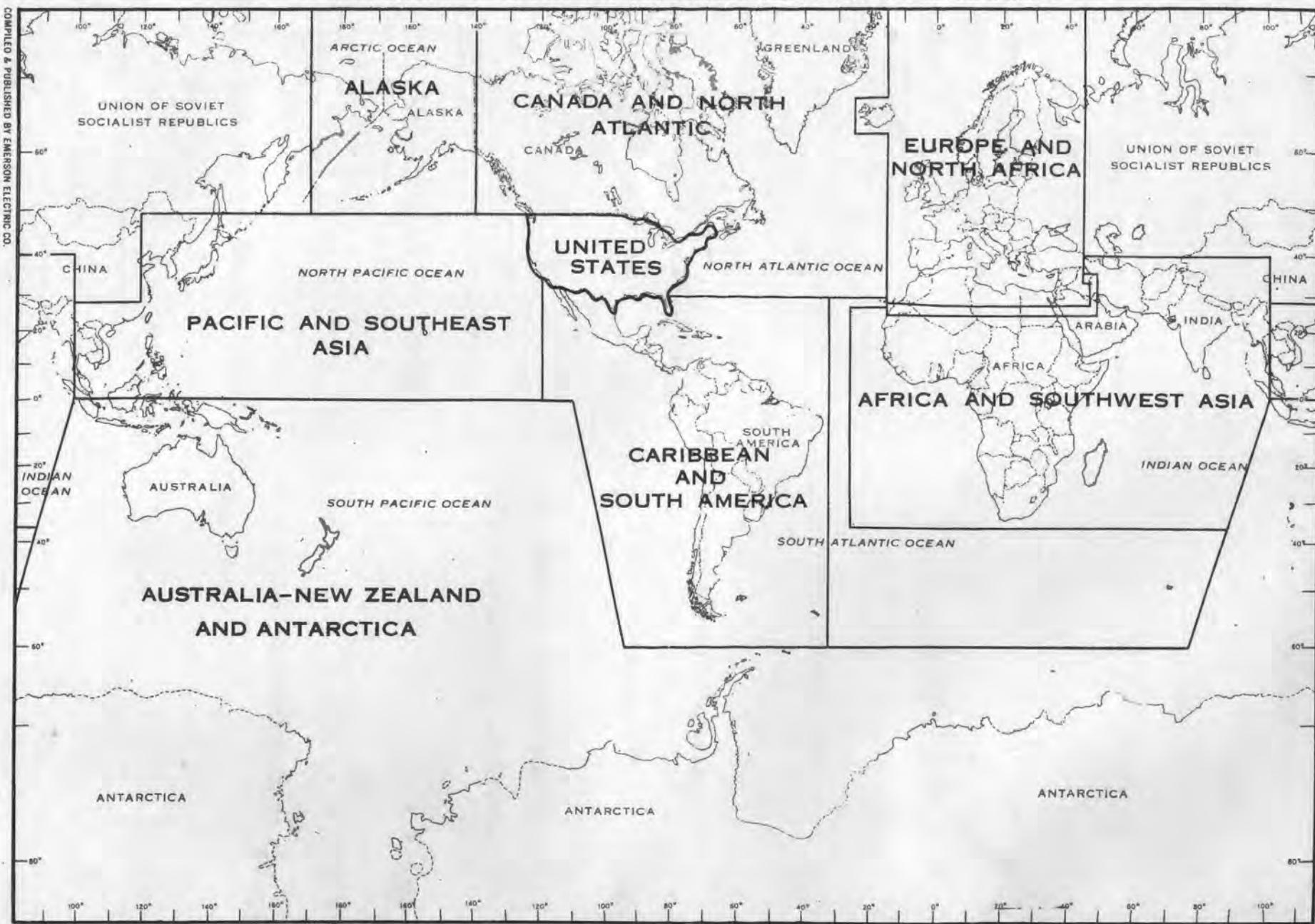
## SUNSET TABLES

LAT.	2 JAN	14 JAN	1 FEB	16 FEB	28 FEB	15 MAR	2 APR	14 APR	2 MAY	14 MAY	1 JUN	16 JUN
72°N			1355	1538	1641	1753	1916	2016	2211			
70°N			1439	1558	1652	1755	1908	2000	2129	2301		
68°N		1337	1508	1613	1700	1756	1902	1947	2101	2201		
66°N	1341	1420	1529	1625	1707	1758	1856	1937	2040	2127	2244	
64°N	1419	1449	1546	1635	1713	1759	1852	1928	2024	2102	2158	2229
62°N	1445	1510	1600	1644	1718	1800	1848	1920	2010	2043	2128	2151
60°N	1506	1528	1612	1652	1723	1801	1844	1914	1959	2028	2106	2125
58°N	1522	1543	1623	1659	1727	1801	1841	1908	1948	2015	2048	2105
56°N	1537	1555	1632	1704	1730	1802	1839	1903	1940	2003	2033	2048
54°N	1549	1606	1640	1710	1734	1803	1836	1859	1932	1953	2021	2034
52°N	1600	1616	1647	1715	1737	1803	1834	1855	1925	1945	2009	2022
50°N	1609	1624	1653	1719	1739	1804	1832	1851	1919	1937	2000	2011
45°N	1629	1642	1707	1728	1745	1805	1828	1843	1906	1920	1939	1949
40°N	1646	1657	1718	1736	1750	1806	1824	1837	1855	1907	1922	1930
35°N	1700	1710	1728	1743	1754	1807	1822	1831	1846	1855	1908	1916
30°N	1712	1721	1737	1749	1758	1808	1819	1826	1837	1845	1856	1903
20°N	1732	1740	1752	1759	1805	1810	1814	1818	1824	1828	1835	1841
10°N	1750	1757	1805	1809	1810	1811	1810	1810	1812	1814	1818	1822
0°	1807	1812	1817	1818	1816	1812	1807	1804	1800	1800	1801	1804
10°S	1825	1829	1830	1827	1822	1814	1804	1757	1750	1746	1745	1747
20°S	1843	1846	1843	1836	1828	1816	1800	1750	1738	1732	1728	1728
30°S	1905	1905	1859	1847	1835	1818	1756	1743	1725	1716	1708	1707
35°S	1917	1917	1908	1854	1839	1819	1754	1738	1717	1706	1656	1655
40°S	1932	1930	1918	1901	1844	1821	1752	1733	1709	1656	1643	1641
45°S	1950	1946	1931	1910	1850	1823	1749	1727	1658	1643	1628	1624
50°S	2012	2006	1946	1920	1857	1825	1746	1720	1647	1628	1609	1603
52°S	2022	2016	1953	1925	1900	1826	1744	1717	1641	1621	1600	1553
54°S	2034	2026	2001	1930	1903	1827	1743	1714	1635	1613	1550	1542
56°S	2048	2038	2009	1937	1907	1828	1741	1710	1628	1604	1538	1530
58°S	2104	2052	2019	1943	1911	1829	1739	1706	1620	1554	1525	1515
60°S	2123	2109	2031	1951	1916	1831	1737	1701	1612	1543	1510	1458

LAT.	1 JUL	16 JUL	31 JUL	15 AUG	2 SEP	14 SEP	2 OCT	14 OCT	1 NOV	16 NOV	1 DEC	16 DEC
72°N			2145	1954	1850	1717	1615	1433	1220	-		
70°N		2255	2113	1941	1844	1721	1625	1459	1337			
68°N		2203	2050	1931	1839	1724	1634	1518	1414	1305		
66°N	2346	2232	2131	2032	1922	1835	1726	1641	1534	1440	1353	1323
64°N	2226	2154	2108	2018	1915	1832	1729	1647	1546	1500	1423	1404
62°N	2151	2127	2050	2006	1909	1829	1730	1652	1557	1516	1446	1432
60°N	2125	2107	2035	1955	1903	1827	1732	1656	1606	1530	1504	1453
58°N	2106	2050	2022	1946	1858	1824	1734	1700	1614	1542	1519	1510
56°N	2049	2036	2011	1939	1854	1822	1735	1704	1621	1552	1532	1525
54°N	2035	2024	2001	1932	1850	1821	1736	1707	1627	1601	1543	1538
52°N	2023	2013	1953	1925	1847	1819	1737	1710	1633	1608	1553	1549
50°N	2013	2004	1945	1920	1844	1818	1738	1712	1638	1616	1602	1558
45°N	1950	1944	1929	1908	1837	1814	1740	1718	1649	1631	1621	1619
40°N	1933	1928	1916	1858	1831	1812	1742	1723	1659	1644	1636	1636
35°N	1918	1914	1904	1849	1826	1810	1744	1727	1707	1655	1649	1650
30°N	1905	1902	1855	1842	1822	1808	1745	1731	1714	1704	1700	1702
20°N	1843	1843	1838	1829	1815	1804	1748	1738	1726	1720	1719	1723
10°N	1825	1826	1823	1818	1809	1802	1750	1744	1737	1735	1737	1742
0°	1807	1810	1810	1808	1803	1759	1753	1750	1747	1748	1753	1759
10°S	1750	1754	1756	1758	1758	1757	1755	1755*	1758	1802	1809	1817
20°S	1732	1737	1742	1747	1752	1754	1758	1802	1809	1817	1826	1836
30°S	1711	1718	1727	1735	1745	1751	1801	1809	1822	1834	1847	1857
35°S	1659	1707	1717	1728	1741	1750	1804	1813	1829	1844	1859	1910
40°S	1645	1654	1707	1720	1737	1748	1806	1818	1838	1856	1912	1925
45°S	1628	1639	1654	1711	1732	1746	1808	1824	1848	1909	1929	1943
50°S	1608	1621	1639	1700	1727	1744	1812	1830	1901	1926	1949	2006
52°S	1558	1612	1632	1655	1724	1743	1813	1834	1906	1934	1959	2017
54°S	1547	1602	1624	1650	1721	1742	1815	1837	1913	1943	2010	2029
56°S	1535	1551	1616	1643	1718	1741	1816	1841	1920	1953	2022	2043
58°S	1520	1539	1606	1637	1714	1740	1818	1845	1928	2004	2037	2100
60°S	1503	1524	1555	1629	1710	1738	1821	1850	1937	2017	2055	2120

## BOUNDARIES OF FLIGHT INFORMATION PUBLICATION – PLANNING

FOR THE AIRCRAFT UNITED STATES AIR FORCE



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