南京航空航天大学民航学院空中交通管理专业系列教材

民航无线电陆空通话

Radiotelephony Communications for Air Traffic Controllers and Airline Pilots

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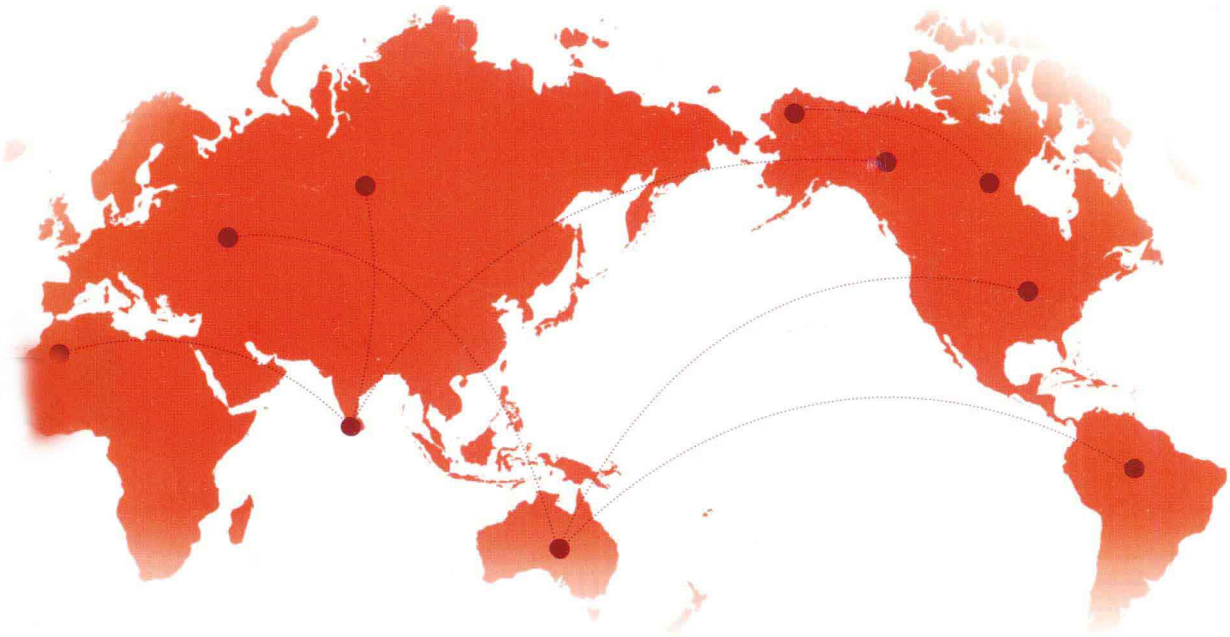

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·北京·

内 容 简 介

《民航无线电陆空通话》是一本以提高民航空管学员和飞行学员专业通话技能为主要任务的专业性教材，内容贯穿实际管制与飞行工作的方方面面，涉及国内外最新使用的各种常规通话用语和非正常情况下的紧急处置通话用语。

本教材内容具有较强的代表性、时效性和实用性，可供空中交通管制和飞行技术专业学生使用。

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前　言

无线电陆空通话是当今航空管制员与飞行员信息沟通的主要方式，无线电通话的正确与否直接关系民航飞行安全。在国际航空史上，由于无线电通话用语不标准而导致的飞行事故和事故征候屡有发生。近年来，我国航空运输持续发展，空中交通流量持续增加，进一步规范无线电通话用语对确保我国空中交通的安全、顺畅具有十分重要的意义。本书以国际民航组织的9432文件(Manual of Radiotelephony)和9835文件(Manual on the Implementation of ICAO Language Proficiency Requirements)为蓝本，以中国民航局空管局《空中交通无线电通话用语指南》为依据编写，是一本以提高民航空管学员和飞行学员专业通话技能为主要任务的专业性教材。

本教材包括9个单元，共21课，内容贯穿实际管制与飞行工作的方方面面，以国际民航组织和国内的有关文件及资料为背景，以国内外最新使用的各种常规通话用语和非正常情况下的紧急处置通话用语为主要内容，通过大量系统性的句型、对话、术语的学习以及口头和书面的训练，以期达到使学员熟练掌握和运用无线电陆空通话用语的目的。

本教材根据我国航空管制和飞行运行的特点，紧扣我国国情，并纳入国际通话程序的最新要求和特点，教材内容具有较强的代表性、时效性和实用性。课后练习可供学员学习和巩固。通过本教材的学习，可以提高学员的实际通话能力，加强学员在处理特殊情况时的信心和应变能力，也可以通过本教材的学习扩大相关专业的词汇量，提高对飞行各个阶段的理解和掌握，更好地为适应未来的工作做好语言上的准备工作。

本教材由南京航空航天大学刘继新副教授主编，胡彬、李桂毅讲师担任副主编。教材编写过程中得到了南京航空航天大学民航学院相关领导和专家的关心和指导，张军峰副教授提供了较多的技术支持，在此一并表示感谢。

由于编者水平有限，书中难免存在错误和不足，敬请各位行业专家和读者批评指正。

编者

二零一三年十月于南京

目　录

Unit One

Basic Operating Procedures

Lesson One

Terms, Numbers, Call Signs, Phonetic Alphabets, Standard Words and Phrases

1. Radiotelephony Terms (无线电通话术语)

Abeam: At right angles to the length of a ship or airplane.

Absolute Minimum: The calculated RVR, or at aerodromes where RVR measurements are not taken or available, the visibility, which is the lowest possible for any instrument approach to be made using that particular approach aid.

Advisory Area: A designated area where air traffic advisory service is available.

Advisory Route: A designated route along which air traffic advisory service is available.

Aerodrome: Any area of land or water designed, equipped, set apart or commonly used for affording facilities for the landing and departure of aircraft.

Aerodrome Control Service: Air traffic control service for aerodrome traffic.

Aerodrome Control Tower: A unit providing air traffic control service for aerodrome traffic.

Aerodrome Flight Information Service (AFIS): A flight information service provided to aerodrome traffic.

Aerodrome Movement: Aircraft movement in the movement area.

Aerodrome Operating Minima: The limits of usability of an aerodrome for either take-off or landing, usually expressed in terms of visibility or runway visual range, decision height and cloud conditions.

Aerodrome Traffic: All traffic on the maneuvering area of an aerodrome and all aircraft operating in the vicinity of an aerodrome.

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

Aerodrome Traffic Zone: Airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.

Aeronautical Mobile Service: A radio communication service between aircraft stations and aeronautical stations, or between aircraft stations.

Aeronautical Station: A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be placed on board a ship or an earth satellite.

Airborne Collision Avoidance System (ACAS): An aircraft system based on SSR transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.

Aircraft Identification: A group of letters, figures, or a combination thereof which is either identical to, or coded equivalent of, the aircraft call sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications.

Aircraft Station: A mobile station in the aeronautical mobile service on board an aircraft.

Air-ground Communications: Two-way communication between aircraft and stations or locations on the surface of the earth.

Air/Ground Communication Service: A service that permits information to be passed from an aeronautical station to an aircraft station on or in the vicinity of an aerodrome.

AIRPROX: A situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised.

Air Traffic: All aircraft in flight or operating on the maneuvering area of an aerodrome.

Air Traffic Control Clearance: Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Air Traffic Service (ATS): A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service, area control service, approach control service or aerodrome control service.

Airway: A control area or part of a control area established in the form of a corridor equipped with radio navigation aids.

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

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

Approach Control Office: A unit established to provide Air Traffic Control Service to controlled flights arriving at, or departing from, one or more aerodromes.

Approach Control Service: ATC service for arriving or departing or transiting controlled

flights.

Approach Sequence: The order in which two or more aircraft are cleared for an approach.

Apron: Any area of an airport set aside for parking, maintenance, loading/unloading, etc. of aircraft; as opposed to runways.

Apron Management Unit: A unit responsible for providing ground transportation service on the apron.

Area Control Centre: A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.

Automatic Terminal Information Service (ATIS): The automatic provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

Base Turn: A turn executed by the aircraft during the initial approach between the end of the outboard track and the beginning of the intermediate or final approach track. The tracks are not reciprocal.

Blind Transmission: A transmission from one station to another station in circumstances where two-way communication cannot be established but where it is believed that the called station is able to receive the transmission.

Broadcast: A transmission of information relating to air navigation that is not addressed to a specific station or stations.

Circling Approach: An extension of an instrument approach procedure which provides for visual circling of the aerodrome prior to landing.

Clearance Limit: The point to which an aircraft is granted an air traffic control clearance.

Control Area: A controlled airspace extending upwards from a specified limit above the surface of the earth.

Controlled Airspace: An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.

Control Zone: A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

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

Decision Altitude/Height: A specified altitude/height in a precision approach at which a missed approach must be initiated if the required visual reference to continue the approach to land has not been established.

Deviation: The situation in which the planned track differs from the actual track.

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

Elevation: The vertical distance of a point or level on, or affixed to, the surface of the earth measured from mean sea level.

Endurance: The time an aircraft can continue flying, without refueling.

Estimated Time of Arrival: The time at which the pilot estimates that the aircraft will be over a specific location.

Expected Approach Time: The time at which it is expected that the flight will leave the Initial Approach Fix to commence an approach to land.

Final Approach: That part of an instrument approach procedure in which alignment and descent for landing are accomplished. a. In a non-precision approach it normally begins at the final approach fix or point and ends at the missed approach point or fix. b. In a precision approach the final approach commences at the glide path intercept point and ends at the decision height/altitude.

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 atmospheric pressure, which is related to a specific pressure datum, 1013.2mb, and is separated from other such surfaces by specific pressure intervals.

Flight Plan: Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft. Flight Plans fall into two categories: Full Flight Plans and Abbreviated Flight Plans.

General Air Traffic: Flights operating in accordance with civil air traffic procedures.

Heading: The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (magnetic).

Height: The vertical distance of a level, a point, or an object considered as a point measured from a specified datum.

Holding Point: An area where pilots wait for takeoff clearance. It is a speech abbreviation used in radiotelephony phraseology having the same meaning as Taxiway Holding Position.

Holding Procedure: A predetermined maneuver which keeps an aircraft within a specified airspace whilst awaiting further clearance.

IFR Flight: A flight conducted in accordance with the instrument flight rules.

Instrument Approach Procedure: A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or when applicable, from the beginning of a defined arrival route to a point from which the landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply.

Instrument Meteorological Conditions (IMC): Meteorological conditions expressed in terms of visibility, horizontal and vertical distance from cloud, less than the minima specified

for visual meteorological conditions.

Level: A generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level.

Maneuvering Area: The part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

Minimum Descent Altitude/Height: An altitude/height in a non-precision or circling approach below which descent may not be made without visual reference.

Missed Approach Point (MAPt): The point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

Missed Approach Procedure: The procedure to be followed if the approach cannot be continued.

Movement Area: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the maneuvering area and the aprons.

Procedure Turn: A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Racetrack procedure: A procedure designed to enable the aircraft to reduce altitude during the initial approach segment and/or establish the aircraft inbound when the entry into a reversal procedure is not practical.

Radar Approach: An approach, executed by an aircraft, under the direction of a radar controller.

Radar Contact: The situation which exists when the radar blip or radar position symbol of a particular aircraft is seen and identified on a radar display.

Radar Identification: The process of correlating a particular radar blip or radar position symbol with a specific aircraft.

Radar Vectoring: Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

Reporting Point: A specified geographical location in relation to which the position of an aircraft can be reported.

Reverse procedure: A procedure designed to enable aircraft to reverse direction during the initial approach segment of an instrument approach procedure. The sequence may include procedure turns or base turns.

Runway: A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

Runway Movement: Any movement of aircraft on available runway(s).

Runway Visual Range: The range over which the pilot of an aircraft on the centre line of

a runway can expect to see the runway surface markings, or the lights delineating the runway or identifying its centre line.

Signal Area: An area on an aerodrome used for the display of ground signals.

Significant Point: A specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigational and ATS purposes.

Special VFR Flight: A flight made at any time in a control zone which is Class A airspace or is in any other control zone in IMC or at night, in respect of which the appropriate air traffic control unit has given permission for the flight to be made in accordance with special instructions given by that unit, instead of in accordance with the Instrument Flight Rules and in the course of which flight the aircraft complies with any instructions given by that unit and remains clear of cloud and in sight of the surface.

Straight Ahead: When used in departure clearances means: 'track extended runway centre-line'. When given in Missed Approach Procedures means: 'continue on Final Approach Track'.

Straight-in Approach (IFR): An instrument approach wherein final approach is commenced without first having executed a procedure turn. (Not necessarily completed with a straight-in landing.)

Straight-in Approach (VFR): Entry into the traffic pattern by interception of the extended runway centerline without executing any other portion of the traffic pattern.

Terminal Control Area: A control area normally established at the confluence of airways in the vicinity of one or more major aerodromes.

Threshold: The beginning of that portion of the runway useable for landing.

Touchdown: The point where the nominal glide path intercepts the runway.

Traffic Alert and Collision Avoidance System (TCAS): See ACAS.

Urgency: An urgent condition, one of being concerned about safety, and requiring timely but not immediate assistance.

Vectoring: Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

VFR Flight: A flight conducted in accordance with the visual flight rules.

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.

Visual Approach: An approach conducted under Instrument Flight Rules that authorizes the pilot to proceed visually and clear of clouds to the airport.

Visual Meteorological Conditions (VMC): Meteorological conditions expressed in terms of visibility, horizontal and vertical distance from cloud, equal to or better than specified minima.

2. Commonly used abbreviations (常用缩略语)

ACC	Area Control Center
ADF	Automatic Direction-finding Equipment
ADS	Automatic Dependent Surveillance
AFIS	Aerodrome Flight Information Service
AGL	Above Ground Level
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIRAC	Aeronautical information Regulation and Control
AIS	Aeronautical Information Service
AMSL	Above Mean Sea Level
AOM	Airport Operation Minima
AOR	Area of Responsibility
APU	Auxiliary Power Unit
ATC	Air Traffic Control
ATD	Actual Time of Departure
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATS	Air Traffic Service
ATZ	Aerodrome Traffic Zone
CAVOK	Ceiling and Visibility OK, i. e. Visibility, cloud and present weather better than prescribed values or condition
CIP	Commercially Important Person
CPDLC	Controller-Pilot Data Link Communications
CRP	Compulsory Reporting Point
CNS	Communications, Navigation, Surveillance
CTR	Control Zone
DME	Distance Measuring Equipment
EAT	Expected Approach Time
EET	Estimated Elapsed Time
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETO	Estimated Time Over
FAA	Federal Aviation Administration
FIC	Flight Information Center

FIR	Flight Information Region
FIS	Flight Information Service
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HF	High Frequency
H24	Continuous Day and Night Service
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Condition
INFO	Information
INS	Inertial Navigation System
LORAN	Long Range Air Navigation System
MET	Meteorological or Meteorology
MLS	Microwave Landing System
MNPS	Minimum Navigation Performance Specifications
NDB	Non-directional radio Beacon
NOZ	Normal Operating Zone
NTZ	No-Transgression Zone
NIL	None or I have nothing to send you
NOTAM	Notice to Airman, i. e. A notice containing information concerning the establishment, condition or change in any aeronautical facility, service procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
PAOAS	Parallel Approach Obstacle Assessment Surfaces
PBN	Performance-Based Navigation
QFE	Atmospheric pressure at aerodrome elevation/at runway threshold
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
RCC	Rescue Co-ordination Center
RNAV	Area Navigation
RNP	Required Navigation Performance
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
SELCAL	A system which permits the selective calling of individual aircraft over radiotelephone channels linking a ground station with the aircraft
SID	Standard Instrument Departure
SIGMET	Information concerning en-route weather phenomena which may affect safety of aircraft operations

SNOWTAM A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area, by means of a special format

SPECIAL Special meteorological report

SSR Secondary Surveillance Radar

SST Supersonic Transport

STAR Standard Terminal Arrival Route

TCAS 或 ACAS Traffic Alert and Collision Avoidance System/Airborne Collision Avoidance System

TAF Aerodrome Forecast

TMA Terminal Control Area

UHF Ultra-High Frequency

UIR Upper Flight Information Region

UTA Upper Control Area

UTC Coordinated Universal Time

VASIS Visual Approach Slope Indicator System

VFR Visual Flight Rules

VHF Very High Frequency

VIP Very Important Person

VMC Visual Meteorological Conditions

VOLMET Meteorological information for aircraft in flight

VOR VHF Omni-directional Radio Range

3. Numbers（数字）

1）General

Number	Pronunciation	汉语读法
0	ZE-RO	洞
1	WUN	幺
2	TOO	两
3	TREE	三
4	FOW-er	四
5	FIFE	五
6	SIX	六
7	SEV-en	拐
8	AIT	八
9	NIN-er	九

Decimal	DAY-SEE-MAL	点
Hundred	HUN-dred	百
Thousand	TOU-SAND	千

注：英文大写部分应重读。

When transmitting messages containing aircraft call signs, altimeter settings, flight levels, headings, wind speeds/directions, pressure settings, transponder codes and frequencies, ATC/pilots shall transmit each digit separately.

All numbers used in the transmission of altitude, height, cloud height, visibility and runway visual range information which contain whole hundreds and whole thousands shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word HUNDRED or TOUSAND as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word THOUSAND and the number of hundreds followed by the word HUNDRED.

10	WUN ZERO（幺洞）
79	SEVEN NINER（拐九）
300	TREE HUNDRED（三百）
7200	SEVEN TOUSAND TOO HUNDRED（七千两）
11000	WUN WUN TOUSAND（一万一千）
13700	WUN TREE TOUSAND SEVEN HUNDRED(一万三千七百)
341	TREE FOWER WUN（三四幺）
68539	SIX AIT FIFE TREE NINER（六八五三九）
BAW 246	SPEEDBIRD TOO FOWER SIX（英航两四六）
150 degrees	WUN FIFE ZERO DEGREES（一百五十度或幺五洞）
180 knots	WUN AIT ZERO KNOTS（一百八十节）
12m/s	WUN TOO METERS PER SECOND（十二米秒）
118.65	WUN WUN AIT DAYSEEMAL SIX FIFE(幺幺八点六五)
123.7	WUN TOO TREE DAYSEEMAL SEVEN（幺两三点拐）
QNH1013	QNH WUN ZERO WUN TREE（修正海压幺洞幺三）
QFE998	QFE NINER NINER AIT（场压九九八）
Heading 160	HEADING WUN SIX ZERO（航向幺六洞）
6300m	SIX TOUSAND TREE HUNDRED METERS（六千三）
14300m	ONE FOWER TOUSAND TREE HUNDRED METERS（幺四三）
31100ft	FLIGHT LEVEL TREE WUN ZERO（飞行高度层三幺幺）
27600ft	FLIGHT LEVEL TOO SEVEN ZERO（飞行高度层两拐六）

2）Transmission of time

When transmitting time, only the minutes of the hour are normally required. However, the hour should be included if there is any possibility of confusion. Time checks shall be given