DEPARTMENT OF COMMERCE

CIVIL AERONAUTICS ADMINISTRATION

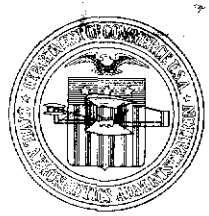
WASHINGTON

CIVIL AERONAUTICS

MANUAL 60

PART 2.

AIRPORT TRAFFIC CONTROL



AUGUST 1, 1940

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DEPARTMENT OF COMMERCE

ADMINISTRATOR OF CIVIL AERONAUTICS

MANUAL 60

PART 2

AIRPORT TRAFFIC CONTROL

Before proceeding into an explanation of airport traffic control, it is desired to set forth the distinctions between airway traffic control and airport traffic control in order that everyone may have a clear understanding of the functions of these two services.

Airway Traffic Control	Airport Traffic Control
Airway traffic control is exercised by federal personnel.	Airport traffic control is exercised by local personnel representing the airport management.
The centers are located on or near large airports not because the personnel are more concerned with local traffic at that particular airport but simply because of the greater convenience and lower cost of communications facilities.	The control towers are located so that the operator has a good view of the airport and the surrounding airspace.
The airway traffic control center may exercise jurisdiction over any flying in its control area, a certain designated portion of the civil airways including, of course, the airspace over any and all airports lying within such airways. However, the airway traffic control center exercises its control only when the visibility is restricted and only over those portions of the airspace under its jurisdiction in which the visibility is restricted.	Airport traffic control is confined for the most part to control over contact flight operations within 3 miles of the center of the airport and includes control of the actual take-off or landing of aircraft under all conditions, except for those take-offs made under such conditions of weather and traffic as to require the immediate control of the flight by the federal agency.
Airway traffic control is exercised principally through ground communications facilities, - interphone, telephone, or teletype connections with nearby agencies, and in some cases teletype or long line telephone with outlying airports, federal airway communications stations and aircraft operators.	Airport traffic control is exercised by radio on 278 k.c. and light signals to aircraft not equipped with radio.

Airway traffic control is or may be continuous, while the aircraft is in flight on the portion of the civil airway under the jurisdiction of a center.	The control which airport personnel exercises is much more immediate - short-lived - and in practically every case the result of visual observation of aircraft movements in the vicinity of the airport or on the airport.
Airway traffic control personnel approve flight plans (issue traffic clearances).	Airport control towers are concerned with flight plans only insofar as they may act as a medium of communication between airway traffic control and the pilot. The tower operators use flight plan information in coordinating local traffic. The air-traffic control-tower operator never approves a flight plan (unless the flight is to be entirely within the immediate vicinity of the airport, and then with the implied or actual consent of airway traffic control). The clearance which the control tower operator gives is merely one with respect to take-off conditions and has no significance with respect to the conditions under which the flight will progress after the pilot leaves the vicinity of the airport.
The control which airway traffic control exercises over take-offs and landings is merely that which is incidental to the beginning or completion of an instrument flight and cannot be substituted for the control exercised by airport personnel.	The airport manager, even when acting through air-traffic control tower operators, is always at liberty to say when or under what conditions operators or pilots may use the landing area. However, the control which the airport management exercises over flight of aircraft is that which is obviously necessary to insure the safety of other aircraft landing, taking off, and taxying on the airport. Where the pilot came from or where he may be going after he leaves the immediate vicinity of the airport is ordinarily not of any concern to the airport management.

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Thus, it can be seen that the federal or airway traffic control might be called "Instrument Weather Traffic Control" or "Continuous Traffic Control." It is the only control which can be applied to the movements of aircraft enroute from one airport to another. On the other hand, airport traffic control might be called "Local Traffic Control", and except in special cases, "Terminal Traffic Control." The two services are not conflicting or duplicative, but are complementary. Both are needed to insure the safety of traffic on the civil airways. (For further information concerning airway traffic control, see Manual 60, Part 3, "Airway Traffic Control."

RULES OF GOOD PRACTICE

Because of differences in the physical characteristics of airports and differences in the kind of operations, there are usually a number of local airport rules. There are, however, a number of rules of good practice which are generally applicable and which should be observed in the absence of any local rules to the contrary.

General

1. Whenever possible, study the local airport rules before using a landing area.

2. If your aircraft is equipped with a radio receiver and a radio-equipped control-tower is in operation at the airport you are about to use, guard the control tower frequency while on or in the immediate vicinity of the airport.

Landing and Taking Off

3. Circle the landing area sufficiently to observe other traffic; such circles should be to the left unless traffic is definitely moving clockwise.

4. Do not enter local traffic so abruptly as to crowd out other aircraft.

5. At many airports wind tees are used primarily to indicate the direction in which landings and take-offs are to be made, and hence they may not indicate the true wind direction, particularly when winds are light; nevertheless, land or take-off in the

direction indicated by the wind tee unless other instructions are received, or unless the use of a different direction appears necessary in the interest of safety.

6. At airports equipped with runways, land and take-off on the runways if practicable.

7. Ordinarily, do not land directly in line with an aircraft on the landing area; if landing on the runway, make sure that the runway is clear and remains clear; if landing on an unpaved area, it is considered good practice to keep all aircraft on the landing area between your line of approach and the hangar line, or, if your line of approach is approximately at right angles to the hangar line, to keep to the right of aircraft on the ground.

Taxying

8. Make sure there is nothing in your way before starting to taxi; if airport attendants are nearby, ask them for a "go ahead" signal.

9. If a control tower is in operation, be on the alert for radio messages or visual signals; if you have a radio transmitter, call the tower before starting to taxi.

10. Taxi at a safe and reasonable speed.

11. If your airplane is not equipped with adequate brakes, do not attempt to taxi near buildings, aircraft, or other obstacles unless someone is at a wing to assist you.

12. If practicable, keep near the boundaries of the landing area while taxying out to take-off position.

13. Use taxi-ways or intersecting runways for taxying.

14. Keep to one side of the end of the runway while making final check of engines, etc., before take-off.

15. Make your turn into take-off position in a direction opposite to the normal flow of traffic so that you can observe aircraft approaching for landing; if you plan to wait until an approaching aircraft has landed, stop your turn while facing incoming aircraft so that the pilot will not be confused as to your intentions.

16. If your airplane or engine does not appear to be functioning properly, taxi back into a parking space, if practicable.

17. Make the landing area available to others by getting out of the line of traffic as promptly as possible.

18. Leave your airplane in a designated parking area; in the absence of any such area, leave it where it will not obstruct taxi-ways, hangar entrances, or terminal building loading gates.

PROCEDURES AND PHRASEOLOGIES FOR AIRPORT TRAFFIC CONTROL

Section 60.38 of the C. A. A. Regulations states: "Airmen shall observe air traffic control procedures and phraseologies which shall provide adequately for safety in the operation of aircraft in air commerce and which are best adapted to ready understanding by the flying public."

Airmen who observe the following procedures and phraseologies for airport traffic control will be considered to have met the requirements of this Section with respect to airport traffic control.

VISUAL SIGNAL PROCEDURES

The following procedures should be observed in the control of aircraft not equipped with radio. These same procedures will be used to control aircraft equipped with radio if radio contacts cannot be established.

Note: It should be understood that pilots may proceed in a conventional manner if no signals are displayed unless local rules specifically provide otherwise.

A. LIGHT SIGNAL PROCEDURE

1. Inbound Aircraft

When an aircraft is in flight

a green light from a directed traffic control light will mean, "CLEARED TO LAND."

a red light from a directed traffic control light will mean, "GIVE WAY TO OTHER AIRCRAFT AND CONTINUE CIRCLING."

During the hours of darkness, a pilot wishing to land should turn on a landing light as he approaches the airport unless he has already been given a green light.

A series of flashes of a landing light by a pilot intending to land will mean:

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a. If the floodlight is on, the pilot wants it turned off;

b. If the floodlight is off, the pilot wants it turned on.

Pilots should acknowledge light signals by rocking their wings during the hours of daylight, or by a single flash of a landing light during the hours of darkness.

2. Aircraft on the Airport

When a pilot is taxying:

a red light, from a directed traffic control light will mean, "STOP."

a series of red flashes from a directed traffic control light will mean that the pilot is to taxi back to the hangar line;

a green light from a directed traffic control light will mean, "CLEARED FOR CONTINUING TAXYING."

When a pilot is in position for take-off:

a red light from a directed traffic control light will mean, "WAIT."

a green light from a directed traffic control light will mean, "CLEARED FOR TAKE-OFF."

Pilots should acknowledge light signals by moving the ailerons or rudder during the hours of daylight or by a single flash of a landing light during the hours of darkness.

3. Light Signals for the Suspension of Contact Flight Operations

During the hours of daylight, the lighting of the rotating airport beacon or a stationary flashing red light on the control tower will mean that flying in accordance with contact flight rules has been suspended.

During the hours of darkness, a stationary flashing red light on the control tower will mean that flying in accordance with contact flight rules has been suspended.

4. Light Signals to Indicate Clockwise (to the right) Flow of Traffic in the Airport Zone

A flashing amber light on the control tower will mean that a clockwise flow of traffic is required.

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5. Forced Landing Signal

When an aircraft is forced to land at night at an airport, it shall signal its forced landing by making a series of short flashes with its navigation lights, if practicable to do so.

B. FLAG SIGNAL PROCEDURE

Flags displayed on or near the control tower may be used to supplement light signals, or they may be used instead of light signals during the hours of daylight.

Flags corresponding to stationary, flashing lights will be displayed from a mast or socket.

Flags used to supplement, or in lieu of, directed traffic control light signals will be displayed manually.

Signal flags will be of a color corresponding to the lights they supplement except that a white flag will be used in place of a green light from a directed traffic control light.

A blue and white checkered flag displayed from a mast on a control tower may be used to indicate that the tower is not in operation. (To be used only when a tower is operated irregularly or on a part-time basis.)

Pilots should acknowledge flag signals in the manner prescribed for the acknowledgment of light signals.

C. PANEL SIGNAL PROCEDURE

Panels displayed on or near the control tower may be used to supplement light signals or they may be used instead of light signals during the hours of daylight.

Panels will be of a color corresponding to the lights they supplement

A letter R in black may be painted upon the panel used to indicate a clockwise flow of traffic.

RADIO PROCEDURES

GENERAL

Pilots of aircraft equipped with functioning two-way radio should make the communications contacts required in the instrument flight rules of the Civil Air Regulations, no matter how good the weather is, and such radio contacts should be made in the form prescribed.

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Messages between pilots and control tower operators may be routed indirectly if such an arrangement seems more practicable in a given situation. (e.g., through military, naval, air carrier or other facilities.) Pilots of aircraft equipped with a receiver only should acknowledge radio messages just as they would acknowledge visual signals.

1. Inbound Aircraft

A pilot should call the control tower for local traffic information and landing instructions when over or near a contact reporting point for the airport of destination, or approximately ten minutes before estimated time of arrival, except that such reports may be delayed until ground contact has been established.

When flying in airway traffic control areas, pilots should not call the control tower for local traffic information and landing instructions until cleared to the tower.

After a pilot has landed, the control tower operator will furnish any necessary information on other aircraft landing or taking off and will issue any necessary instructions relative to taxying. This control will be continued until the pilot has parked his aircraft.

The control tower operator will initiate calls to inbound aircraft which have not called the tower as soon as such aircraft are observed.

2. Aircraft on the Airport

If an aircraft is equipped with functioning two-way radio, it is the pilot's duty to initiate radio contact before starting to taxi and to maintain a continuous guard on the control tower frequency while on the landing area proper.

3. Outbound Aircraft

After the take-off, the pilot should continue to guard the control tower frequency until the tower operator indicates he has no further information or until outside the airport zone, unless it is necessary to switch over to the range frequency earlier for navigational purposes.

STANDARD PHRASEOLOGIES

The following phraseologies should be used in radio contacts with either control tower operators or Federal Communications Station operators.

The name of the pilot should not be used in routine radio contacts.

Every digit of a number should be stated separately, except when giving flight altitude; the cipher "O" is considered a digit and should always be spoken "ZERO."

Aircraft should be identified as:

Itinerant civil - (make, and if pertinent, model of aircraft) - (certificate number)
e. g., "STINSON ONE, EIGHT, ONE, FOUR, THREE."

Air carrier - (abbreviated name of company) (flight or trip number)
e. g., "UNITED ONE FIVE."

Army - (Army) (Army serial number)
e. g., "ARMY SIX, ZERO, THREE, TWO."

Navy - (Navy) (Navy serial number)
e. g., "NAVY EIGHT, THREE, FOUR, FIVE."

Control towers should be identified as "LAGUARDIA TOWER," "CHICAGO TOWER," etc., rather than by the use of call letters.

Communications stations should be referred to as "WASHINGTON RADIO," "CLEVELAND RADIO," etc., rather than by the use of call letters.

Army Airway Communications Stations should be referred to as "LANGLEY ARMY AIRWAYS," "PITTSBURGH ARMY AIRWAYS," or "ATLANTA ARMY AIRWAYS" to avoid confusion with civil airway stations.

Since the hour is ordinarily not significant in airport traffic control, time may be stated in minutes only, e. g.,

__:25 would be given as "TWO, FIVE."

However, if the hour is included in the time, the time should be given in four digits and the hour should be stated with reference to a 24-hour clock, e. g.,

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12:30 a.m., written 00:30 and spoken "ZERO, ZERO, THREE, ZERO,"
8:45 a.m., written 08:45 and spoken "ZERO, EIGHT, FOUR, FIVE,"
2:35 p.m., written 14:35 and spoken "ONE, FOUR, THREE, FIVE."

Flight altitudes should be reported in feet above sea level, as;

"ONE THOUSAND."
"ONE THOUSAND, FIVE HUNDRED."
"TWO THOUSAND, SIX HUNDRED."

Enunciation. A uniform flow of language without hesitation is necessary in order that each word may be heard distinctly. The position and distance of the speaker from the microphone should not be changed during the transmission. Pilots should endeavor to prevent any break in the continuity of the message. Each syllable of each word should be enunciated clearly and numerals especially should be spoken distinctly.

Speech rate. It is suggested that pilots observe and adopt the speech rate of ground operators whose messages are most easily understood.

MESSAGE STRUCTURE

A. STANDARD MESSAGES

A standard message is made up of three parts:

the preface,
the body of the message,
the end of the message.

The preface is made up of three parts:

designation of the aircraft or ground station being called,
"FROM,"
designation of the caller,
e. g., "CHICAGO TOWER FROM STINSON ONE, FOUR, SIX, FIVE, SEVEN,"
(if the pilot of the aircraft wishes to call the tower).

This form of preface should always be used unless an exception is specifically authorized.

The body of the message. The subject matter of a message should be arranged and expressed as indicated in examples of routine messages.

The end of the message. Except as indicated in examples of abbreviated messages, messages should be terminated by:

"GO AHEAD," which requires a reply even though it be merely an acknowledgment, or

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"REPEAT," when instructions or information have not been understood, or

"WAIT," which indicates that a return call will be made as soon as practicable, or

"ROGER," *which serves as an acknowledgment, or

"WILCO," to indicate compliance; usually used by ground stations, but may be used by pilots, ** or

by the last item in a routine message as indicated in examples given of standard messages.

* The word "Roger" for receipt has been adopted by the services due to its excellent carrying qualities.

** When a pilot acknowledges receipt of a message it will be presumed that he will comply with all instructions contained therein.

B. ABBREVIATED MESSAGES

From a control tower operator:

"SPARTAN ONE, FOUR, ONE, FIVE, SEVEN, WAIT" when it is necessary to prevent garbling of a message being received.

"SPARTAN ONE, FOUR, ONE, FIVE, SEVEN, GO AHEAD," to permit resumption of a message previously interrupted, or to indicate which one of two or three pilots are to call back first.

From a pilot:

"UNITED ONE FIVE" which serves as an acknowledgment from the pilot of United 15.

The Preliminary Call-Up. The preliminary call-up is an abbreviated message sent in an effort to establish contact and used by the station called to acknowledge completion of contact. It is a message containing only a preface and end of message.

A preliminary call-up may be initiated by either a control tower operator or a pilot, e. g.,

"LA GUARDIA TOWER FROM ARMY EIGHT, TWO, THREE, EIGHT, GO AHEAD," or

"UNITED ONE FIVE FROM NEWARK TOWER, GO AHEAD."

Normally, a preliminary call-up should be made and acknowledged before any information or request for information is included in a message.

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If a radio contact is initiated by the pilot of an aircraft in flight, a preliminary call-up should be made and acknowledged:

(a) before sending a flight plan or other relatively long message;

(b) whenever there is any doubt as to the completion of a contact;

(c) whenever from monitoring the control tower frequency it appears likely that two or more messages may be sent simultaneously unless they are transmitted as requested by the control tower operator.

Note: It is particularly important that pilots make the preliminary call-ups. Normally, a pilot has his receiver adjusted and tuned so that he can hear only one station at a time. However, the control tower operator must guard a number of frequencies and may be within the effective range of a large number of aircraft transmitters.

MESSAGE SEQUENCE AND EXAMPLES OF ROUTINE MESSAGES

A pilot should be most careful to tune his receiver to the frequency of the station he wishes to contact before calling such station. Remember - at many airports there are several radio stations, hence it is very important that the station be addressed properly, e. g., "CLEVELAND TOWER," "WASHINGTON TOWER."

A. INBOUND AIRCRAFT

The pilot of the aircraft should call the control tower operator when over or near a contact reporting point for the airport of destination, or approximately ten minutes before estimated time of arrival.

The body of the message should include

(a) "(geographical location)"

(b) "(Time)" (optional)

(c) "(flight altitude of aircraft)"

(d) "(contemplated course)" (if flight is not being made in accordance with approved flight plan)

(e) "(request for information or instructions)" (if pertinent)

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e. g., "CLEVELAND TOWER FROM STINSON ONE, FOUR, ONE, FIVE, SEVEN, ELYRIA THREE THOUSAND LANDING AT CLEVELAND, GO AHEAD."

This first message permits the control tower operator to plan an orderly landing sequence and to give the pilot wind direction and velocity, known traffic along his approach, and any other pertinent information.

The pilot should acknowledge whatever information the control tower operator furnishes with:

"(identification of aircraft)" (if further information is needed, the procedure will follow the general form prescribed).
e. g., "STINSON ONE, FOUR, ONE, FIVE, SEVEN."

Normally, the pilot will continue his approach, and make a second call as he enters the airport zone.

The body of the message should include

"(geographical location or distance and direction from the airport)"

"(altitude)"

End of message

"GO AHEAD."

e. g., "CLEVELAND TOWER FROM STINSON ONE, FOUR, ONE, FIVE, SEVEN. THREE MILES WEST. ONE THOUSAND EIGHT HUNDRED. GO AHEAD."

The control tower operator's answer will include clearance to land, local traffic, wind direction and velocity, runway to be used, field condition and other helpful information.

The pilot should make the customary acknowledgment and maintain a continuous guard on the tower frequency so as to receive any change of information or instructions concerning the conditions under which he will be landing.

After the pilot has landed, the control tower operator usually will initiate a call to give taxi clearance, ground traffic, and taxying instructions.

The pilot should make the customary acknowledgment and remain on the control tower frequency until he has parked his aircraft.

B. OUTBOUND AIRCRAFT

The pilot should call the control tower operator when ready to taxi out.

The body of this message should include

"READY TO TAXI" "DEPARTING FOR (destination or nature of flight)" or
"HERE IS MY FLIGHT PLAN" (if flight plan has not been submitted previously)

e. g., "CLEVELAND TOWER FROM WACO ONE, THREE, ONE, FIVE, NINE. READY TO TAXI. DEPARTING FOR CHICAGO. GO AHEAD."

Normally, a pilot has no occasion to use his transmitter again except to acknowledge receipt of information or instructions from the control tower. Such acknowledgments should be abbreviated messages, e. g., "WACO ONE, THREE, ONE, FIVE, NINE."

When the pilot has reached the point of take-off, the control tower operator will initiate a call giving take-off clearance and local traffic preceded by airway traffic clearance, if such clearance has not previously been given.

After the take-off, the pilot should continue to guard the control tower frequency until the tower operator has stated "Cleared to change frequency," or until outside the airport zone, unless it is necessary to switch over to the range frequency earlier for navigational purposes.

C. ENROUTE AIRCRAFT

Normally, pilots submit position reports to **Federal Airway Communications** Stations along the route they are flying. However, a pilot may make a position report to a control tower at an airport over which he is passing if for any reason he deems such a procedure more practical.

The pilot should make the customary acknowledgment of any information or airway traffic control instructions relayed to him by the control tower operator.

Note: A control tower operator may ask the pilot to repeat back instructions especially when such instructions contain additions to or changes in the flight plan as submitted.

If the pilot of an aircraft enroute wishes to submit a flight plan through a control tower he should submit all the pertinent information as set forth in Section 60.133 of the Civil Air Regulations.

Pilots of aircraft equipped with radio receivers only will, insofar as practicable, be given the same service as is prescribed for pilots of aircraft equipped with two-way radio. Obviously, such pilots should acknowledge radio messages just as they would acknowledge visual signals.