ข้อกำหนดของสำนักงานการบินพลเรือนแห่งประเทศไทย

ฉบับที่ ๑๑๔

ว่าด้วยการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคล และทรัพย์สินบนภาคพื้น และแผนการบิน (Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA))

ตามที่มาตรา ๑๖/๕ วรรคหนึ่ง (๒) และ (๓) แห่งพระราชบัญญัติการเดินอากาศ พ.ศ. ๒๔๙๗ และที่แก้ไขเพิ่มเติม กำหนดว่าเมื่อคณะกรรมการการบินพลเรือนกำหนดนโยบายเกี่ยวกับการใช้ห้วงอากาศที่ใช้ในการเดินอากาศของประเทศไทยตามมาตรา ๑๕ (๔) แล้ว ให้ผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทยดำเนินการออกข้อกำหนดเกี่ยวกับการเดินอากาศและการทำการบินของอากาศยานและออกข้อกำหนดเกี่ยวกับการป้องกันบุคคลและทรัพย์สินบนภาคพื้น เพื่อประโยชน์ของความปลอดภัยในการบิน โดยคณะกรรมการการบินพลเรือนได้ออกนโยบายห้วงอากาศแห่งชาติ (National Airspace Policy) ให้ไว้ ณ วันที่ ๑๙ กรกฎาคม ๒๕๖๑ จึงสมควรกำหนดหลักเกณฑ์เกี่ยวกับการเดินอากาศและการทำการบินของอากาศยานและการป้องกันบุคคลและทรัพย์สินบนภาคพื้นขึ้น เพื่อประโยชน์ของความปลอดภัยในการบิน อย่างไรก็ตาม วิธีปฏิบัติที่เกี่ยวข้องกับกฎจราจรทางอากาศตามที่กำหนดไว้ในข้อบังคับของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๓๐ ว่าด้วย กฎจราจรทางอากาศ และการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคลและทรัพย์สินบนภาคพื้น รวมถึงการจัดทำแผนการบิน มีเนื้อหาที่เกี่ยวข้องและเชื่อมโยงกัน จึงสมควรที่จะกำหนดไว้ด้วยกัน และเพื่อให้เกิดความเหมาะสมในทางวิธีปฏิบัติสำหรับผู้เกี่ยวข้องและเป็นไปตามมาตรฐานสากลและให้สอดคล้องกับกฎหมาย Standardised European Rule of the Air (SERA) รวมถึงมาตรฐานและวิธีปฏิบัติขององค์การการบินระหว่างประเทศ (ICAO) ที่เกี่ยวข้อง และเป็นไปตามแนวทางการพัฒนากฎหมายการบินพลเรือนของประเทศไทยในรูปแบบ Thailand Civil Aviation Regulation (TCAR) โดยออกข้อกำหนดของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๙๔ ว่าด้วยการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคล และทรัพย์สินบนภาคพื้น และแผนการบิน (Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA)) ให้ไว้ ณ วันที่ ๒๕ มีนาคม พ.ศ. ๒๕๖๘ ซึ่งมีความจำเป็นต้องแก้ไขเพื่อให้สอดคล้องกับมาตรฐานที่กำหนดไว้ในภาคผนวก ๒ ตามข้อแก้ไขที่ ๔๘ และเอกสาร PANS-ATM (Doc4444) ตามข้อแก้ไขที่ ๑๒ และข้อแก้ไขที่ ๑๓ ของอนุสัญญาว่าด้วยการบินพลเรือนระหว่างประเทศ ซึ่งมีผลใช้บังคับตั้งแต่วันที่ ๒๗ พฤศจิกายน ๒๕๖๘ เป็นต้นไป อาศัยอำนาจตามความในมาตรา ๖/๑ และมาตรา ๑๘/๑ แห่งพระราชบัญญัติการเดินอากาศ พ.ศ. ๒๔๙๗ แก้ไขเพิ่มเติมโดยพระราชกำหนดแก้ไขเพิ่มเติมพระราชบัญญัติการเดินอากาศ พ.ศ. ๒๔๙๗ พ.ศ. ๒๕๕๘ และมาตรา ๑๖/๕ (๒)

และ (๓) แห่งพระราชบัญญัติการเดินอากาศ พ.ศ. ๒๔๙๗ แก้ไขเพิ่มเติมโดยพระราชบัญญัติการเดินอากาศ (ฉบับที่ ๑๔) พ.ศ. ๒๕๖๒ ผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทย จึงออกข้อกำหนดเพื่อกำหนดเกี่ยวกับการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคลและทรัพย์สินบนภาคพื้น และการทำแผนการบินไว้ ดังต่อไปนี้

ข้อ ๑ ข้อกำหนดนี้ เรียกว่า “ข้อกำหนดของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๑๑๔ ว่าด้วยการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคลและทรัพย์สินบนภาคพื้น และแผนการบิน (Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA))”

ข้อ ๒ ข้อกำหนดนี้ให้ใช้บังคับตั้งแต่วันถัดจากวันประกาศในราชกิจจานุเบกษาเป็นต้นไป

ข้อ ๓ ให้ยกเลิกข้อกำหนดของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๙๔ ว่าด้วยการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคลและทรัพย์สินบนภาคพื้น และแผนการบิน (Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA)) ให้ไว้ ณ วันที่ ๒๕ มีนาคม พ.ศ. ๒๕๖๘

ข้อ ๔ ในข้อกำหนดนี้

“แผนการบิน” (Flight plan) หมายความว่า ข้อมูลเฉพาะแสดงรายละเอียดที่วางแผนไว้ของเที่ยวบิน

ข้อ ๕ ในการเดินอากาศและการทำการบินของอากาศยาน การป้องกันความเสียหายต่อบุคคลและทรัพย์สินบนภาคพื้น และแผนการบิน ผู้ดำเนินการเดินอากาศ ผู้ให้บริการการเดินอากาศ และผู้ประจำหน้าที่นักบิน รวมถึงผู้ที่เกี่ยวข้องกับการเดินอากาศและการทำการบินของอากาศยาน ต้องดำเนินการให้เป็นไปตามหลักเกณฑ์ที่กำหนดไว้ในเรื่อง ดังต่อไปนี้

(๑) การปฏิบัติการบินเหนือทะเลหลวง (Flight over the high seas)

(๒) การบังคับใช้และการปฏิบัติตาม (Applicability and compliance)

(ก) การกำหนดใช้ (Subject)

(ข) การปฏิบัติตามกฎจราจรทางอากาศ (Compliance with the rules of the air)

(ค) ความรับผิดชอบในการปฏิบัติตามกฎจราจรทางอากาศ (Responsibilities)

(ง) อำนาจหน้าที่ของนักบินผู้ควบคุมอากาศยาน (Authority of pilot-in-command of an aircraft)

(จ) การใช้สารออกฤทธิ์ต่อจิตและประสาทในลักษณะที่อาจกระทบหรือเป็นอุปสรรคต่อการปฏิบัติหน้าที่ (Problematic use of psychoactive substances)

(๓) กฎทั่วไปและการหลีกเลี่ยงการชน (General rules and collision avoidance)

(ก) การปฏิบัติการบินในลักษณะประมาทหรือปราศจากความระมัดระวัง (Negligent or reckless operation of aircraft)

(ข) ความสูงขั้นต่ำ (Minimum heights)

(ค) ระดับเดินทาง (Cruising level)

(ง) วิธีตั้งค่าเครื่องวัดความสูง (Altimeter setting procedures)

(จ) การทิ้งสิ่งของ การพ่น หรือการปล่อยของเหลวหรือก๊าซ (Dropping or spraying)

(ฉ) การลากจูง (Towing)

(ช) การโดดร่ม การทิ้งร่มอากาศ (Parachute descents)

(ซ) การบินผลาดแผลง (Aerobatic flights)

(ฌ) การบินเกาะหมู่ (Formation flights)

(ญ) บัลลูนลอยอิสระไม่มีคนอยู่ (Unmanned free balloons)

(ฎ) ห้วงอากาศเพื่อการใช้งานวัตถุประสงค์เฉพาะ (Special use airspace)

(ฏ) การหลีกเลี่ยงการชนกัน (Avoidance of collisions)

(ฐ) การเข้าใกล้กัน (Proximity)

(ฑ) สิทธิในทาง (Right-of-way)

(ฒ) ไฟที่อากาศยานต้องแสดง (Lights to be displayed by aircraft)

(ณ) การบินภายใต้การจำลองสภาวะการบินด้วยเครื่องวัดประกอบการบิน (Simulated instrument flights)

(ด) การปฏิบัติการบินในสนามบินและในพื้นที่ใกล้เคียงสนามบิน (Operation on and in the vicinity of an aerodrome)

(ต) การปฏิบัติการบินบนพื้นน้ำ (Water operations)

(ถ) สัญญาณ (Signals)

(ท) เวลา (Time)

(๔) แผนการบิน (Flight plans)

(ก) การยื่นแผนการบิน (Submission of a flight plan)

(ข) เนื้อหาของแผนการบิน (Contents of a flight plan)

(ค) การรับแผนการบิน (Acceptance of a flight plan)

(ง) การใส่ข้อมูลแผนการบินให้ครบถ้วน (Completion of a flight plan)

(จ) การเปลี่ยนแปลงแผนการบิน (Change to a flight plan)

(ฉ) การปิดแผนการบิน (Closing a flight plan)

(๕) เกณฑ์ทัศนวิสัย กฎการบินด้วยทัศนวิสัย การบินด้วยวีเอฟอาร์กรณีพิเศษ และกฎการบินด้วยเครื่องวัดประกอบการบิน (Visual Meteorological Conditions, Visual Flight Rules, Special VFR and Instrument Flight Rules)

(ก) เกณฑ์ทัศนวิสัยและระยะห่างจากเมฆขั้นต่ำ (VMC visibility and distance from cloud minima)

(ข) กฎการบินด้วยทัศนวิสัย (Visual Flight Rules)

(ค) การบินด้วยวีเอฟอาร์กรณีพิเศษในเขตควบคุม (Special VFR in Control Zones)

(ง) กฎการบินด้วยเครื่องวัดประกอบการบิน ที่บังคับใช้กับอากาศยานที่ปฏิบัติด้วยกฎการบินด้วยเครื่องวัดประกอบการบินทุกลำ (Instrument Flight Rules - Rules applicable to all IFR flights)

(จ) กฎการบินด้วยเครื่องวัดประกอบการบิน ที่บังคับใช้กับอากาศยานที่ปฏิบัติการบินภายในห้วงอากาศควบคุม (IFR - Rules applicable to IFR flights within controlled airspace)

(ฉ) กฎการบินด้วยเครื่องวัดประกอบการบิน ที่บังคับใช้กับอากาศยานที่ปฏิบัติการบินภายนอกห้วงอากาศควบคุม (IFR - Rules applicable to IFR flights outside controlled airspace)

(๖) การแบ่งชั้นของห้วงอากาศ (Airspace classification)

(ก) ชั้นของห้วงอากาศ (Classification of airspaces)

(๗) บริการจราจรทางอากาศ (Air Traffic Services)

(ก) วัตถุประสงค์ของบริการจราจรทางอากาศ (General - Objectives of the air traffic services)

(ข) ข้อมูลแจ้งเตือนการชนกัน (Collision hazard information when ATS based on surveillance are provided)

(ค) การประสานงานระหว่างผู้ดำเนินการเดินอากาศและผู้ให้บริการจราจรทางอากาศ (Coordination between the aircraft operator and air traffic services)

(๘) บริการควบคุมจราจรทางอากาศ (Air traffic control service)

(ก) การบังคับใช้ (Application)

(ข) การดำเนินการให้บริการควบคุมการจราจรทางอากาศ (Operation of air traffic control service)

(ค) คำอนุญาตเปิดทาง (Air traffic control clearances)

(ง) การปฏิบัติตามแผนการบิน (Adherence to flight plan)

(จ) การรายงานตำแหน่ง (Position reports)

(ฉ) การสิ้นสุดการควบคุม (Termination of control)

(ช) การติดต่อสื่อสาร (Communications)

(ซ) การติดต่อสื่อสารขัดข้อง (Communications Failure)

(๙) บริการข้อมูลสำหรับเที่ยวบิน (Flight Information Service)

(ก) การบังคับใช้ (Application)

(ข) ขอบเขตของบริการข้อมูลสำหรับเที่ยวบิน (Scope of flight information service)

(ค) บริการข่าวอากาศอัตโนมัติ (Automatic terminal information service (ATIS))

(๑๐) บริการเฝ้าระวังและแจ้งเตือน (Alerting Service)

(ก) การบังคับใช้ (Application)

(ข) ข้อมูลสำหรับอากาศยานที่ปฏิบัติการบินใกล้กับอากาศยานที่อยู่ในสถานการณ์ฉุกเฉิน (Information to aircraft operating in the vicinity of an aircraft in a state of emergence)

(๑๑) การแทรกแซง สภาวะฉุกเฉิน และการสกัดกั้น (Interference, Emergency Contingency and Interception)

(ก) บททั่วไป (General)

(ข) การแทรกแซงโดยมิชอบด้วยกฎหมาย (Unlawful Interference)

(ค) อากาศยานบินหลงทาง หรือ อากาศยานที่ไม่สามารถพิสูจน์ฝ่ายได้ (Strayed or unidentified aircraft)

(ง) สภาวะน้ำมันเชื้อเพลิงเหลือน้อย หรือสภาวะฉุกเฉินจากปริมาณน้ำมันเชื้อเพลิง (Minimum fuel or Fuel emergency)

(จ) สมรรถนะที่ลดลงของอากาศยาน (Degraded aircraft performance)

(ฉ) ระบบป้องกันการชนกันของอากาศยานขณะทำการบิน (ACAS Resolution Advisory (RA))

(ช) การสกัดกั้น (Interception)

(๑๒) บริการที่เกี่ยวกับอุตุนิยมวิทยา (Services related to meteorology - aircraft observations and reports by voice communications)

(ก) ประเภทการรายงานสภาพอากาศโดยอากาศยาน (Types of aircraft observations)

(ข) การรายงานสภาพอากาศพิเศษโดยอากาศยาน (Special aircraft observations)

(ค) การรายงานสภาพอากาศแบบไม่ประจำโดยอากาศยาน (Other non-routine aircraft observations)

(ง) การรายงานสภาพอากาศโดยอากาศยานด้วยการติดต่อสื่อสารทางวิทยุ (Reporting of aircraft observations by voice communication)

(จ) การแลกเปลี่ยนข้อมูลการรายงานสภาพอากาศ (Exchange of air-reports)

(๑๓) เครื่องส่งสัญญาณแสดงตน (SSR Transponder)

(ก) การใช้งานเครื่องส่งสัญญาณแสดงตน (Operation of an SSR transponder)

(ข) การตั้งรหัสเครื่องส่งสัญญาณแสดงตน (SSR transponder Mode A code setting)

(ค) ข้อมูลระยะสูง (Pressure-altitude derived information)

(ง) การตั้งรหัสเครื่องส่งสัญญาณแสดงตนแบบโหมดเอส (SSR transponder Mode S aircraft identification setting)

(จ) กรณีเครื่องส่งสัญญาณแสดงตนใช้งานไม่ได้ (SSR transponder failure when the carriage of a functioning transponder is mandatory)

(๑๔) วิธีปฏิบัติในการสื่อสารด้วยเสียง (Voice communication procedures)

(ก) บททั่วไป (General)

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ข้อ ๖ หลักเกณฑ์ที่กำหนดไว้ในข้อ ๕ ให้เป็นไปตามที่กำหนดไว้ใน Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA) Issue 01 Revision 01 Date 17 November 2025 แนบท้ายข้อกำหนดนี้

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สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation - Air Navigation Service Part Rules of the Air (TCAR ANS Part - ROA)

Issue 01

Revision 01

Date 17 November 2025

Approved By

Air Chief Marshal

Manat Chavanaprayoon

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Revision No.	Date (DD-MMM-YYYY)	Subject	Updated by (Department-Division)
00	25 MAR 2025	Initial Issue	ANS Department
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Change and amendment bar is placed against each paragraph affected.

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INTRODUCTION AND APPLICABILITY

Pursuant to Section 16/5 of the Air Navigation ACT B.E. 2497 and the National Airspace Policy established by The Civil Aviation Board on July 19, 2018, The Civil Aviation Authority of Thailand (CAAT) is responsible for issuing requirements on air navigation and flight operations of aircraft, as well as requirements on protection of persons and property on the ground, all in the interest of aviation safety.

The procedures outlined in the regulation of CAAT No. 30 Rules of the Air which cover air navigation and flight operations of aircraft, protection of persons and property on the ground, as well as flight planning, are directly connected to this regulation. Therefore, it is appropriate to include these related procedures into this regulation to ensure effective implementation for relevant stakeholders. This regulation is in alignment with the Standardised European Rule of the Air (SERA) and the applicable standards and recommended practices of the International Civil Aviation Organization (ICAO), as well as with the development approach for Thailand Civil Aviation Regulation (TCAR).

In this publication the word ‘shall’ is used to indicate where the Director General requires compliance with, or adhere closely to, the defined requirements.

Apart from aircraft, this Regulation shall also apply to air navigation service providers, aerodrome operators and ground personnel engaged in aircraft operations.

TCAR ANS Part ROA is not part of the overall TCAR ANS regulation set.

This document will be updated regularly to incorporate further amendments. Any comments should be sent to ans@caat.or.th

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DEFINITIONS

Word	Meaning
Accuracy	Degree of conformance between the estimated or measured value and the true value
Advisory Airspace	An airspace of defined dimensions, or designated route, within which air traffic advisory service is available
Advisory Route	A designated route along which air traffic advisory service is available
Aerial Work	An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.
Aerobatic Flight	Manoeuvres intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed, not necessary for normal flight or for instruction for licenses or ratings other than aerobatic rating
Aerodrome	A defined area (including any buildings, installations and equipment) on land or water or on a fixed, fixed off-shore or floating structure intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft
Aerodrome Control Service	Air traffic control service for aerodrome traffic
Aerodrome Control Tower	A unit established to provide air traffic control service to aerodrome traffic
Aerodrome Traffic	All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome. An aircraft operating in the vicinity of an aerodrome includes but is not limited to aircraft 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
Aeronautical Information Publication (AIP)	A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation
Aeronautical Mobile Service	A mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft

Word	Meaning
	stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies
Aeronautical Station	A land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea
Aeroplane	A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight
Air Traffic	All aircraft in flight or operating on the manoeuvring area of an aerodrome
Air Traffic Advisory Service	A service provided within advisory airspace to ensure separation, in so far as practical, between aircraft which are operating on instrument flight rules (IFR) flight plans
Air Traffic Control (ATC) Clearance	Authorization for an aircraft to proceed under conditions specified by an air traffic control unit
Air Traffic Control Instruction	Directives issued by air traffic control for the purpose of requiring a pilot to take a specific action
Air Traffic Control Service	A service provided for the purpose of: - Preventing collisions: (1) between aircraft; and (2) on the manoeuvring area between aircraft and obstructions; and - Expediting and maintaining an orderly flow of air traffic
Air Traffic Control Unit	A generic term meaning variously, area control center, approach control unit or aerodrome control tower
Air Traffic Service (ATS)	Means 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)
Air Traffic Services (ATS) Airspaces	Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified
Air Traffic Services (ATS) Reporting Office (ARO)	A unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure

Word	Meaning
Air Traffic Services (ATS) Surveillance Service	A service provided directly by means of an ATS surveillance system
Air Traffic Services (ATS) Unit	A generic term meaning, variously, air traffic control unit, flight information center, aerodrome flight information service unit or air traffic services reporting office
Airborne Collision Avoidance System (ACAS)	An aircraft system based on secondary surveillance radar (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	Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface
Aircraft Address	A unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance
Aircraft Observation	The evaluation of one or more meteorological elements made from an aircraft in flight
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
AIRMET Information	Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof
Air-Report	A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting
Air-Taxiing	Movement of a helicopter/vertical take-off and landing (VTOL) above the surface of an aerodrome, normally in ground effect and at a ground speed normally less than 37 km/h (20 kts)
Airway	A control area or portion thereof established in the form of a corridor

Word	Meaning
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 to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing, where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following: - Take-off alternate: an alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure; - En-route alternate: an alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route; - Destination alternate: an alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing;
Altitude	The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL)
Approach Control Service	Air traffic control service for arriving or departing controlled flights
Approach Control Unit	A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes
Apron	A defined area, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance
Area Control Center (ACC)	A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction
Area Control Service	Air traffic control service for controlled flights in control areas
Area Navigation (RNAV)	A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these

Word	Meaning
ATS Route	A specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services
Automatic Dependent Surveillance — Broadcast (ADS-B)	A means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link
Automatic Dependent Surveillance — Contract (ADS-C)	A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports
Automatic Dependent Surveillance — Contract (ADS-C) Agreement	A reporting plan which establishes the conditions of ADS-C data reporting (i.e. Data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to, prior to using ADS-C in the provision of air traffic services)
Automatic Terminal Information Service (ATIS)	The automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof: - Data link-automatic terminal information service (d-atis) means the provision of atis via data link - Voice-automatic terminal information service (voice-atis) means the provision of atis by means of continuous and repetitive voice broadcasts
Ceiling	The height above the ground or water of the base of the lowest layer of cloud below 6 000 m (20 000 ft) covering more than half the sky
Change-Over Point	The point at which an aircraft navigating on an ATS route segment defined by reference to very high frequency omnidirectional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft
Clearance Limit	The point to which an aircraft is granted an air traffic control clearance
Cloud Of Operational Significance	A cloud with the height of cloud base below 1 ,500 m (5,000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height

Word	Meaning
Code (SSR)	The number assigned to a particular multiple pulse reply signal transmitted by a transponder in Mode A or Mode C
Competent Authority	The authority designated by the Member State as competent to ensure compliance with the requirements of this Regulation
Control Area	A controlled airspace extending upwards from a specified limit above the earth
Control Zone	A controlled airspace extending upwards from the surface of the earth to a specified upper limit
Controlled Aerodrome	An aerodrome at which air traffic control service is provided to aerodrome traffic
Controlled Airspace	An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification
Controlled Flight	Any flight which is subject to an air traffic control clearance
Controller-Pilot Data Link Communications (CPDLC)	A means of communication between controller and pilot, using data link for ATC communications
Critical Area	An area of defined dimensions extending around the ground equipment of a precision instrument approach within which the presence of vehicles or aircraft will cause unacceptable disturbance of the guidance signals
Cruise Climb	An aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases
Cruising Level	A level maintained during a significant portion of a flight
Current Flight Plan (CPL)	The flight plan that reflects changes to the filed flight plan, if any, by subsequent ATC clearances
Danger Area	An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times
Data Link Communications	A form of communication intended for the exchange of messages via a data link
Datum	Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities
Downstream Clearance	A clearance issued to an aircraft by an air traffic control unit that is not the current controlling authority of that aircraft
eFPL	The symbol used to designate a filed flight plan exchanged using FF-ICE services
Estimated Elapsed Time	The estimated time required to proceed from one significant point to another

Word	Meaning
Estimated Off-Block Time	The estimated time at which the aircraft will commence movement associated with departure
Estimated Time Of Arrival (ETA)	For IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For visual flight rules (VFR) flights, the time at which it is estimated that the aircraft will arrive over the aerodrome
Expected Approach Time	The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing. The actual time of leaving the holding fix will depend upon the approach clearance
Filed Flight Plan (FPL or eFPL)	The latest flight plan as submitted by the pilot, an operator or a designated representative for use by ATS units
Flight Crew Member	A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period
Flight Information Center	A unit established to provide flight information service and alerting service
Flight Information Region	An airspace of defined dimensions within which flight information service and alerting service are provided
Flight Information Service	A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights
Flight Level (FL)	A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013,2 hectopascals (hpa), and is separated from other such surfaces by specific pressure intervals
Flight Plan	The specified information relative to an intended flight or portion of a flight of an aircraft
Flight and flow - information for a collaborative environment (FF-ICE)	Information necessary for planning, coordination, and notification of flights, exchanged in a standardized format between members of the ATM community, including those involved in flight operations and aerodrome operations
Flight and flow - information for a collaborative	A set of services established for the purposes of facilitating the exchange of FF-ICE, accurate assessment of demands, appropriate resource planning, and optimizing flight planning and execution

Word	Meaning
environment (FF-ICE) services	
Flight and flow - information for a collaborative environment (FF-ICE) services unit	A unit designated by the appropriate ATS authority for the provision of FF-ICE services.
Flight Visibility	The visibility forward from the cockpit of an aircraft in flight
FPL	The symbol used to designate a filed flight plan exchanged via aeronautical fixed service (AFS)
Forecast	A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace
Glider	A non-power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.
Globally unique flight identifier (GUFI)	An unchangeable data element associated with a flight that allows all eligible members of the ATM community to unambiguously refer to information pertaining to the flight
Ground Visibility	The visibility at an aerodrome, as reported by an accredited observer or by automatic systems
Heading	The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid)
Height	The vertical distance of a level, a point or an object considered as a point, measured from a specified datum
Helicopter	A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power driven rotors on substantially vertical axes
High Seas Airspace	An airspace beyond land territory and territorial seas, as specified in the United Nations Convention on the Law of the Sea (Montego Bay, 1982)
IFR	The symbol used to designate the instrument flight rules
IFR Flight	A flight conducted in accordance with the instrument flight rules
IMC	The symbol used to designate instrument meteorological conditions

Word	Meaning
Instrument Approach Operation	An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations: - A two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and - A three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance;
Instrument Approach Procedure (IAP)	A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a 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 approach procedures are classified as follows: - Non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument approach operations type A; - Approach procedure with vertical guidance (APV). A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations type A; - Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS CAT I) designed for 3D instrument approach operations type A orB;
Instrument Meteorological Conditions (IMC)	A meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions;
Landing Area	The part of a movement area intended for the landing or take-off of aircraft
Level	A generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level
AMC Manageable Area	AMC Manageable Areas are areas including Prohibited, Restricted and Danger areas, subject to management and allocation by AMC at ASM Level 2.

Word	Meaning
Manoeuvring Area	The part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons
Metorological service provider	The relevant entity designated to provide meteorological service
Minimum Fuel	A term used to describe a situation in which an aircraft's fuel supply has reached a state where the flight is committed to land at a specific aerodrome and no additional delay can be accepted
Mode (SSR)	The conventional identifier related to specific functions of the interrogation signals transmitted by an SSR interrogator. There are four modes specified in ICAO Annex 10: A, C, S and intermode.
Mountainous Area	An area of changing terrain profile where the changes of terrain elevation exceed 900 m (3 000 ft) within a distance of 18.5 km (10.0 NM)
Movement Area	The part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s)
Night	The hours between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight ends in the evening when the center of the sun's disc is 6 degrees below the horizon and begins in the morning when the center of the sun's disc is 6 degrees below the horizon
Obstacle	All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that: - Are located on an area intended for the surface movement of aircraft; or - Extend above a defined surface intended to protect aircraft in flight; or - Stand outside those defined surfaces and that have been assessed as being a hazard to air navigation;
Operating Site	A site selected by the operator or pilot-in-command for landing, take-off and/or hoist operations
Pilot-In-Command	The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight

Word	Meaning
Preliminary flight plan (PFP)	The information related to a flight submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan
Pressure-Altitude	An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere, as defined in Annex 8, Part 1 to the Chicago Convention
Problematic Use Of Substances	The use of one or more psychoactive substances by aviation personnel in a way that: - Constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and/or - Causes or worsens an occupational, social, mental or physical problem or disorder
Prohibited Area	An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited
Psychoactive Substance	An alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas caffeine and tobacco are excluded
Radar	A radio detection device which provides information on range, azimuth and/or elevation of objects
Radio Navigation Service	A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids
Radiotelephony	A form of radio communication primarily intended for the exchange of information in the form of speech
Reporting Point	A specified geographical location in relation to which the position of an aircraft can be reported
Restricted Area	An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions
Route Segment	A route or portion of route usually flown without an intermediate stop
Runway	A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft
Runway Visual Range (RVR)	The range over which the pilot of an aircraft on the center line of a runway can see the runway surface markings or the lights delineating the runway or identifying its center line

Word	Meaning
Runway-Holding Position	A designated position intended to protect a runway, an obstacle limitation surface, or an instrument landing system (ILS)/microwave landing system (MLS) critical/sensitive area at which taxiing aircraft and vehicles are to stop and hold, unless otherwise authorized by the aerodrome control tower
Safety-Sensitive Personnel	The persons who might endanger aviation safety if they perform their duties and functions improperly, including crew members, aircraft maintenance personnel, aerodrome operations personnel, rescue, fire-fighting and maintenance personnel, personnel allowed unescorted access to the movement area and air traffic controllers
Secondary Surveillance Radar (SSR)	A surveillance radar system which uses transmitters/receivers (interrogators) and transponders
Sensitive Area	An area extending beyond the critical area where the parking or movement, or both, of aircraft or vehicles will affect the guidance signal to the extent that it may be rendered as an unacceptable disturbance to aircraft using the signal
SIGMET Information	An information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations
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 navigation and ATS purposes
Special VFR Flight	A VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC
Strayed Aircraft	An aircraft which has deviated significantly from its intended track or which reports that it is lost
Surveillance Radar	A radar equipment used to determine the position of an aircraft in range and azimuth
Taxiing	The movement of an aircraft on the surface of an aerodrome or an operating site under its own power, excluding take-off and landing
Taxiway	A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:

Word	Meaning
	- Aircraft stand taxilane means a portion of an apron designated as a taxiway and intended to provide access to aircraft stands only. - Apron taxiway means a portion of a taxiway system located on an apron and intended to provide a through taxi route across the apron. - Rapid exit taxiway means a taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways thereby minimising runway occupancy times;
Temporary Reserved Area (TRA)	An airspace temporarily reserved and allocated for the specific use of a particular user for a determined period of time and through which other traffic may be allowed to transit under ATC clearance.
Territory	The land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of a State;
Threshold	The beginning of that portion of the runway usable for landing;
Total Estimated Elapsed Time	- For IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome; - For VFR flights, the estimated time required from take-off to arrive over the destination aerodrome;
Track	The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (true, magnetic or grid)
Traffic Avoidance Advice	An advice provided by an air traffic services unit specifying manoeuvres to assist a pilot to avoid a collision
Traffic Information	The information issued by an air traffic services unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision
Transfer Of Control Point	A defined point located along the flight path of an aircraft, at which the responsibility for providing air traffic control service to the aircraft is transferred from one control unit or control position to the next

Word	Meaning
Transition Altitude	The altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes
Transition Level	The lowest flight level available for use above the transition altitude
Transponder Mandatory Zone (TMZ)	An airspace of defined dimensions wherein the carriage and operation of pressure-altitude reporting transponders is mandatory;
Unidentified Aircraft	An aircraft which has been observed or reported to be operating in a given area but whose identity has not been established
Unmanned Free Balloon	A non-power-driven, unmanned, lighter-than-air aircraft in free flight;
VFR	The symbol used to designate the visual flight rules
VFR Flight	A flight conducted in accordance with the visual flight rules
Visibility	The visibility for aeronautical purposes which is the greater of: - The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background; - The greatest distance at which lights in the vicinity of 1,000 candelas can be seen and identified against an unlit background;
Visual Meteorological Conditions	The meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima;
VMC	The symbol used to designate visual meteorological conditions;

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SECTION 1 FLIGHT OVER THE HIGH SEAS

ROA.1001 General

For all aircraft registered in Thailand and state aircraft of Thailand that operated over the high seas, the rules of the air shall apply without exception.

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SECTION 2 APPLICABILITY AND COMPLIANCE

ROA. 2001 Subject

The rules of the air shall apply to all aircraft within Thailand.

ROA. 2005 Compliance with the rules of the air

The operation of an aircraft either in flight, on the movement area of an aerodrome or at an operating site shall be in compliance with the general rules, the applicable local provisions and, in addition, when in flight, either with:

a) the visual flight rules; or
b) the instrument flight rules.

ROA. 2010 Responsibilities

a) Responsibility of pilot-in-command

   The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with the rules of the air, except that the pilot-in-command may depart from these rules in circumstances that render such departure absolutely necessary in the interests of safety.

b) Pre-flight action

   Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation. Pre-flight action for flights away from the vicinity of an aerodrome, and for all IFR flights, shall include a careful study of available current weather reports and forecasts, taking into consideration fuel requirements and an alternative course of action if the flight cannot be completed as planned.

ROA. 2015 Authority of pilot-in-command of an aircraft

The pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command.

ROA. 2020 Problematic use of psychoactive substances

No person whose function is critical to the safety of aviation (safety-sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired. No such person shall engage in any kind of problematic use of substances.

SECTION 3 GENERAL RULES AND COLLISION AVOIDANCE

CHAPTER 1 PROTECTION OF PERSONS AND PROPERTY

ROA. 3101 Negligent or reckless operation of aircraft

An aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others.

ROA. 3105 Minimum heights

Except when necessary for take-off or landing, or except by permission from the appropriate authority, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface.

ROA. 3110 Cruising Level

The cruising levels at which a flight or a portion of a flight is to be conducted shall be in terms of:

a) flight levels, for flights at or above the lowest usable flight level or, where applicable, above the transition altitude;
b) altitudes, for flights below the lowest usable flight level or, where applicable, at or below the transition altitude.

RVSM — FEET

a) in areas where feet are used for altitude and where, in accordance with regional air navigation agreements, a vertical separation minimum of 1 000 ft is applied between FL 290 and FL 410 inclusive:*

TRACK**											
From 000 degrees to 179 degrees***						From 180 degrees to 359 degrees***					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres
010	1 000	300	–	–	–	020	2 000	600	–	–	–
030	3 000	900	035	3 500	1 050	040	4 000	1 200	045	4 500	1 350
050	5 000	1 500	055	5 500	1 700	060	6 000	1 850	065	6 500	2 000
070	7 000	2 150	075	7 500	2 300	080	8 000	2 450	085	8 500	2 600
090	9 000	2 750	095	9 500	2 900	100	10 000	3 050	105	10 500	3 200
110	11 000	3 350	115	11 500	3 500	120	12 000	3 650	125	12 500	3 800
130	13 000	3 950	135	13 500	4 100	140	14 000	4 250	145	14 500	4 400
150	15 000	4 550	155	15 500	4 700	160	16 000	4 900	165	16 500	5 050
170	17 000	5 200	175	17 500	5 350	180	18 000	5 500	185	18 500	5 650
190	19 000	5 800	195	19 500	5 950	200	20 000	6 100	205	20 500	6 250
210	21 000	6 400	215	21 500	6 550	220	22 000	6 700	225	22 500	6 850
230	23 000	7 000	235	23 500	7 150	240	24 000	7 300	245	24 500	7 450
250	25 000	7 600	255	25 500	7 750	260	26 000	7 900	265	26 500	8 100
270	27 000	8 250	275	27 500	8 400	280	28 000	8 550	285	28 500	8 700
290	29 000	8 850				300	30 000	9 150			
310	31 000	9 450				320	32 000	9 750			
330	33 000	10 050				340	34 000	10 350			
350	35 000	10 650				360	36 000	10 950			
370	37 000	11 300				380	38 000	11 600			
390	39 000	11 900				400	40 000	12 200			
410	41 000	12 500				430	43 000	13 100			
450	45 000	13 700				470	47 000	14 350			
490	49 000	14 950				510	51 000	15 550			
etc.	etc.	etc.				etc.	etc.	etc.			

* Except when, on the basis of regional air navigation agreements, a modified table of cruising levels based on a nominal vertical separation minimum of 1 000 ft (300 m) is prescribed for use, under specified conditions, by aircraft operating above FL 410 within designated portions of the airspace.

** Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

*** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note.— Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive *(Doc 9574).*

RVSM — METRES

b) in areas where metres are used for altitude and where, in accordance with regional air navigation agreements, a vertical separation minimum of 300 m is applied between 8 900 m and 12 500 m inclusive:*

TRACK**											
From 000 degrees to 179 degrees***						From 180 degrees to 359 degrees***					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
Standard Metric	Metres	Feet	Standard Metric	Metres	Feet	Standard Metric	Metres	Feet	Standard Metric	Metres	Feet
0030	300	1 000	–	–	–	0060	600	2 000	–	–	–
0090	900	3 000	0105	1 050	3 500	0120	1 200	3 900	0135	1 350	4 400
0150	1 500	4 900	0165	1 650	5 400	0180	1 800	5 900	0195	1 950	6 400
0210	2 100	6 900	0225	2 250	7 400	0240	2 400	7 900	0255	2 550	8 400
0270	2 700	8 900	0285	2 850	9 400	0300	3 000	9 800	0315	3 150	10 300
0330	3 300	10 800	0345	3 450	11 300	0360	3 600	11 800	0375	3 750	12 300
0390	3 900	12 800	0405	4 050	13 300	0420	4 200	13 800	0435	4 350	14 300
0450	4 500	14 800	0465	4 650	15 300	0480	4 800	15 700	0495	4 950	16 200
0510	5 100	16 700	0525	5 250	17 200	0540	5 400	17 700	0555	5 550	18 200
0570	5 700	18 700	0585	5 850	19 200	0600	6 000	19 700	0615	6 150	20 200
0630	6 300	20 700	0645	6 450	21 200	0660	6 600	21 700	0675	6 750	22 100
0690	6 900	22 600	0705	7 050	23 100	0720	7 200	23 600	0735	7 350	24 100
0750	7 500	24 600	0765	7 650	25 100	0780	7 800	25 600	0795	7 950	26 100
0810	8 100	26 600	0825	8 250	27 100	0840	8 400	27 600	0855	8 550	28 100
0890	8 900	29 100				0920	9 200	30 100			
0950	9 500	31 100				0980	9 800	32 100			
1010	10 100	33 100				1040	10 400	34 100			
1070	10 700	35 100				1100	11 000	36 100			
1130	11 300	37 100				1160	11 600	38 100			
1190	11 900	39 100				1220	12 200	40 100			
1250	12 500	41 100				1310	13 100	43 000			
1370	13 700	44 900				1430	14 300	46 900			
1490	14 900	48 900				1550	15 500	50 900			
etc.	etc.	etc.				etc.	etc.	etc.			

* Except when, on the basis of regional air navigation agreements, a modified table of cruising levels based on a nominal vertical separation minimum of 1 000 ft (300 m) is prescribed for use, under specified conditions, by aircraft operating above FL 410 within designated portions of the airspace.

** Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

*** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note.— Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive *(Doc 9574).*

Non-RVSM — FEET

c) in other areas where feet are the primary unit of measurement for altitude:

TRACK*											
From 000 degrees to 179 degrees**						From 180 degrees to 359 degrees**					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres
010	1 000	300	–	–	–	020	2 000	600	–	–	–
030	3 000	900	035	3 500	1 050	040	4 000	1 200	045	4 500	1 350
050	5 000	1 500	055	5 500	1 700	060	6 000	1 850	065	6 500	2 000
070	7 000	2 150	075	7 500	2 300	080	8 000	2 450	085	8 500	2 600
090	9 000	2 750	095	9 500	2 900	100	10 000	3 050	105	10 500	3 200
110	11 000	3 350	115	11 500	3500	120	12 000	3 650	125	12 500	3 800
130	13 000	3 950	135	13 500	4 100	140	14 000	4 250	145	14 500	4 400
150	15 000	4 550	155	15 500	4 700	160	16 000	4 900	165	16 500	5 050
170	17 000	5 200	175	17 500	5 350	180	18 000	5 500	185	18 500	5 650
190	19 000	5 800	195	19 500	5 950	200	20 000	6 100	205	20 500	6 250
210	21 000	6 400	215	21 500	6 550	220	22 000	6 700	225	22 500	6 850
230	23 000	7 000	235	23 500	7 150	240	24 000	7 300	245	24 500	7 450
250	25 000	7 600	255	25 500	7 750	260	26 000	7 900	265	26 500	8 100
270	27 000	8 250	275	27 500	8 400	280	28 000	8 550	285	28 500	8 700
290	29 000	8 850	300	30 000	9 150	310	31 000	9 450	320	32 000	9 750
330	33 000	10 050	340	34 000	10 350	350	35 000	10 650	360	36 000	10 950
370	37 000	11 300	380	38 000	11 600	390	39 000	11 900	400	40 000	12 200
410	41 000	12 500	420	42 000	12 800	430	43 000	13 100	440	44 000	13 400
450	45 000	13 700	460	46 000	14 000	470	47 000	14 350	480	48 000	14 650
490	49 000	14 950	500	50 000	15 250	510	51 000	15 550	520	52 000	15 850
etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.

* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note.— Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive *(Doc 9574).*

Non-RVSM — METRES

d) in other areas where metres are the primary unit of measurement for altitude:

TRACK*											
From 000 degrees to 179 degrees**						From 180 degrees to 359 degrees**					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
Standard Metric	Metres	Feet	Standard Metric	Metres	Feet	Standard Metric	Metres	Feet	Standard Metric	Metres	Feet
0030	300	1 000	–	–	–	0060	600	2 000	–	–	–
0090	900	3 000	0105	1 050	3 500	0120	1 200	3 900	0135	1 350	4 400
0150	1 500	4 900	0165	1 650	5 400	0180	1 800	5 900	0195	1 950	6 400
0210	2 100	6 900	0225	2 250	7 400	0240	2 400	7 900	0255	2 550	8 400
0270	2 700	8 900	0285	2 850	9 400	0300	3 000	9 800	0315	3 150	10 300
0330	3 300	10 800	0345	3 450	11 300	0360	3 600	11 800	0375	3 750	12 300
0390	3 900	12 800	0405	4 050	13 300	0420	4 200	13 800	0435	4 350	14 300
0450	4 500	14 800	0465	4 650	15 300	0480	4 800	15 700	0495	4 950	16 200
0510	5 100	16 700	0525	5 250	17 200	0540	5 400	17 700	0555	5 550	18 200
0570	5 700	18 700	0585	5 850	19 200	0600	6 000	19 700	0615	6 150	20 200
0630	6 300	20 700	0645	6 450	21 200	0660	6 600	21 700	0675	6 750	22 100
0690	6 900	22 600	0705	7 050	23 100	0720	7 200	23 600	0735	7 350	24 100
0750	7 500	24 600	0765	7 650	25 100	0780	7 800	25 600	0795	7 950	26 100
0810	8 100	26 600	0825	8 250	27 100	0840	8 400	27 600	0855	8 550	28 100
0890	8 900	29 100	0920	9 200	30 100	0950	9 500	31 100	0980	9 800	32 100
1010	10 100	33 100	1040	10 400	34 100	1070	10 700	35 100	1100	11 000	36 100
1130	11 300	37 100	1160	11 600	38 100	1190	11 900	39 100	1220	12 200	40 100
1250	12 500	41 100	1280	12 800	42 100	1310	13 100	43 000	1370	13 400	44 000
1370	13 700	44 900	1400	14 000	46 100	1430	14 300	46 900	1460	14 600	47 900
1490	14 900	48 900	1520	15 200	49 900	1550	15 500	50 900	1580	15 800	51 900
etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.

* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

** Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

Note.— Guidance material relating to vertical separation is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive *(Doc 9574).*

ROA. 3111 Altimeter Setting Procedures

(a) INTRODUCTION

(1) The following altimeter setting procedures describe the method for providing adequate vertical separation between aircraft and adequate terrain clearance during all phases of flight.

(2) QNH and QFE values are given in whole hectopascal or inch of mercury, but they will be provided in tenths on request for landing.

(b) BASIC ALTIMETER SETTING PROCEDURES

(1) General

(i) The transition altitude for Bangkok FIR is 11000 ft.

(ii) The transition level for Bangkok FIR is flight level 130 (FL130).

(iii) The transition layer is located between the transition altitude and the transition level.

(iv) The vertical position of aircraft operating at or below the transition altitude shall be expressed in terms of altitudes, which are determined from an altimeter set to sea level pressure (QNH).
Note: This does not preclude a pilot using a QFE setting for terrain clearance purposes during the final approach to the runway.

(v) The vertical position at or above the transition level shall be expressed in terms of flight levels, which are surfaces of constant atmospheric pressure based on an altimeter setting of 1013.2 hPa or 29.92 inHg

(vi) While passing through the transition layer, vertical position shall be expressed in terms of:

(A) flight levels when climbing; and

(B) altitudes when descending.

(vii) Cruising within the transition layer is not permitted unless specifically cleared by the ATS unit providing control services for that portion of airspace.

(viii) While operating in the transition layer, vertical position shall be expressed in terms of flight levels or altitudes as advised by ATC.

(ix) Flight level zero is located at the atmospheric pressure level of 1013.2 hPa (29.92 inHg). Consecutive flight levels are separated by a pressure interval corresponding to 500 ft (152.4 m) in the International Standard Atmosphere.

(x) For all flights operating at or below the transition altitude, altimeter shall be set to the appropriate QNH derived from an available source.

(2) QNH for aircraft operating at or below the transition altitude

(i) Pilot who operating an aircraft at or below the transition altitude shall set an altimeter to the currently reported QNH of the nearest station along the route of flight, except as provide in (b)(2)(ii) and (b)(2)(iii).

(ii) Pilot who operating an aircraft operating in a terminal control area or a terminal control zone shall set an altimeter to the currently reported QNH of the major aerodrome of that airspace, which will be given by ATC.

(iii) When there is no appropriate available station, pilot shall set an altimeter to the elevation of the departure aerodrome until the appropriate QNH can be obtained.

Note: Pressure-altitude-derived level information displayed to the controller and level received from a pilot by radiotelephony might be vary due to different pressure setting. ATC shall comply with criteria as stated in ICAO doc 4444 paragraph 8.5.5 Level information based on the use of pressure-altitude information.

(3) Take-off and climb

(i) Altimeter setting is made available to aircraft in the routine takeoff and climb instructions.

(ii) Vertical displacement of aircraft during climb is controlled by reference to altitude until passing the transition altitude above which vertical displacement is controlled by reference to flight level.

Note: The word “controlled” is used in a composite sense in that a pilot will wish to fly his aircraft on predetermined flight levels or altitudes and ATS will wish to advise a pilot the availability of flight levels or altitudes: both are concerned with vertical position of aircraft.

(4) Approach and landing

(i) A QNH altimeter setting is made available in the routine approach and landing instructions.

(ii) A QFE altimeter setting is made available on request in approach and landing clearance but reports to ATC are to be made in altitude.

(iii) Vertical displacement of aircraft during approach is effected by reference to flight level until passing the transition level below which

vertical displacement is controlled by reference to altitude, except as provided in (b)(4)(iv)

(iv) After approach clearance has been issued and the descent to land is commenced, the vertical position of an aircraft above the transition level may be by reference to altitude (QNH) provided that level flight above the transition altitude is not indicated or anticipated.

(5) Missed Approach

(i) The relevant portions of paragraph (b)(3) and (b)(4) shall be applied in case of a missed approach.

ROA. 3115 Dropping or spraying

Dropping or spraying from an aircraft in flight shall only be conducted in accordance with:

a) CAAT Regulations
b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

ROA. 3120 Towing

An aircraft or other object shall only be towed by an aircraft in accordance with

a) CAAT Regulations; and
b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

ROA. 3125 Parachute descents

Parachute descents, other than emergency descents, shall only be made in accordance with:

a) CAAT Regulations ; and
b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

ROA. 3130 Aerobatic flights

Aerobatic flights shall only be carried out in accordance with:

(a) CAAT Regulations ; and
(b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

ROA. 3135 Formation flights

Aircraft shall not be flown in formation except by pre-arrangement among the pilots-in-command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the conditions prescribed by the competent authority. These conditions shall include the following:

(a) one of the pilots-in-command shall be designated as the flight leader;
(b) the formation operates as a single aircraft with regard to navigation and position reporting;
(c) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots-in-command of the other aircraft in the flight and shall include periods of transition when aircraft are manoeuvring to attain their own separation within the formation and during join- up and breakaway; and
(d) A distance not exceeding 1 km (0.5 nm) laterally and longitudinally and 30 m (100 ft) vertically from the flight leader shall be maintained by each aircraft.

ROA. 3140 Unmanned free balloons

An unmanned free balloon shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in **Appendix 1.**

ROA. 3145 Special Use of Airspace

(a) Prohibited areas, restricted areas, temporary reserved areas and temporary flight restriction areas
(1) Aircraft shall not be flown in a prohibited area, restricted area, temporary reserved area and temporary flight restriction area, the particulars of which have been duly published, except in accordance with the conditions

of the restrictions or by permission from the responsible Agency of the airspace

(b) Danger areas

(1) Aircraft shall not be flown in a danger area unless that pilot has determined that the activity associated with the danger area will not affect the safety of the aircraft.

CHAPTER 2 AVOIDANCE OF COLLISIONS

ROA. 3201 General

Nothing in these rules shall relieve the pilot-in-command of an aircraft from the responsibility of taking such action, including collision avoidance manoeuvres based on resolution advisories provided by ACAS equipment, as will best avert collision.

ROA. 3205 Proximity

An aircraft shall not be operated in such proximity to other aircraft as to create a collision hazard.

ROA. 3210 Right-of-way

(a) The aircraft that has the right-of-way shall maintain its heading and speed.

(b) An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft.

(c) An aircraft that is obliged by the following rules to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.

(1) Approaching head-on. When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.

(2) Converging. When two aircraft are converging at approximately the same level, the aircraft that has the other on its right shall give way, except as follows:

(i) power-driven heavier-than-air aircraft shall give way to airships, gliders and balloons.

(ii) airships shall give way to gliders and balloons.

(iii) gliders shall give way to balloons.

(iv) power-driven aircraft shall give way to aircraft which are seen to be towing other aircraft or objects.

(3) Overtaking. An overtaking aircraft is an aircraft that approaches another from the rear on a line forming an angle of less than 70 degrees with the plane of symmetry of the latter,

i.e. is in such a position with reference to the other aircraft that at night it should be unable to see either of the aircraft's left (port) or right (starboard) navigation lights. An aircraft that is being overtaken has the right-of-way and the overtaking aircraft, whether climbing, descending or in horizontal flight, shall keep out of the way of the other aircraft by altering its heading to the right, and no subsequent change in the relative positions of the two aircraft shall absolve the overtaking aircraft from this obligation until it is entirely past and clear.

(4) Landing. An aircraft in flight, or operating on the ground or water, shall give way to aircraft landing or in the final stages of an approach to land.

(i) When two or more heavier-than-air aircraft are approaching an aerodrome or an operating site for the purpose of landing, aircraft at the higher level shall give way to aircraft at the lower level, but the latter shall not take advantage of this rule to cut in front of another which is in the final stages of an approach to land, or to overtake that aircraft. Nevertheless, power-driven heavier-than-air aircraft shall give way to gliders.

(ii) Emergency landing. An aircraft that is aware that another is compelled to land shall give way to that aircraft.

(5) Taking off. An aircraft taxiing on the manoeuvring area of an aerodrome shall give way to aircraft taking off or about to take off.

(d) Surface movement of aircraft, persons and vehicles.

(1) In case of danger of collision between two aircraft taxiing on the movement area of an aerodrome or equivalent part of an operating site, the following shall apply:

(i) when two aircraft are approaching head on, or approximately so, each shall stop or where practicable alter its course to the right so as to keep well clear;

(ii) when two aircraft are on a converging course, the one which has the other on its right shall give way;

(iii) an aircraft which is being overtaken by another aircraft shall have the right-of-way and the overtaking aircraft shall keep well clear of the other aircraft.

(2) At a controlled aerodrome an aircraft taxiing on the manoeuvring area shall stop and hold at all runway-holding positions unless otherwise authorized by the aerodrome control tower.

(3) An aircraft taxiing on the manoeuvring area shall stop and hold at all lighted stop bars and may proceed further in accordance with (2) when the lights are switched off.

(i) Aerodrome operator, air traffic service unit, and air operator shall establish specific procedure in situations where the lit stop bars cannot be turned off because of a technical problem.

(ii) In case of the lit stop bars cannot be turned off, all necessary information shall be notified to pilot

(4) Movement of persons and vehicles at aerodromes:

(i) The movement of persons or vehicles, including towed aircraft, on the manoeuvring area of an aerodrome shall be controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off.

(ii) In conditions where low visibility procedures are in operation:

(A) persons and vehicles operating on the manoeuvring area of an aerodrome shall be restricted to the essential minimum and particular regard shall be given to the requirements to protect the critical and sensitive area(s) of radio navigation aids;

(B) subject to the provisions of point (iii), the method or methods to separate vehicles and taxiing aircraft shall be as specified by the air navigation service provider (‘ANSP’) in coordination with Airport Operator and approved by CAAT taking into account the aids available;

(C) when mixed ILS and MLS Category I or Category II precision instrument operations are taking place to the same runway continuously, the more restrictive ILS or MLS critical and sensitive areas shall be protected.

(iii) Emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic.

(iv) Subject to the provisions in (iii), vehicles on the manoeuvring area shall be required to comply with the following rules:

(A) vehicles and vehicles towing aircraft shall give way to aircraft which are landing, taking-off or taxiing;

(B) vehicles shall give way to other vehicles towing aircraft;

(C) vehicles shall give way to other vehicles in accordance with air traffic services unit instructions;

(D) notwithstanding the provisions of (A),(B) and (C), vehicles and vehicles towing aircraft shall comply with instructions issued by the aerodrome control tower.

ROA. 3215 Lights to be displayed by aircraft

(a) Except as provided by (e), from sunset to sunrise or during any other period when the visibility becomes deteriorated, all aircraft in flight shall display:

(1) anti-collision lights intended to attract attention to the aircraft; and

(2) navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights.

(b) Except as provided by (e), from sunset to sunrise or during any other period when the visibility becomes deteriorated:

(1) all aircraft moving on the movement area of an aerodrome shall display navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights.

(2) unless stationary and otherwise adequately illuminated, all aircraft on the movement area of an aerodrome shall display lights intended to indicate the extremities of their structure, as far as practicable.

(3) all aircraft operating on the movement area of an aerodrome shall display lights intended to attract attention to the aircraft; and

(4) all aircraft on the movement area of an aerodrome whose engines are running shall display lights which indicate that fact.

(c) Except as provided by (e), all aircraft in flight and fitted with anti-collision lights to meet the requirement of (a)(1) shall display such lights also outside the period specified in (a)

(d) Except as provided by (e), all aircraft:

(1) operating on the movement area of an aerodrome and fitted with anti-collision lights to meet the requirement of (b)(3); or

(2) on the movement area of an aerodrome and fitted with lights to meet the requirement of (b)(4);

shall display such lights also outside the period specified in (b)

(e) A pilot shall be permitted to switch off or reduce the intensity of any flashing lights fitted to meet the requirements of (a), (b), (c) and (d) if they do or are likely to:
(1) adversely affect the satisfactory performance of duties; or
(2) subject an outside observer to harmful dazzle.

ROA. 3220 Simulated instrument flights

An aircraft shall not be flown under simulated instrument flight conditions unless:

(a) fully functioning dual controls are installed in the aircraft; and
(b) an additional qualified pilot (in this rule called a safety pilot) occupies a control seat to act as safety pilot for the person who is flying under simulated instrument conditions. The safety pilot shall have adequate vision forward and to each side of the aircraft, or a competent observer in communication with the safety pilot shall occupy a position in the aircraft from which the observer's field of vision adequately supplements that of the safety pilot.
(c) Any VFR flight conducting Simulated instrument flights shall maintain in-flight visibility and distance from cloud in accordance with TCAR ANS Part - ROA.5001

ROA. 3225 Operation on and in the vicinity of an aerodrome

An aircraft operated on or in the vicinity of an aerodrome shall:

(a) observe other aerodrome traffic for the purpose of avoiding collision;
(b) conform with or avoid the pattern of traffic formed by other aircraft in operation;
(c) except for balloons, make all turns to the left, when approaching for a landing and after taking off, unless otherwise indicated, or instructed by ATC;
(d) except for balloons, land and take off into the wind unless safety, the runway configuration, or air traffic considerations determine that a different direction is preferable.

ROA. 3230 Water operations

(a) When two aircraft or an aircraft and a vessel are approaching one another and there is a risk of collision, the aircraft shall proceed with careful regard to existing circumstances and conditions including the limitations of the respective craft.

(1) Converging. An aircraft which has another aircraft or a vessel on its right shall give way so as to keep well clear.

(2) Approaching head-on. An aircraft approaching another aircraft or a vessel head-on, or approximately so, shall alter its heading to the right to keep well clear.

(3) Overtaking. The aircraft or vessel which is being overtaken has the right of way, and the one overtaking shall alter its heading to keep well clear.

(4) Landing and taking off. Aircraft landing on or taking off from the water shall, in so far as practicable, keep well clear of all vessels and avoid impeding their navigation.

(b) Lights to be displayed by aircraft on the water. At night or during any other period prescribed by the competent authority, all aircraft on the water shall display lights as required by the PREVENTION OF COLLISIONS AT SEA ACT B.E.2522(1979), unless it is impractical for them to do so, in which case they shall display lights as closely similar as possible in characteristics and position to those required by the International Regulations.

CHAPTER 3 SIGNALS

ROA. 3301 General

(a) Upon observing or receiving any of the signals given in Appendix 2, aircraft shall take such action as may be required by the interpretation of the signal given in that Appendix.

(b) The signals of Appendix 2 shall, when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

(c) A signalman/marshaller shall be responsible for providing standard marshalling signals to aircraft in a clear and precise manner using the signals shown in Appendix 2.

(d) Only persons trained, qualified and approved as required by the CAAT shall carry out the functions of a signalman/marshaller.

(e) The signalman/marshaller shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.

(f) Daylight-fluorescent wands, table-tennis bats or gloves shall be used for all signalling by all participating ground staff during daylight hours. Illuminated wands shall be used at night or in low visibility.

CHAPTER 4 TIME

ROA. 3401 General

(a) Coordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

(b) A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

(c) Wherever time is utilised in the application of data link communications, it shall be accurate to within 1 second of UTC.

(d) Time in air traffic services

(1) Aerodrome control towers shall, prior to an aircraft taxiing for take-off, provide the pilot with the correct time, unless arrangements have been made for the pilot to obtain it from other sources. Air traffic services units shall, in addition, provide aircraft with the correct time on request. Time checks shall be given at least to the nearest minute.

SECTION 4 FLIGHT PLANS

ROA. 4001 Submission of a flight plan

(a) Specified information relative to an intended flight or portion of a flight of an aircraft shall be in the form of a flight plan.

(b) A flight plan shall be submitted for the operation of any flight in the Bangkok FIR.

(c) Flight plans, except preliminary flight plans, shall not be submitted more than 120 hours before the estimated off-block time of a flight.

(1) Unless prescribed by appropriate ATS Units, a flight plan shall be submitted at least 60 minutes prior to the Estimated Off-Block Time (EOBT).

(2) flight plan shall be amended or a new flight plan submitted and the old flight plan cancelled in case a delay of 30 minutes in excess of the estimated off-block time.

(3) Flight Plan can be submitted during flight when no other means of submission is practicable. A flight plan submission during flight shall be submitted at a time which will ensure its receipt by the appropriate air traffic services unit as soon as practicable and, before the aircraft is estimated to reach:

(i) the intended point of entry into a control area or advisory area; or

(ii) the point of crossing an airway or advisory route.

ROA. 4005 Contents of a flight plan

(a) A flight plan shall comprise information regarding such of the following items :

(1) Aircraft identification

(2) Flight rules and type of flight

(3) Number and type(s) of aircraft and wake turbulence category

(4) Equipment

(5) Departure aerodrome or operating site

(6) Estimated off-block time

(7) Cruising speed(s)

(8) Cruising level(s)

(9) Route to be followed
(10) Destination aerodrome or operating site and total estimated elapsed time
(11) Alternate aerodrome(s) or operating site(s)
(12) Fuel endurance
(13) Total number of persons on board
(14) Emergency and survival equipment
(15) Other information.

(b) For flight plans submitted during flight, the departure aerodrome or operating site provided shall be the location from which supplementary information concerning the flight may be obtained, if required. Additionally, the information to be provided in lieu of the estimated off-block time shall be the time over the first point of the route to which the flight plan relates.

ROA. 4006 Acceptance of a flight plan

(a) The first unit receiving a flight plan, or change thereto, shall:
(1) check it for compliance with the format and data conventions;
(2) check it for completeness and, to the extent possible, for accuracy;
(3) take action, if necessary, to make it acceptable to the air traffic services; and
(4) indicate acceptance of the flight plan or change there to, to the originator.

ROA. 4010 Completion of a flight plan

Unless prescribed by appropriate ATS Units, a flight plan shall contain information, as applicable, on all items in Flight Plan form.

ROA. 4015 Changes to a flight plan

(a) Subject to the provisions of TCAR ANS Part - ROA.8020 (b) all changes to a flight plan submitted for an IFR flight, or a VFR flight operated as a controlled flight, shall be reported as soon as practicable to the appropriate air traffic services unit. For other VFR flights, significant changes to a flight plan shall be reported as soon as practicable to the appropriate air traffic services unit.

(b) Information submitted prior to departure regarding fuel endurance or total number of persons carried on board, if incorrect at time of departure, constitutes a significant change to the flight plan and as such shall be reported.

ROA. 4020 Closing a flight plan

(a) An arrival report shall be made in person, by radiotelephony, via data link or by other means at the earliest possible moment after landing, to the appropriate air traffic services unit at the arrival aerodrome.
   (1) Submission of an arrival report is not required after landing on an aerodrome where air traffic services are provided on condition that radio communication or visual signals indicate that the landing has been observed.

(b) When no air traffic services unit exists at the arrival aerodrome or operating site, the arrival report, when required, shall be made as soon as practicable after landing and by the quickest means available to the nearest air traffic services unit.

(c) When communication facilities at the arrival aerodrome or operating site are known to be inadequate and alternate arrangements for the handling of arrival reports on the ground are not available, the following action shall be taken. Immediately prior to landing the aircraft shall, if practicable, transmit to the appropriate air traffic services unit, a message comparable to an arrival report, where such a report is required. Normally, this transmission shall be made to the aeronautical station serving the air traffic services unit in charge of the flight information region in which the aircraft is operated.

(d) Arrival reports made by aircraft shall contain the following elements of information:
   (1) aircraft identification;
   (2) departure aerodrome or operating site;
   (3) destination aerodrome or operating site (only in the case of a diversionary landing);
   (4) arrival aerodrome or operating site;
   (5) time of arrival.

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SECTION 5 VISUAL METEOROLOGICAL CONDITIONS, VISUAL FLIGHT RULES, SPECIAL VFR AND INSTRUMENT FLIGHT RULES

ROA. 5001 VMC visibility and distance from cloud minima

Altitude band	Airspace class	Flight visibility	Distance from cloud
At and above 3 050 m (10 000 ft) AMSL	A*** B C D E F G	8 km	1 500 m horizontally 300 m (1 000 ft) vertically
Below 3 050 m (10 000 ft) AMSL and above 900 m (3 000 ft) AMSL, or above 300 m (1 000 ft) above terrain, whichever is the higher	A***B C D E F G	5 km	1 500 m horizontally 300 m (1 000 ft) vertically
At and below 900 m (3 000 ft) AMSL, or 300 m (1 000 ft) above terrain, whichever is the higher	A***B C D E	5 km	1 500 m horizontally 300 m (1 000 ft) vertically
	F G	5 km**	Clear of cloud and with the surface in sight

(a) When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 shall be used in lieu of 10 000 ft.

(b) The VMC minima in Class A airspace are included for guidance to pilots.

(c) When so authorized by CAAT

(1) flight visibilities reduced to not less than 1 500 m may be permitted for flights operating:

(i) at speeds that, in the prevailing visibility, will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or

(ii) in circumstances in which the probability of encounters with other traffic would normally be low, e.g. in areas of low volume traffic and for aerial work at low levels;

(2) helicopters may be permitted to operate in less than 1 500 m but not less than 800 m flight visibility, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

(d) Within activated TRA or AMC Manageable Area, state aircraft may operate in the condition where the visibility and distance from cloud are less than the above prescribed minima.

ROA. 5005 Visual flight rules

(a) Except when operating as a special VFR flight, VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than those specified in TCAR ANS Part - ROA. 5001.

(b) Except when a special VFR clearance is obtained from an air traffic control unit, VFR flights shall not take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima:
   (1) the ceiling is less than 450 m (1 500 ft); or
   (2) the ground visibility is less than 5 km.

(c) VFR AT NIGHT
   (1) The time used to determine sunset and sunrise shall be referred to the information published for each province by the Hydrographic Department, the Royal Thai Navy. In case there is no published information for a specific location, the Information from the nearest province shall be used.
   (2) VFR flights are permitted at night in accordance with the following criteria:
      (i) Flights shall establish and maintain two-way radio communication on the appropriate ATS communication channel, when available;
      (ii) The VMC visibility and distance from cloud minima as specified in the rules of the air shall apply except that:
         (A) the ceiling shall not be less than 450 m (1 500 ft);
         (B) in airspace classes B, C, D, E, F, and G, at and below 900 m (3 000 ft) AMSL or 300 m (1 000 ft) above the terrain, whichever is the higher, the pilot shall maintain continuous sight of the surface.
   (3) Except when necessary for take-off or landing, or except when specifically authorized by the CAAT, a VFR flight at night shall be flown
      (i) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;
      (ii) elsewhere than as specified in (c)(3)(i), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(d) VFR flights shall not be operated at transonic and supersonic speeds unless:

(1) ATC Clearance is obtained for controlled flight.
(2) Authorized by CAAT for uncontrolled flight.

(e) VFR flights shall not be operated above FL 200 except state aircraft with ATC Clearance.

(f) Authorization for VFR flights to operate above FL 290 shall not be granted where a vertical separation minimum of 300 m (1 000 ft) is applied above FL 290.

(g) Except when necessary for take-off or landing, or except by permission from CAAT, a VFR flight shall not be flown:
(1) over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1 000 ft) above the highest obstacle within a radius of 600 m from the aircraft;
(2) elsewhere than as specified in (g)(1), at a height less than 150 m (500 ft) above the ground or water.
(3) For state aircraft and aircraft engaged in search and rescue operations, the requirements outlined in (1) and (2) may be exempt, provided that an assessment has been conducted and the safety of persons and properties on the ground remains assured.

(h) Except where otherwise indicated in air traffic control clearances or specified by CAAT, VFR flights in level cruising flight when operated above 900 m (3000 ft) from the ground or water shall be conducted at a cruising level appropriate to the track as specified in the table of cruising levels in TCAR ANS Part - ROA. 3110.

(i) VFR flights shall comply with the provisions of Section 8:
(1) when operated within Classes B, C and D airspace;
(2) when forming part of aerodrome traffic at controlled aerodromes; or
(3) when operated as special VFR flights.

(j) A VFR flight operating within or into areas or along routes designated by the competent authority, shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and report its position as necessary to, the air traffic services unit providing flight information service.

(k) An aircraft operated in accordance with the visual flight rules which wishes to change to compliance with the instrument flight rules shall communicate the necessary changes to be affected to its current flight plan

(l) Within activated TRA or AMC Manageable Area, state aircraft are exempt from the requirements as prescribed in (b), (c), (d), (f), (h) and (i)

ROA. 5010 Special VFR in Control Zones

Special VFR flights may be authorized to operate within a control zone, subject to an ATC clearance. The following additional conditions shall be applied:

(a) such special VFR flights may be conducted during day only, unless otherwise permitted by the competent authority;

(b) by the pilot:

(1) clear of cloud and with the surface in sight;

(2) the flight visibility is not less than 1,500 m;

(3) fly at a speed to give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision; and

(c) an air traffic control unit shall not issue a special VFR clearance to aircraft to enter a control zone for the purpose of landing, take off and depart from a control zone, cross a control zone or operate locally within a control zone when the reported meteorological conditions at that aerodrome are below the following minima:

(1) the ground visibility is less than 1,500 m

(d) Separation shall be effected between all IFR flights and special VFR flights and, when so prescribed by the appropriate ATS authority, between all special VFR flights in accordance with separation minima prescribed by that authority.

ROA. 5015 Instrument flight rules (IFR) - Rules applicable to all IFR flights

(a) Aircraft equipment

Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route to be flown and in accordance with the applicable air operations legislation.

(b) Minimum levels

Except when necessary for take-off or landing, or except when specifically authorized by the competent authority, an IFR flight shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

(1) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;

(2) elsewhere than as specified in (1), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(c) Change from IFR flight to VFR flight

(1) An aircraft electing to change the conduct of its flight from compliance with the instrument flight rules to compliance with the visual flight rules shall notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate thereto the changes to be made to its current flight plan.

(2) When an aircraft operating under the instrument flight rules is flown in or encounters visual meteorological conditions it shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted visual meteorological conditions.

(3) Change from IFR flight to VFR flight shall only be acceptable when a message initiated by the pilot-in-command containing the specific expression 'CANCELLING MY IFR FLIGHT', together with the hanges, if any, to be made to the current flight plan, is received by an ATS unit. No invitation to change from IFR flight to VFR flight shall be made by ATS either directly or by inference.

ROA. 5020 IFR - Rules applicable to IFR flights within controlled airspace

(a) IFR flights shall comply with the provisions of Section 8 when operated in controlled airspace.

(b) An IFR flight operating in cruising flight in controlled airspace shall be flown at a cruising level, or, if authorized by ATS unit to employ cruise climb techniques, between two levels or above a level, selected from

(1) the table of cruising levels in TCAR ANS Part - ROA. 3110.

(2) a modified table of cruising levels, when so prescribed in accordance with TCAR ANS Part - ROA. 3110 for flight above FL 410;

(c) except that the correlation of levels to track prescribed therein shall not apply whenever otherwise indicated in air traffic control clearances or specified by the competent authority in aeronautical information publications.

ROA. 5025 IFR - Rules applicable to IFR flights outside controlled airspace

(a) Cruising levels

An IFR flight operating in level cruising flight outside of controlled airspace shall be flown at a cruising level appropriate to its track as specified in the table of cruising levels in TCAR ANS Part - ROA. 3110, except when otherwise specified by the competent authority for flight at or below 900 m (3 000 ft) above mean sea level.

(b) Communications

An IFR flight operating outside controlled airspace but within or into areas, or along routes, shall maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service.

(c) Position reports

An IFR flight operating outside controlled airspace and required to maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service, shall report position, as specified in TCAR ANS Part - ROA.8025 for controlled flights.

SECTION 6 AIRSPACE CLASSIFICATION

ROA. 6001 Classification of airspaces

ATS airspaces shall be classified and designated in accordance with the following:

(a) Class A. Except for State aircraft VFR flight with authorization from ATS Unit, only IFR flights are permitted. All flights shall be subject to ATC clearance. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground communications and Transponder with altitude reporting capability are required for all flights.

(b) Class B. IFR and VFR flights are permitted, all flights shall be subject to ATC clearance. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground communications and Transponder with altitude reporting capability are required for all flights.

(c) Class C. IFR and VFR flights are permitted. All flights shall be subject to ATC clearance. all flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flight and traffic avoidance advice on request. Continuous air-ground communications and Transponder with altitude reporting capability are required for all flights. For VFR flights a speed limitation of 250 kts indicated airspeed (IAS) applies below 3 050 m (10 000 ft) AMSL, except which the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

(d) Class D. IFR and VFR flights are permitted. All flights shall be subject to ATC clearance. All flights are provided with air traffic control service. IFR flights are separated from other IFR flights, receive traffic information in respect of VFR flights and traffic avoidance advice on request. VFR flights receive traffic information in respect of all other flights and traffic avoidance advice on request. Continuous air-ground communications are required for all flight. Speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except which the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

(e) Class E. IFR and VFR flights are permitted. All IFR flights shall be subject to ATC clearance. IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information, as far as is practical. Continuous air-ground communications are required for IFR flights. All VFR flights shall be capable of establishing air - ground communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL. If the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

(f) Class F. IFR and VFR flights are permitted. ATC clearance is not required. All participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested. Continuous air-ground communications are required for IFR flights participating in the advisory service and all flights shall be capable of establishing air-ground communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL. If the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

(g) Class G. IFR and VFR flights are permitted. ATC clearance is not required. All flights receive flight information service if requested. All flights shall be capable of establishing air- ground communications. A speed limitation of 250 kts IAS applies to all flights below 3050 m (10000 ft) AMSL. If the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed in this section, the aircraft may be operated at that minimum speed.

SECTION 7 AIR TRAFFIC SERVICES

ROA. 7001 General - Objectives of the air traffic services

The objectives of the air traffic services shall be to:

(a) prevent collisions between aircraft;
(b) prevent collisions between aircraft on the manoeuvring area and obstructions on that area;
(c) expedite and maintain an orderly flow of air traffic;
(d) provide advice and information useful for the safe and efficient conduct of flights;
(e) notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

ROA. 7002 Collision hazard information when ATS based on surveillance are provided

(a) When an identified controlled flight is observed to be on a conflicting path with an unknown aircraft, deemed to constitute a collision hazard, the pilot of the controlled flight shall, whenever practicable:
    (1) be informed of the unknown aircraft, and, if the pilot so requests, or if the situation so warrants in the opinion of the controller, avoiding action shall be suggested;
    (2) be notified when the conflict no longer exists.

ROA. 7005 Coordination between the aircraft operator and air traffic services

(a) Air traffic services units, in carrying out their objectives, shall have due regard for the requirements of the aircraft operators consequent on their obligations as specified in the relevant legislation on Air Operations, and, if so required by the aircraft operators, shall make available to them or their designated representatives such information as may be available to enable them or their designated representatives to carry out their responsibilities.

(b) When so requested by an aircraft operator, messages (including position reports) received by air traffic services units and relating to the operation of the aircraft for which operational control service is provided by that aircraft operator shall, so far as practicable, be made available immediately to the aircraft operator or a designated representative in accordance with locally agreed procedures.

SECTION 8 AIR TRAFFIC CONTROL SERVICE

ROA. 8001 Application

Air traffic control service shall be provided:

(a) to all IFR flights in airspace Classes A, B, C, D and E;
(b) to all VFR flights in airspace Classes A, B, C and D;
(c) to all special VFR flights;
(d) to all aerodrome traffic at controlled aerodromes.

ROA. 8005 Operation of air traffic control service

(a) In order to provide air traffic control service, an air traffic control unit shall:
  (1) be provided with information on the intended movement of each aircraft, or variations therefrom, and with current information on the actual progress of each aircraft;
  (2) determine from the information received, the relative positions of known aircraft to each other;
  (3) issue one or more of the following: clearances, instructions or information for the purpose of preventing collision between aircraft under its control and of expediting and maintaining an orderly flow of traffic;
  (4) coordinate clearances as necessary with other units:
    (i) whenever an aircraft might otherwise conflict with traffic operated under the control of such other units;
    (ii) before transferring control of an aircraft to such other units.

(b) Clearances issued by air traffic control units shall provide separation:
  (1) between all flights in airspace Classes A and B;
  (2) between IFR flights in airspace Classes C, D and E;
  (3) between IFR flights and VFR flights in airspace Class C;
  (4) between IFR flights and special VFR flights;
  (5) between special VFR flights unless otherwise prescribed by the competent authority;

  except that, when requested by the pilot of an aircraft and agreed by the pilot of the other aircraft and if so prescribed by the competent authority for the cases listed under b) above in airspace Classes D and E, a flight may be cleared subject to maintaining own separation in respect of a specific portion

of the flight below 3 050 m (10 000 ft) during climb or descent, during day in visual meteorological conditions.

(c) Except for cases of operations on parallel or near-parallel runways as in TCAR-ATS.TR.255 Operations on parallel or near-parallel runways, or when a reduction in separation minima in the vicinity of aerodromes can be applied, separation by an ATC unit shall be obtained by at least one of the following:
(1) vertical separation, obtained by assigning different levels selected from the table of cruising levels in TCAR ANS Part - ROA. 3110, except that the correlation of levels to track as prescribed therein shall not apply whenever otherwise indicated in appropriate aeronautical information publications or ATC clearances. The vertical separation minimum shall be a nominal 300 m (1 000 ft) up to and including FL 410 and a nominal 600 m (2000 ft) above that level. Geometric height information shall not be used to establish vertical separation;
(2) horizontal separation, obtained by providing:
(i) longitudinal separation, by maintaining an interval between aircraft operating along the same, converging or reciprocal tracks, expressed in time or distance; or
(ii) lateral separation, by maintaining aircraft on different routes or in different geographical areas.

ROA. 8015 Air traffic control clearances

(a) Air traffic control clearances shall be based solely on the following requirements for providing air traffic control service:
(1) Clearances shall be issued solely for expediting and separating air traffic and be based on known traffic conditions which affect safety in aircraft operation. Such traffic conditions include not only aircraft in the air and on the manoeuvring area over which control is being exercised, but also any vehicular traffic or other obstructions not permanently installed on the manoeuvring area in use.
(2) ATC units shall issue such ATC clearances as necessary to prevent collisions and to expedite and maintain an orderly flow of air traffic.
(3) ATC clearances shall be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for it to comply with them.

(b) Operation subject to clearance

(1) An air traffic control clearance shall be obtained prior to operating a controlled flight, or a portion of a flight as a controlled flight. Such clearance shall be requested through the submission of a flight plan to an air traffic control unit.

(2) The pilot-in-command of an aircraft shall inform ATC if an air traffic control clearance is not satisfactory. In such cases, ATC will issue an amended clearance, if practicable.

(3) Whenever an aircraft has requested a clearance involving priority, a report explaining the necessity for such priority shall be submitted, if requested by the appropriate air traffic control unit.

(4) Potential re-clearance in flight. If, prior to departure, it is anticipated that, depending on fuel endurance and subject to re-clearance in flight, a decision may be taken to proceed to a revised destination aerodrome, the appropriate air traffic control units shall be so notified by the insertion in the flight plan of information concerning the revised route (where known) and the revised destination.

(5) An aircraft operated on a controlled aerodrome shall not taxi on the manoeuvring area without clearance from the aerodrome control tower and shall comply with any instructions given by that unit.

(6) When vectoring or assigning a direct routing not included in the flight plan, which takes an IFR flight off published ATS route or instrument procedure, an air traffic controller providing ATS surveillance service shall issue clearances such that the prescribed obstacle clearance exists at all times until the aircraft reaches the point where the pilot re-joins the flight plan route or joins a published ATS route or instrument procedure.

(c) Clearances for transonic flight

(1) The air traffic control clearance relating to the transonic acceleration phase of a supersonic flight shall extend at least to the end of that phase.

(2) The air traffic control clearance relating to the deceleration and descent of an aircraft from supersonic cruise to subsonic flight shall seek to provide for uninterrupted descent at least during the transonic phase.

(d) Contents of clearances.

An air traffic control clearance shall indicate:

(1) aircraft identification as shown in the flight plan;

(2) clearance limit;

(3) route of flight:

(i) the route of flight shall be detailed in each clearance when deemed necessary; and

(ii) the phrase 'cleared via flight planned route' shall not be used when granting a re-clearance;

(4) level(s) of flight for the entire route or part thereof and changes of levels if required;

(5) any necessary instructions or information on other matters, such as ATFM departure slot if applicable, approach or departure manoeuvres, communications and the time of expiry of the clearance.

(e) Read back of clearances, instructions and safety-related information

(1) The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:

(i) ATC route clearances;

(ii) clearances and instructions to enter, land on, take off from, hold short of, cross, taxi and backtrack on any runway; and

(iii) runway-in-use, altimeter settings, SSR codes, newly assigned communication channels, level instructions, heading and speed instructions; and

(iv) transition levels, whether issued by the controller or contained in ATIS broadcasts.

(2) Other clearances or instructions, including conditional clearances and taxi instructions, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

(3) The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

(4) Voice read-back of CPDLC messages shall not be required, unless otherwise specified by the ANSP.

(f) Changes in clearance regarding route or level

(1) When issuing a clearance covering a requested change in route or level, the exact nature of the change shall be included in the clearance.

(2) When traffic conditions will not permit clearance of a requested change, the word 'UNABLE' shall be used. When warranted by circumstances, an alternative route or level shall be offered.

(g) Clearance related to altimetry

(1) For flights in areas where a transition altitude is established, the vertical position of the aircraft shall, except as provided for in (5) below, be expressed in terms of altitudes at or below the transition altitude and in terms of flight levels at or above the transition level. While passing through the transition layer, the vertical position shall be expressed in terms of flight levels when climbing and in terms of altitudes when descending.

(2) The flight crew shall be provided with the transition level in due time prior to reaching it during descent.

(3) Except when it is known that the aircraft has already received the information in a directed transmission, an QNH altimeter setting shall be included in:

(i) the descent clearance, when first cleared to an altitude below the transition level;

(ii) the approach clearance or the clearance to enter the traffic circuit;

(iii) the taxi clearance for departing aircraft.

(4) A QFE altimeter setting shall be provided to aircraft on request or on a regular basis in accordance with local arrangements.

(5) When an aircraft has been given clearance to land, or where an aircraft has been informed that the runway is available for landing at AFIS aerodromes, and that aircraft is completing its approach using atmospheric pressure at aerodrome elevation (QFE), the vertical position of that aircraft shall be expressed in terms of height above aerodrome elevation during that portion of its flight for which QFE may be used, except that it shall be expressed in terms of height above runway threshold elevation:

(i) for instrument runways if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and

(ii) for precision approach runways.

(h) Conditional clearances

Conditional phrases, such as ‘behind landing aircraft’ or ‘after departing aircraft’, shall not be used for movements affecting the active runway(s), except when the aircraft or vehicles concerned are seen by the appropriate controller and pilot. The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/vehicle to pass in front of the other aircraft concerned. In all cases, a conditional clearance shall be given in the following order and consist of:

(1) the call sign;
(2) the condition;
(3) the clearance; and
(4) a brief reiteration of the condition.

ROA. 8020 Adherence to flight plan

(a) Except as provided for in (b) and (d) an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.
(1) Unless otherwise authorized by the competent authority, or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:
(i) when on an established ATS route, operate along the defined center line of that route; or
(ii) when on any other route, operate directly between the navigation facilities and/or points defining that route.
(2) Unless otherwise authorized by the competent authority, or directed by the appropriate air traffic control unit, an aircraft operating along an ATS route segment defined by reference to very high frequency omnidirectional radio ranges shall change over for its primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the changeover point, where established.
(3) Deviation from the requirements in point (1) shall be notified to the appropriate ATS unit.

(b) Inadvertent changes. In the event that a controlled flight inadvertently deviates from its current flight plan, the following action shall be taken:
(1) Deviation from track: if the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable.

(2) Variation in true airspeed: if the average true airspeed at cruising level between reporting points varies or is expected to vary by plus or minus 5 per cent of the true airspeed, from that given in the flight plan, the appropriate air traffic services unit shall be so informed.

(3) Change in time estimate: if the time estimate for the next applicable reporting point, flight information region boundary or destination aerodrome, whichever comes first, is found to be in error in excess of 2 minutes from that notified to ATS or such other period of time as prescribed by the competent authority, a revised estimated time shall be notified as soon as possible to the appropriate ATS unit.

(4) Additionally, when an ADS-C agreement is in place, the air traffic services unit shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS-C event contract.

(c) Intended changes. Requests for flight plan changes shall include information as indicated hereunder:

(1) Change of cruising level: aircraft identification; requested new cruising level and cruising speed at this level, revised time estimates (when applicable) at subsequent flight information region boundaries.

(2) Change of route:

(i) Destination unchanged: aircraft identification; flight rules; description of new route of flight including related flight plan data beginning with the position from which requested change of route is to commence; revised time estimates; any other pertinent information.

(ii) Destination changed: aircraft identification; flight rules; description of revised route of flight to revised destination aerodrome including related flight plan data, beginning with the position from which requested change of route is to commence; revised time estimates; alternate aerodrome(s); any other pertinent information.

(d) Weather deterioration below the VMC. When it becomes evident that flight in VMC in accordance with its current flight plan will not be practicable, a VFR flight operated as a controlled flight shall:

(1) request an amended clearance enabling the aircraft to continue in VMC to destination or to an alternative aerodrome, or to leave the airspace within which an ATC clearance is required; or

(2) if no clearance in accordance with a) can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken

either to leave the airspace concerned or to land at the nearest suitable aerodrome; or

(3) if operated within a control zone, request authorization to operate as a special VFR flight; or

(4) request clearance to operate in accordance with the instrument flight rules.

ROA. 8025 Position reports

(a) Unless exempted by the competent authority or by the appropriate air traffic services unit under conditions specified by that authority, a controlled flight shall report to the appropriate air traffic services unit, as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information. Position reports shall similarly be made in relation to additional points when requested by the appropriate air traffic services unit. In the absence of designated reporting points, position reports shall be made at intervals prescribed by the competent authority or specified by the appropriate air traffic services unit.

(1) Controlled flights providing position information to the appropriate air traffic services unit via data link communications shall only provide voice position reports when requested.

(2) When a controlled flight has been exempted from the requirement to report at compulsory reporting points, pilots shall, unless automated position reporting is in effect, resume voice or CPDLC position reporting:

(i) when so instructed;

(ii) when advised that the ATS surveillance service has been terminated; or

(iii) when advised that the ATS surveillance identification is lost.

(3) The format of position reports shall be in accordance with Appendix 5 (a), Point A.

ROA. 8030 Termination of control

A controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATC unit as soon as it ceases to be subject to air traffic control service.

ROA. 8035 Communications

An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the relevant ATS Provider in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

The requirement for an aircraft to maintain an air-ground voice communication watch shall remain in effect when CPDLC has been established.

ROA. 8040 Communications Failure

(a) Communication failure. If a communication failure precludes compliance with TCAR ANS Part - ROA. 8035 (a), the aircraft shall comply with the voice communication failure procedures of Annex 10, Volume II, and with such of the following procedures as are appropriate. The aircraft shall attempt to establish communications with the appropriate air traffic control unit using all other available means. In addition, the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

(1) If in visual meteorological conditions, the aircraft shall:

(i) continue to fly in visual meteorological conditions; land at the nearest suitable aerodrome; and report its arrival by the most expeditious means to the appropriate air traffic services unit;

(ii) if considered advisable, complete an IFR flight in accordance with (2)

(2) If in instrument meteorological conditions or when the pilot of an IFR flight considers it inadvisable to complete the flight in accordance with TCAR ANS Part - ROA . 8040 (a), the aircraft shall:

(i) unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;

(ii) in airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following:

(A) the time the last assigned level or minimum flight altitude is reached; or

(B) the time the transponder is set to Code 7600; or

(C) the aircraft's failure to report its position over a compulsory reporting point;

whichever is later, and thereafter adjust level and speed in accordance with the filed flight plan

(iii) when being radar vectored or having been directed by ATC to proceed offset using area navigation (RNAV) without a specified limit, rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;

(iv) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with (v) below, hold over this aid or fix until commencement of descent;

(v) commence descent from the navigation aid or fix specified in (iv) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;

(vi) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

(vii) land, if possible, within 30 minutes after the estimated time of arrival specified in (v) or the last acknowledged expected approach time, whichever is later.

SECTION 9 FLIGHT INFORMATION SERVICE

ROA. 9001 Application

(a) Flight information service shall be provided by the appropriate air traffic services units to all aircraft which are likely to be affected by the information and which are:
  (1) provided with air traffic control service; or
  (2) otherwise known to the relevant air traffic services units.

(b) The reception of flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command shall make the final decision regarding any suggested alteration of flight plan.

(c) Where air traffic services units provide both flight information service and air traffic control service, the provision of air traffic control service shall have precedence over the provision of flight information service whenever the provision of air traffic control service so requires.

ROA. 9005 Scope of flight information service

(a) Flight information service shall include the provision of pertinent:
  (1) SIGMET and AIRMET information;
  (2) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;
  (3) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;
  (4) information on changes in the availability of radio navigation services;
  (5) information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas when they are affected by snow, ice or significant depth of water;
  (6) information on unmanned free balloons;
  (7) information on abnormal aircraft configuration and condition;
  (8) any other information likely to affect safety.

(b) Flight information service provided to flights shall include, in addition to that outlined in (a), the provision of information concerning:
  (1) weather conditions reported or forecast at departure, destination and alternate aerodromes;
  (2) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G;

(3) for flight over water areas, in so far as practicable and when requested by a pilot, any available information such as radio call sign, position, true track, speed, etc. of surface vessels in the area; and

(4) messages, including clearances, received from other air traffic services units to relay to aircraft. If specified in letter of agreement between air traffic service units concerned.

(c) Flight information service provided to VFR flights shall include, in addition to that outlined in (a), the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

(d) AFIS provided to flights shall include, in addition to relevant items outlined in points (a) and (b), the provision of the information concerning:

(1) collision hazards with aircraft, vehicles and persons operating on the manoeuvring area;

(2) the runway-in-use.

ROA. 9010 Automatic terminal information service (ATIS)

(a) Use of the ATIS messages in directed request/reply transmissions

(1) Whenever Voice-ATIS and/or D-ATIS is provided:

(i) aircraft shall acknowledge receipt of the information upon establishing communication with the ATS unit providing approach control service, the aerodrome control tower or Aerodrome Flight Information Service (AFIS), as appropriate; and

(ii) the appropriate air traffic services unit shall, when replying to an aircraft acknowledging receipt of an ATIS message or, in the case of arriving aircraft, at such other time as may be prescribed by the competent authority, provide the aircraft with the current altimeter setting.

(2) Information contained in a current ATIS, the receipt of which has been acknowledged by the aircraft concerned, need not be included in a directed transmission to the aircraft, with the exception of the altimeter setting, which shall be provided in accordance with (1).

(3) If an aircraft acknowledges receipt of an ATIS that is no longer current, the ATS unit shall without delay take one of the following actions:

(i) communicate to the aircraft any element of information which has to be updated;

(ii) instruct the aircraft to obtain the current ATIS information.

(b) ATIS for arriving and departing aircraft

ATIS messages containing both arrival and departure information shall contain the following elements of information in the order listed:

(1) name of aerodrome;
(2) arrival and/or departure indicator;
(3) contract type, if communication is via D-ATIS;
(4) designator;
(5) time of observation, if appropriate;
(6) type of approach(es) to be expected;
(7) the runway(s) in use; status of arresting system constituting a potential hazard, if any;
(8) significant runway surface conditions and, if appropriate, braking action;
(9) holding delay, if appropriate;
(10) transition level, if applicable;
(11) other essential operational information;
(12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;
(13) visibility and, when applicable, RVR* and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;
(14) present weather;
(15) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available;
(16) air temperature;
(17) dew point temperature;
(18) altimeter setting(s);
(19) any available information on significant meteorological phenomena in the approach and climb-out areas including wind shear, and information on recent weather of operational significance;
(20) trend forecast, when available; and
(21) specific ATIS instructions.

(c) ATIS for arriving aircraft

ATIS messages containing arrival information only shall contain the following elements of
information in the order listed:

(1) name of aerodrome;
(2) arrival indicator;
(3) contract type, if communication is via D-ATIS;
(4) designator;
(5) time of observation, if appropriate;
(6) type of approach(es) to be expected;
(7) main landing runway(s); status of arresting system constituting a potential hazard, if any;
(8) significant runway surface conditions and, if appropriate, braking action;
(9) holding delay, if appropriate;
(10) transition level, if applicable;
(11) other essential operational information;
(12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;
(13) visibility and, when applicable, RVR and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;
(14) present weather
(15) cloud below 1500 m (5000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available;
(16) air temperature;
(17) dew point temperature;
(18) altimeter setting(s);
(19) any available information on significant meteorological phenomena in the approach area including wind shear, and information on recent weather of operational significance;
(20) trend forecast, when available; and
(21) specific ATIS instructions.

(d) ATIS for departing aircraft

ATIS messages containing departure information only shall contain the following elements of information in the order listed:

(1) name of aerodrome;
(2) departure indicator;
(3) contract type, if communication is via D-ATIS;
(4) designator;
(5) time of observation, if appropriate;
(6) runway(s) to be used for take-off; status of arresting system constituting a potential hazard, if any;
(7) significant surface conditions of runway(s) to be used for take-off and, if appropriate, braking action;
(8) departure delay, if appropriate;
(9) transition level, if applicable;
(10) other essential operational information;
(11) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;
(12) visibility and, when applicable RVR and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;
(13) present weather;
(14) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available;
(15) air temperature;
(16) dew point temperature;
(17) altimeter setting(s);
(18) any available information on significant meteorological phenomena in the climb-out area including wind shear;
(19) trend forecast, when available; and
(20) specific ATIS instructions.

(e) The element in (b)(13)(14)(15), (c)(13)(14)(15), (d)(12)(13)(14) are replaced by the term ‘CAVOK’ when the following conditions occur simultaneously at the time of observation:

(1) visibility: 10 km or more, and the lowest visibility not reported;
(2) no cloud of operational significance; and
(3) no weather of significance to aviation.

SECTION 10 ALERTING SERVICE

ROA. 10001 Application

(a) Alerting service shall be provided by the air traffic services units:
  (1) for all aircraft provided with air traffic control service;
  (2) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic services; and
  (3) to any aircraft known or believed to be the subject of unlawful interference or in the state of emergency.

ROA. 10005 Information To Aircraft Operating In The Vicinity of An Aircraft In A State Of Emergency

(a) When it has been established by an air traffic services unit that an aircraft is in a state of emergency, other aircraft known to be in the vicinity of the aircraft involved shall, except as provided in (b), be informed of the nature of the emergency as soon as practicable.

(b) When an air traffic services unit knows or believes that an aircraft is being subjected to unlawful interference, no reference shall be made in ATS air-ground communications to the nature of the emergency unless it has first been referred to in communications from the aircraft involved and it is certain that such reference will not aggravate the situation.

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SECTION 11 INTERFERENCE, EMERGENCY CONTINGENCIES AND INTERCEPTION

ROA. 11001 General

(a) In case of an aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, ATS units shall give the aircraft maximum consideration, assistance and priority over other aircraft, as may be necessitated by the circumstances.

(b) Subsequent ATC actions shall be based on the intentions of the pilot, the overall air traffic situation and the real-time dynamics of the contingency.

ROA. 11005 Unlawful Interference

(a) An aircraft which is being subjected to unlawful interference shall endeavour to set the transponder to Code 7500 and notify the appropriate ATS unit of any significant circumstances associated therewith and any deviation from the current flight plan necessitated by the circumstances, in order to enable the ATS unit to give priority to the aircraft and to minimise conflict with other aircraft.

(b) If an aircraft is subjected to unlawful interference, the pilot-in-command shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the competent authority, unless considerations aboard the aircraft dictate otherwise.

(c) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall attend promptly to requests by the aircraft. Information pertinent to the safe conduct of the flight shall continue to be transmitted and necessary action shall be taken to expedite the conduct of all phases of the flight, especially the safe landing of the aircraft.

(d) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the aircraft operator or its designated representative.

ROA. 11010 Strayed or unidentified aircraft

(a) As soon as an air traffic services unit becomes aware of a strayed aircraft it shall take all necessary steps as outlined in (1) and (3) to assist the aircraft and to safeguard its flight.

(1) If the aircraft's position is not known, the air traffic services unit shall:

(i) attempt to establish two-way communication with the aircraft, unless such communication already exists;

(ii) use all available means to determine its position;

(iii) inform other air traffic services units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;

(iv) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning strayed aircraft;

(v) request from the units referred to in (iii) and (iv) and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

(2) The requirements in (1)(iv) and (1)(v) shall apply also to air traffic services units informed in accordance with (1)(iii).

(3) When the aircraft's position is established, the air traffic services unit shall:

(i) advise the aircraft of its position and the corrective action to be taken. This advice shall be immediately provided when the ATS unit is aware that there is a possibility of interception or other hazard to the safety of the aircraft; and

(ii) provide, as necessary, other air traffic services units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

(b) As soon as an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavour to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the air traffic services unit shall take such of the following steps as are appropriate in the circumstances:

(1) attempt to establish two-way communication with the aircraft;

(2) inquire of other air traffic services units within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;
(3) inquire of air traffic services units serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;
(4) attempt to obtain information from other aircraft in the area;
(5) the air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

(c) In the case of a strayed or unidentified aircraft, the possibility of the aircraft being subject of unlawful interference shall be taken into account. Should the air traffic services unit consider that a strayed or unidentified aircraft may be the subject of unlawful interference, the appropriate authority designated by the State shall immediately be informed, in accordance with locally agreed procedures.

ROA. 11012 Minimum Fuel or Fuel Emergency

(a) When a pilot reports a state of minimum fuel, the controller shall inform the pilot as soon as practicable of any anticipated delays or that no delays are expected.

(b) When the level of fuel renders declaring a situation of distress necessary, the pilot, in accordance with TCAR ANS Part - ROA.14095, shall indicate that by using the radiotelephony distress signal (MAYDAY), preferably spoken three times, followed by the nature of the distress condition (FUEL).

ROA. 11013 Degraded aircraft performance

(a) Whenever, as a result of failure or degradation of navigation, communications, altimetry, flight control or other systems, aircraft performance is degraded below the level required for the airspace in which it is operating, the flight crew shall advise the ATC unit concerned without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.

(b) Degradation or failure of the RNAV system When an aircraft cannot meet the specifications as required by the RNAV route or procedure, as a result of a

failure or degradation of the RNAV system, a revised clearance shall be requested by the pilot.

(c) Loss of vertical navigation performance required for reduced vertical separation minima (RVSM) airspace

(1) The pilot shall inform ATC as soon as possible of any circumstances where the vertical navigation performance requirements for RVSM airspace cannot be maintained. In such cases, the pilot shall obtain a revised ATC clearance prior to initiating any deviation from the cleared route and/or flight level, whenever possible. When a revised ATC clearance cannot be obtained prior to such a deviation, the pilot shall obtain a revised clearance as soon as possible thereafter.

(2) During operations in, or vertical transit through, RVSM airspace with aircraft not approved for RVSM operations, pilots shall report non-approved status as follows:

(i) at initial call on any channel within RVSM airspace;

(ii) in all requests for level changes; and

(iii) in all read-backs of level clearances.

(3) Air traffic controllers shall explicitly acknowledge receipt of messages from aircraft reporting RVSM non-approved status.

(4) Degradation of aircraft equipment — pilot-reported:

(i) When informed by the pilot of an RVSM-approved aircraft operating in RVSM airspace that the aircraft's equipment no longer meets the RVSM requirements, ATC shall consider the aircraft as non-RVSM-approved.

(ii) ATC shall take action immediately to provide a minimum vertical separation of 600 m (2 000 ft) or an appropriate horizontal separation from all other aircraft concerned that are operating in RVSM airspace. An aircraft rendered non-RVSM-approved shall normally be cleared out of RVSM airspace by ATC when it is possible to do so.

(iii) Pilots shall inform ATC, as soon as practicable, of any restoration of the proper functioning of equipment required to meet the RVSM requirements.

(iv) The first ACC to become aware of a change in an aircraft's RVSM status shall coordinate with adjacent ACCs, as appropriate.

(5) Severe turbulence — not forecast:

(i) When an aircraft operating in RVSM airspace encounters severe turbulence due to weather or wake vortex that the pilot believes will

impact the aircraft's capability to maintain its cleared flight level, the pilot shall inform ATC. ATC shall establish either an appropriate horizontal separation or an increased minimum vertical separation.

(ii) ATC shall, to the extent possible, accommodate pilot requests for flight level and/or route changes and shall pass on traffic information, as required.

(iii) ATC shall solicit reports from other aircraft to determine whether RVSM should be suspended entirely or within a specific flight level band and/or area.

(iv) When any severe meteorological conditions are expected to prevail over an area for an extended time period, the ACC may consider temporarily suspending the use of 300 m (1 000 ft) VSM in the affected area.

(v) The ACC suspending RVSM shall coordinate with adjacent ACCs such suspension(s) and any required adjustments to sector capacities, as appropriate, to ensure an orderly progression of the transfer of traffic.

(6) Severe turbulence — forecast:

(i) When a meteorological forecast is predicting severe turbulence within RVSM airspace, ACC shall determine whether RVSM should be suspended and, if so, for how long and for which specific flight level(s) and/or area.

(ii) In cases where RVSM will be suspended, the ACC suspending RVSM shall coordinate with adjacent ACCs with regard to the flight levels appropriate for the transfer of traffic, unless a contingency flight level allocation scheme has been determined by letter of agreement. The ACC suspending RVSM shall also coordinate applicable sector capacities with adjacent ACCs, as appropriate.

ROA. 11014 ACAS Resolution Advisory (RA)

(a) In the event of an ACAS RA, pilots shall:

(1) respond immediately by following the RA, as indicated, unless doing so would jeopardise the safety of the aircraft;

(2) follow the RA even if there is a conflict between the RA and an ATC instruction to manoeuvre;

(3) not manoeuvre in the opposite sense to an RA;

(4) as soon as possible, as permitted by flight crew workload, notify the appropriate ATC unit of any RA which requires a deviation from the current ATC instruction or clearance;
(5) promptly comply with any modified RAs;
(6) limit the alterations of the flight path to the minimum extent necessary to comply with the RAs;
(7) promptly return to the terms of the ATC instruction or clearance when the conflict is resolved; and
(8) notify ATC when returning to the current clearance.

(b) When a pilot reports an ACAS RA, the controller shall not attempt to modify the aircraft flight path until the pilot reports 'CLEAR OF CONFLICT'.

(c) Once an aircraft departs from its ATC clearance or instruction in compliance with an RA, or a pilot reports an RA, the controller ceases to be responsible for providing separation between that aircraft and any other aircraft affected as a direct consequence of the manoeuvre induced by the RA. The controller shall resume responsibility for providing separation to all the affected aircraft when:
(1) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or
(2) the controller acknowledges a report from the flight crew that the aircraft is resuming the current clearance and issues an alternative clearance which is acknowledged by the flight crew.

ROA. 11015 Interception

(a) The pilot-in-command of a civil aircraft, when intercepted, shall:
(1) Immediately follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the Rules of Ministry of Defense and Ministry of Transport on Visual Signal to be used by military officers to communicate with intercepted aircraft. As detailed in Appendix 7
(2) notify, if possible, the appropriate air traffic services unit.
(3) attempt to establish radio-communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121,5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz,

(4) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.

(5) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

(b) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

(c) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

(d) If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Appendix 8 and transmitting each phrase twice:

(e) As soon as an air traffic services unit learns that an aircraft is being intercepted in its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

(1) attempt to establish two-way communication with the intercepted aircraft via any means available, including the emergency radio frequency 121,5 MHz or 243 MHz, unless such communication already exists,

(2) inform the pilot of the intercepted aircraft of the interception;

(3) establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft;

(4) relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;

(5) in close coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft;

(6) inform air traffic services units serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

(f) As soon as an air traffic services unit learns that an aircraft is being intercepted outside its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

(1) inform the air traffic services unit serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft and requesting it to take action in accordance with (e);

(2) relay messages between the intercepted aircraft and the appropriate air traffic services unit, the intercept control unit or the intercepting aircraft.

SECTION 12 SERVICES RELATED TO METEOROLOGY - AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

ROA. 12001 Types of Aircraft Observations

(a) The following aircraft observations shall be made during any phase of the flight:
  (1) special aircraft observations; and
  (2) other non-routine aircraft observations.

ROA. 12005 Special aircraft observations

(a) Special observations shall be made and reported by all aircraft whenever the following conditions are encountered or observed:
  (1) moderate or severe turbulence; or
  (2) moderate or severe icing; or
  (3) severe mountain wave; or
  (4) thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines; or
  (5) thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines; or
  (6) heavy dust storm or heavy sandstorm; or
  (7) volcanic ash cloud; or
  (8) pre-eruption volcanic activity or a volcanic eruption; or
  (9) the runway braking action encountered is not as good as reported.

(b) Flight crews shall compile the reports using forms based on the model AIREP SPECIAL form as set out in point A of Appendix 9. Those reports shall comply with the detailed instructions for reporting, as provided in point 2 of Appendix 9
  (1) The detailed instructions, including the formats of messages and the phraseologies provided in Appendix 9, shall be used by flight crews when transmitting air-reports and by ATS units when retransmitting such reports.
  (2) Special air-reports containing observations of volcanic activity shall be recorded on the special air-report of volcanic activity form. Forms based

on the model form for special air reports of volcanic activity set out in point B of Appendix 9 shall be provided for flight crews operating on routes which could be affected by volcanic ash clouds.

ROA. 12010 Other non-routine aircraft observations

When other meteorological conditions not listed under TCAR ANS Part - ROA .12005(a), e.g. wind shear, are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable.

ROA. 12015 Reporting of aircraft observations by voice communication

(a) Aircraft observations shall be reported during flight at the time the observation is made or as soon thereafter as is practicable.

(b) Aircraft observations shall be reported as air-reports and shall comply with the technical specifications in Appendix 9

ROA. 12020 Exchange of air-reports

(a) ATS units shall transmit, as soon as practicable, special and non-routine air-reports to:
   (1) other aircraft concerned;
   (2) the associated meteorological watch office (MWO) in accordance with point 3 of Appendix 9; and
   (3) other ATS units concerned.

(b) Transmissions to aircraft shall be repeated at a frequency and continued for a period of time which shall be determined by the ATS unit concerned.

SECTION 13 SSR TRANSPONDER

ROA. 13001 Operation of an SSR transponder

(a) When an aircraft carries a serviceable SSR transponder, the pilot shall operate the transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where SSR is used for ATS purposes.

(b) Pilots shall not operate the IDENT feature unless requested by ATS.

(c) Except for flight in airspace designated by the CAAT for mandatory operation of transponder, aircraft without sufficient electrical power supply are exempted from the requirement to operate the transponder at all times.

ROA. 13005 SSR transponder Mode A code setting

(a) To indicate that it is in a specific contingency situation, the pilot of an aircraft equipped with SSR shall:

(1) Select code 7700 to provide recognition of an aircraft in an emergency. unless ATC has previously directed the pilot to operate the transponder on a specified code. In the latter case, a pilot may nevertheless select Code 7700 whenever there is a specific reason to believe that this would be the best course of action;

(2) select Code 7600 to provide recognition of an aircraft with radiocommunication failure.

(3) Attempt to select code 7500 to provide recognition of an aircraft which is being subjected to unlawful interference. If circumstances so warrant, Code 7700 should be used instead.

(b) Except in the cases described in (a) above, the pilot shall:

(1) select codes as instructed by the ATS unit; or

(2) Pilots of IFR aircraft about to enter Bangkok FIR who have not received specific instructions from ATC concerning the setting of the transponder shall operate the transponder on mode A code 3300 before entry and maintain that code setting until otherwise instructed.

(3) VFR flight departing from an aerodrome without SSR code being assigned shall use mode A code 2000 until a specific code is assigned by an ATS unit.

(c) When it is observed that the code shown on the situation display is different from what has been assigned to the aircraft:
  (1) the pilot shall be requested to confirm the code selected and, if the situation warrants, to reselect the correct code; and
  (2) if the discrepancy between assigned and displayed codes still persists, the pilot may be requested to stop the operation of the aircraft's transponder. The next control position and any other affected unit using SSR and/or multilateration (MLAT) in the provision of ATS shall be informed accordingly.

ROA. 13010 Pressure-altitude-derived information

(a) When the aircraft carries serviceable Mode C equipment, the pilot shall continuously operate this mode unless otherwise dictated by ATC.

(b) The tolerance value used to determine that pressure-altitude-derived level information displayed to the controller is accurate shall be ±60 m (±200 ft) in RVSM airspace. In other airspace, it shall be ±90 m (±300 ft)

(c) Verification of pressure-altitude-derived level information displayed to the controller shall be affected at least once by each suitably equipped ATC unit on initial contact with the aircraft concerned or, if this is not feasible, as soon as possible thereafter. The verification shall be effected by simultaneous comparison with altimeter-derived level information received from the same aircraft by radiotelephony. The pilot of the aircraft whose pressure-altitude-derived level information is within the approved tolerance value need not be advised of such verification.

ROA. 13015 SSR transponder Mode S aircraft identification setting

(a) Aircraft equipped with Mode S having an aircraft identification feature shall transmit the aircraft identification as specified in Item 7 of the FPL or, when no flight plan has been filed, the aircraft registration.

(b) Whenever it is observed on the situation display that the aircraft identification transmitted by a Mode S-equipped aircraft is different from that expected from the aircraft, the pilot shall be requested to confirm and, if necessary, re-enter the correct aircraft identification.

(c) If, following confirmation by the pilot that the correct aircraft identification has been set on the Mode S identification feature, the discrepancy continues to exist, the controller shall take the following actions:
  (1) inform the pilot of the persistent discrepancy;
  (2) where possible, correct the label showing the aircraft identification on the situation display; and
  (3) notify the next control position and any other unit concerned using Mode S for identification purposes that the aircraft identification transmitted by the aircraft is erroneous.

ROA. 13020 SSR transponder failure when the carriage of a functioning transponder is mandatory

(a) In case of a transponder failure after departure, ATC units shall attempt to provide for continuation of the flight to the destination aerodrome in accordance with the flight plan. Pilots may, however, be expected to comply with specific restrictions.

(b) In the case of a transponder which has failed and cannot be restored before departure, pilots shall:
  (1) inform ATS as soon as possible, preferably before submission of a flight plan;
  (2) insert in Item 10 of the FPL form under SSR the character 'N' for complete unserviceability of the transponder or, in case of partial transponder failure, insert the character corresponding to the remaining transponder capability; and
  (3) comply with any published procedures for requesting an exemption from the requirements to carry a functioning SSR transponder.

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SECTION 14 VOICE COMMUNICATION PROCEDURES

ROA. 14001 General

Standardised phraseology shall be used in all situations for which it has been specified. Only when standardised phraseology cannot serve an intended transmission, plain language shall be used.

ROA. 14005 Categories of messages

(a) The categories of messages handled by the aeronautical mobile service, and the order of priority in the establishment of communications and the transmission of messages shall be in accordance with Table 14-1.

Table 14-1.

Table 14-1.		
Message category and radiotelephony order of priority signal		Radiotelephony signal
(a)	Distress calls, distress messages and distress traffic	MAYDAY
(b)	Urgency messages, including messages preceded by the medical transports signal	PAN PAN or PAN PAN MEDICAL
(c)	Communications relating to direction finding	—
(d)	Flight safety messages	—
(e)	Meteorological messages	—
(f)	Flight regularity messages	—

(b) Distress messages and distress traffic shall be handled in accordance with the provisions of point TCAR ANS Part - ROA.14095

(c) Urgency messages and urgency traffic, including messages preceded by the medical transports signal, shall be handled in accordance with the provisions of point TCAR ANS Part - ROA.14095.

ROA. 14010 Flight safety messages

Flight safety messages shall comprise the following:

(a) movement and control messages;
(b) messages originated by an aircraft operator or by an aircraft, of immediate concern to an aircraft in flight;

(c) meteorological advice of immediate concern to an aircraft in flight or about to depart (individually communicated or for broadcast);
(d) other messages concerning aircraft in flight or about to depart.

ROA. 14015 Language to be used in air-ground communication

(a) The air-ground radiotelephony communications shall be conducted in the language normally used by the station on the ground or in the English language.
(b) The English language shall be available, on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services.
(c) The languages available at a given station on the ground shall form part of the Aeronautical Information
Publications and other published aeronautical information concerning such facilities.

ROA. 14020 Word spelling in radiotelephony

When proper names, service abbreviations and words of which the spelling is doubtful are spelled out in radiotelephony, the alphabet in the Table 14-2 shall be used.

Table 14-2

The radiotelephony spelling alphabet

Letter	Word	Approximate pronunciation (Latin alphabet representation)
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE *or* SHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HO TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH

M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM *or* OO NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

ROA. 14025 Principles governing the identification of ATS routes other than standard departure and arrival routes

(a) Use of ATS route designators in communications

(1) In voice communications, the basic letter of a designator shall be spoken in accordance with the spelling alphabet as defined in TCAR ANS Part - ROA. 14020 Table 14-2.

(2) Where the prefixes K, U or S are used, they shall, in voice communications, be spoken as follows:

(i) K — KOPTER

(ii) U — UPPER

(iii) S — SUPERSONIC

(b) The word ‘kopter’ shall be pronounced as in the word ‘helicopter’ and the words ‘upper’ and ‘supersonic’ as in the English language.

ROA. 14026 Significant points

Normally the plain language name for significant points marked by the site of a radio navigation aid, or the unique five-letter pronounceable ‘name-code’ for significant points not marked by the site of a radio navigation aid, shall be used to refer to the significant point in voice communications. If the plain language name for the site of a radio navigation aid is not used, it shall be replaced by the coded designator which, in voice communications, shall be spoken in accordance with the spelling alphabet.

ROA. 14030 Use of designators for standard instrument departure and arrival routes

The plain language designator for standard instrument departure or arrival routes shall be used in voice communications.

ROA. 14035 Transmission of numbers in radiotelephony

(a) Transmission of numbers

(1) All numbers used in the transmission of aircraft call sign, headings, runway, wind direction and speed shall be transmitted by pronouncing each digit separately.

(i) Flight levels shall be transmitted by pronouncing each digit separately, except for the case of flight levels in whole hundreds.

(ii) The altimeter setting shall be transmitted by pronouncing each digit separately, except for the case of a setting of 1000 hPa, which shall be transmitted as ‘ONE THOUSAND’.

(iii) All numbers used in the transmission of transponder codes shall be transmitted by pronouncing each digit separately except that, when the transponder codes contain whole thousands only, the information shall be transmitted by pronouncing the digit in the number of thousands followed by the word ‘THOUSAND’.

(2) All numbers used in transmission of other information than those described in point (a)(1) shall be transmitted by pronouncing each digit separately, except that all numbers containing 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 ‘THOUSAND’, 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’, followed by the number of hundreds followed by the word ‘HUNDRED’.

(3) In cases where there is a need to clarify the number transmitted as whole thousands and/or whole hundreds, the number shall be transmitted by pronouncing each digit separately .

(4) When providing information regarding the relative bearing to an object or to conflicting traffic in terms of the 12-hour clock, the information shall be given pronouncing the digits together such as ‘TEN O'CLOCK’ or ‘ELEVEN O'CLOCK’.

(5) Numbers containing a decimal point shall be transmitted as prescribed in point (a)(1) with the decimal point in appropriate sequence, indicated by the word 'DECIMAL'.

(6) All six digits of the numerical designator shall be used to identify the transmitting channel in very high frequency (VHF) radiotelephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits shall be used.

ROA. 14040 Pronunciation of numbers

When the language used for communication is English, numbers shall be transmitted using the pronunciation shown in Table 14-3:

Table 14-3

Numeral or numeral element	Pronunciation
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
10	TEN
11	EE-LE-VEN
12	TWELF
Decimal	DAY-SEE-MAL
Hundred	HUN-dred
Thousand	TOU-SAND

ROA. 14045 Transmitting technique

(a) Transmissions shall be conducted concisely in a normal conversational tone.

(b) The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning ascribed in Table 14-4:

Table 14-4	
Phrase	**Meaning**
ACKNOWLEDGE	'Let me know that you have received and understood this message.'
AFFIRM	'Yes.'
APPROVED	'Permission for proposed action granted.'
BREAK	'I hereby indicate the separation between portions of the message.'
BREAK BREAK	'I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment.'
CANCEL	'Annul the previously transmitted clearance.'
CHECK	'Examine a system or procedure.'
CLEARED	'Authorized to proceed under the conditions specified.'
CONFIRM	'I request verification of: (clearance, instruction, action, information).'
CONTACT	'Establish communications with…'
CORRECT	'True' or 'Accurate'.
CORRECTION	'An error has been made in this transmission (or message indicated). The correct version is…'
DISREGARD	'Ignore.'
HOW DO YOU READ	'What is the readability of my transmission?' (see point SERA.14070(c))
I SAY AGAIN	'I repeat for clarity or emphasis.'
MAINTAIN	'Continue in accordance with the condition(s) specified' or in its literal sense.
MONITOR	'Listen out on (frequency).'
NEGATIVE	'No' or 'Permission not granted' or 'That is not correct' or 'Not capable'.
OVER	'My transmission is ended, and I expect a response from you.'
OUT	'This exchange of transmissions is ended and no response is expected.'
READ BACK	'Repeat all, or the specified part, of this message back to me exactly as received.'
RECLEARED	'A change has been made to your last clearance and this new clearance

	supersedes your previous clearance or part thereof.'
REPORT	'Pass me the following information…'
REQUEST	'I should like to know…' or 'I wish to obtain…'
ROGER	'I have received all of your last transmission.'
SAY AGAIN	'Repeat all, or the following part, of your last transmission.'
SPEAK SLOWER	'Reduce your rate of speech.'
STANDBY	'Wait and I will call you.'
UNABLE	'I cannot comply with your request, instruction, or clearance.'
WILCO	(Abbreviation for 'will comply') 'I understand your message and will comply with it.'
WORDS TWICE	(a) As a request: 'Communication is difficult. Please send every word, or group of words, twice.' (b) As information: 'Since communication is difficult, every word, or group of words, in this message will be sent twice.'

ROA. 14050 Radiotelephony call signs for aircraft

(a) Full call signs:

An aircraft radiotelephony call sign shall be one of the following types:

(1) Type [a] — the characters corresponding to the registration marking of the aircraft; or

(2) Type [b] — the telephony designator of the aircraft operator, followed by the last four characters of the registration marking of the aircraft;

(3) Type [c] — the telephony designator of the aircraft operator, followed by the flight identification.

(b) Abbreviated call signs:

The aircraft radiotelephony call signs shown in point (a), with the exception of Type (c), may be abbreviated under the circumstances prescribed in point TCAR ANS Part - ROA.14055(c). Abbreviated call signs shall be in the following form:

(1) Type [a] — the first character of the registration and at least the last two characters of the call sign;

(2) Type [b] — the telephony designator of the aircraft operator, followed by at least the last two characters of the call sign;
(3) Type [c] — no abbreviated form.

ROA. 14055 Radiotelephony procedures

(a) An aircraft shall not change the type of its radiotelephony call sign during flight, except temporarily on the instruction of an ATC unit in the interests of safety. Except for reasons of safety, no transmission shall be directed to an aircraft during take-off, during the last part of the final approach or during the landing roll.
(b) Establishment of radiotelephony communications
(1) Full radiotelephony call signs shall always be used when establishing communication. When establishing communication, aircraft shall start their call by the designation of the station called, followed by the designation of the station calling.
(2) The reply to the above calls shall use the call sign of the station calling, followed by the call sign of the station answering, which shall be considered an invitation to proceed with transmission by the station calling.
(3) Communications shall commence with a call and a reply when it is desired to establish contact, except that, when it is certain that the station called will receive the call, the calling station may transmit the message, without waiting for a reply from the station called.
(c) Subsequent radiotelephony communications
(1) Abbreviated radiotelephony call signs, as prescribed in point TCAR ANS Part - ROA.14050(b), shall be used only after satisfactory communication has been established and provided that no confusion is likely to arise. An aircraft shall use its abbreviated call sign only after it has been addressed in this manner by the aeronautical station.
(2) When issuing ATC clearances and reading back such clearances, controllers and pilots shall always add the call sign of the aircraft to which the clearance applies. For other than those occasions, continuous two-way communication after contact has been established shall be permitted without further identification or call until termination of the contact.

ROA. 14060 Transfer of VHF communications

(a) An aircraft shall be advised by the appropriate ATS unit to transfer from one radio frequency to another in accordance with agreed procedures. In the absence of such advice, the aircraft shall notify the ATS unit before such a transfer takes place.

(b) When establishing initial contact on, or when leaving, a VHF frequency, an aircraft shall transmit such information as may be prescribed by the ANSP responsible for the provision of services.

ROA. 14065 Radiotelephony procedures for air-ground voice communication channel changeover

(a) Unless otherwise prescribed by the ANSP responsible for the provision of services and approved by the competent authority, the initial call to an ATS unit after a change of air-ground voice communication channel shall contain the following elements:
   (1) the designation of the ATS unit being called;
   (2) call sign and, for aircraft in the heavy wake turbulence category, the word ‘Heavy’ or ‘Super’ if that aircraft has been so identified by the competent authority;
   (3) level, including passing and cleared levels, if not maintaining the cleared level;
   (4) speed, if assigned by ATC; and
   (5) additional elements, as required by the ANSP responsible for the provision of services.

(b) Pilots shall provide level information at the nearest full 30 m or 100 ft as indicated on the pilot's altimeter.

(c) Initial call to aerodrome control tower For aircraft being provided with aerodrome control service, the initial call shall contain:
   (1) the designation of the ATS unit being called;
   (2) call sign and, for aircraft in the heavy wake turbulence category, the word ‘Heavy’ or ‘Super’;
   (3) position; and
   (4) additional elements, as required by the ANSP responsible for the provision of services.

ROA. 14070 Test procedures

(a) The form of test transmissions shall be as follows:
  (1) the identification of the station being called;
  (2) the identification of the station calling;
  (3) the words 'RADIO CHECK';
  (4) the frequency being used.

(b) The reply to a test transmission shall be as follows:
  (1) the identification of the station requesting the test;
  (2) the identification of the station replying;
  (3) information regarding the readability of the station requesting the test transmission.

(c) When the tests are made, the following readability scale shall be used
  (1) 1 — Unreadable
  (2) 2 — Readable now and then
  (3) 3 — Readable but with difficulty
  (4) 4 — Readable
  (5) 5 — Perfectly readable

ROA. 14075 Exchange of communications

(a) Communications shall be concise and unambiguous, using standard phraseology whenever available.

(b) Acknowledgement of receipt. The receiving operator shall make certain that the message has been received correctly before acknowledging receipt.
  (1) When transmitted by an aircraft, the acknowledgement of receipt of a message shall comprise the call sign of that aircraft.
  (2) When acknowledgement of receipt is transmitted by an ATS unit to an aircraft, it shall comprise the call sign of the aircraft, followed if considered necessary, by the call sign of the ATS unit.

(c) End of conversation.
  A radiotelephone conversation shall be terminated by the receiving ATS unit or the aircraft using its own call sign.

(d) Corrections and repetitions
  (1) When an error has been made in transmission, the word 'CORRECTION' shall be spoken, the last correct group or phrase repeated, and then the correct version transmitted.

(2) If a correction can best be made by repeating the entire message, the phrase 'CORRECTION, I SAY AGAIN' shall be used before the message is transmitted a second time .

(3) If the receiving station is in doubt as to the correctness of the message received, a repetition either in full or in part shall be requested.

(4) If repetition of an entire message is required, the words 'SAY AGAIN' shall be spoken. If repetition of a portion of a message is required, the phrase: 'SAY AGAIN ALL BEFORE... (first word satisfactorily received)' shall be used; or 'SAY AGAIN... (word before missing portion) TO.. (word after missing portion)'; or 'SAY AGAIN ALL AFTER... (last word satisfactorily received)'.

(e) If, in checking the correctness of a read-back, incorrect items are noticed, the words 'NEGATIVE I SAY AGAIN' shall be transmitted at the conclusion of the read-back followed by the correct version of the items concerned.

ROA. 14080 Communications watch/Hours of service

(a) During flight, aircraft shall maintain watch as required by CAAT and shall not cease watch, except for reasons of safety, without informing the ATS unit concerned.

(1) Aircraft on long over-water flights or on flights over designated areas over which the carriage of an emergency locator transmitter (ELT) is required, shall continuously guard the VHF emergency frequency 121,5 MHz, except for those periods when aircraft carry out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

(2) Aircraft shall continuously guard the VHF emergency frequency 121,5 MHz in areas or over routes where the possibility of interception of aircraft or other hazardous situations exists, and a requirement has been established by the competent authority.

(b) Aeronautical stations shall maintain a continuous listening watch on VHF emergency channel 121,5 MHz during the hours of service of the units at which it is installed. Where two or more such stations are co-located, provision of 121,5 MHz listening watch at one of them shall meet that requirement.

(c) When it is necessary for an aircraft or ATS unit to suspend operation for any reason, it shall, if possible, so inform other stations concerned, giving the time at which it is expected that operation will be resumed. When operation

is resumed, other stations concerned shall be so informed. When it is necessary to suspend operation beyond the time specified in the original notice, a revised time of resumption of operation shall, if possible, be transmitted at or near the time first specified.

ROA. 14085 Use of blind transmission

(a) When an aircraft fails to establish contact on the designated channel, on the previous channel used or on another channel appropriate to the route, and fails to establish communication with the appropriate ATS unit, other ATS unit or other aircraft using all available means, the aircraft shall transmit its message twice on the designated channel(s), preceded by the phrase 'TRANSMITTING BLIND' and, if necessary, include the addressee(s) for which the message is intended.

(b) When an aircraft is unable to establish communication due to receiver failure, it shall transmit reports at the scheduled times, or positions, on the channel in use preceded by the phrase 'TRANSMITTING BLIND DUE TO RECEIVER FAILURE'. The aircraft shall:

(1) transmit the intended message, following this by a complete repetition;

(2) advise the time of its next intended transmission;

(3) when provided with ATS, transmit information regarding the intention of the pilot-in- command with respect to the continuation of the flight.

ROA. 14087 Use of relay communication technique

(a) When an ATS unit has been unable to establish contact with an aircraft after calls on the frequencies on which the aircraft is believed to be listening, it shall:

(1) request other ATS units to render assistance by calling the aircraft and relaying traffic, if necessary; and

(2) request aircraft on the route to attempt to establish communication with the aircraft and relay traffic, if necessary.

(b) The provisions of point (a) shall also be applied:

(1) at request of the ATS unit concerned;

(2) when an expected communication from an aircraft has not been received within a time period such that the occurrence of a communication failure is suspected.

(c) Notification of communications failure. The air-ground control radio station shall notify the appropriate air traffic services unit and the aircraft operating agency, as soon as possible, of any failure in air-ground communication.

(d) Blind transmission of air traffic control clearances by Other ATS Unit rendering Assistance shall not be made to aircraft, except at the specific request of the originator.

ROA. 14090 Specific communication procedures

(a) Movement of vehicles

Phraseologies for the movement of vehicles, other than tow-tractors, on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word 'PROCEED' shall be substituted for the word 'TAXI' when communicating with vehicles.

(b) Air traffic advisory service

Air traffic advisory service does not deliver 'clearances' but only 'advisory information' and it shall use the word 'advise' or 'suggest' when a course of action is proposed to an aircraft.

(c) Indication of heavy wake turbulence category

(1) For aircraft in the heavy wake turbulence category, the word 'Heavy' shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

(2) For specific aircraft types specified as such in Doc 8643, Aircraft Type Designators , the word 'Super' shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

(d) Procedures related to weather deviation

(1) When the pilot initiates communications with ATC, a rapid response may be obtained by stating 'WEATHER DEVIATION REQUIRED' to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot shall initiate communications using the urgency call 'PAN PAN' (preferably spoken three times).

(2) Pilot shall inform ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route.

ROA. 14095 Distress and urgency radiotelephony communication procedures

(a) General

(1) Distress and urgency traffic shall comprise all radiotelephony messages relative to the distress and urgency conditions respectively. Distress and urgency conditions are defined as:

(i) Distress a condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

(ii) Urgency a condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance.

(2) The radiotelephony distress signal ‘MAYDAY’ and the radiotelephony urgency signal ‘PAN PAN’ shall be used at the commencement of the first distress and urgency communication respectively. At the commencement of any subsequent communication in distress and urgency traffic, it shall be permissible to use the radiotelephony distress and urgency signals.

(3) The originator of messages addressed to an aircraft in distress or urgency condition shall restrict to the minimum the number and volume and content of such messages as required by the condition.

(4) If no acknowledgement of the distress or urgency message is made by the ATS unit addressed by the aircraft, other ATS units shall render assistance as prescribed in points (b)(2) and (b)(3) respectively.

(5) Distress and urgency traffic shall normally be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided by transferring that traffic to another frequency.

(6) In cases of distress and urgency communications, in general, the transmissions by radiotelephony shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

(b) Radiotelephony distress communications

(1) Action by the aircraft in distress

In addition to being preceded by the radiotelephony distress signal ‘MAYDAY’ in accordance with point (a)(2), preferably spoken three times, the distress message to be sent by an aircraft in distress shall:

(i) be on the air-ground frequency in use at the time;

(ii) consist of as many as possible of the following elements spoken distinctly and, if possible, in the following order:

(A) the name of the ATS unit addressed (time and circumstances permitting);
(B) the identification of the aircraft;
(C) the nature of the distress condition;
(D) the intention of the pilot-in-command;
(E) present position, level (i.e. flight level, altitude, etc., as appropriate) and heading.

(2) Action by the ATS unit addressed or by the first ATS unit acknowledging the distress message. The ATS unit addressed by an aircraft in distress, or the first ATS unit acknowledging the distress message, shall:
(i) immediately acknowledge the distress message;
(ii) take control of the communications or specifically and clearly transfer that responsibility, advising the aircraft if a transfer is made; and
(iii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:
(A) the ATS unit concerned;
(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;
(iv) warn other ATS units, as appropriate, in order to prevent the transfer of traffic to the frequency of the distress communication.

(3) Imposition of silence
(i) The aircraft in distress, or the ATS unit in control of distress traffic, shall be permitted to impose silence, either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It shall address these instructions 'to all stations' or to one station only, according to the circumstances. In either case, it shall use:
(A) 'STOP TRANSMITTING';
(B) the radiotelephony distress signal 'MAYDAY'.
(ii) The use of the signals specified in point (b)(3)(i) shall be reserved for the aircraft in distress and for the ATS unit controlling the distress traffic.

(4) Action by all other ATS units/aircraft
(i) The distress communications have absolute priority over all other communications and ATS units/aircraft aware of them shall not transmit on the frequency concerned unless:
(A) the distress is cancelled or the distress traffic is terminated;
(B) all distress traffic has been transferred to other frequencies;

(C) the ATS unit controlling communications gives permission;
(D) it has itself to render assistance.

(ii) Any ATS unit/aircraft which has knowledge of distress traffic, and which cannot itself assist the aircraft in distress, shall nevertheless continue listening to such traffic until it is evident that assistance is being provided.

(5) Termination of distress communications and of silence

(i) When an aircraft is no longer in distress, it shall transmit a message cancelling the distress condition.

(ii) When the ATS unit which has controlled the distress communication traffic becomes aware that the distress condition is ended, it shall take immediate action to ensure that this information is made available, as soon as possible, to:

(A) the ATS units concerned;
(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements.

(iii) The distress communication and silence conditions shall be terminated by transmitting a message, including the words 'DISTRESS TRAFFIC ENDED', on the frequency or frequencies being used for the distress traffic.

(c) Radiotelephony urgency communications

(1) Action by the aircraft reporting an urgency condition except as indicated in point (c)(4). In addition to being preceded by the radiotelephony urgency signal 'PAN PAN' in accordance with point (a)(2), preferably spoken three times and each word of the group pronounced as the French word 'panne', the urgency message to be sent by an aircraft reporting an urgency condition shall:

(i) be on the air-ground frequency in use at the time;

(ii) consist of as many as required of the following elements spoken distinctly and, if possible, in the following order:

(A) the name of the ATS unit addressed;
(B) the identification of the aircraft;
(C) the nature of the urgency condition;
(D) the intention of the pilot-in-command;
(E) present position, level (i.e. flight level, altitude, etc., as appropriate) and heading;
(F) any other useful information.

(2) Action by the ATS unit addressed or first ATS unit acknowledging the urgency message The ATS unit addressed by an aircraft reporting an urgency condition or the first ATS unit acknowledging the urgency message shall:

(i) acknowledge the urgency message;

(ii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:

(A) the ATS unit concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;

(iii) if necessary, exercise control of communications.

(3) Action by all other ATS units/aircraft

The urgency communications have priority over all other communications except distress communications and all ATS units/aircraft shall take care not to interfere with the transmission of urgency traffic.

(4) Action by an aircraft used for medical transports

(i) The use of the signal described in point (c)(4)(ii) shall indicate that the message which follows concerns a protected medical transport pursuant to the 1949 Geneva Conventions and Additional Protocols.

(ii) For the purpose of announcing and identifying aircraft used for medical transports, a transmission of the radiotelephony urgency signal 'PAN PAN', preferably spoken three times, and each word of the group pronounced as the French word 'panne', shall be followed by the radiotelephony signal for medical transports 'MAY-DEE-CAL', pronounced as in the French 'medical'. The use of the signals described above indicates that the message which follows concerns a protected medical transport. The message shall convey the following data:

(A) the call sign or other recognised means of identification of the medical transports;

(B) position of the medical transports;

(C) number and type of the medical transports;

(D) intended route;

(E) estimated time en-route and of departure and arrival, as appropriate; and

(F) any other information such as flight altitude, radio frequencies guarded, languages used and secondary surveillance radar modes and codes.

(5) Action by the ATS units addressed, or by other stations receiving a medical transports message The provisions of points (c)(2) and (c)(3) shall apply as appropriate to ATS units receiving a medical transports message.

(d) VHF emergency frequency (121,500 MHz) shall be used for genuine emergency purposes including any of the following:

(1) to provide a clear channel between aircraft in distress or emergency and a ground station when the normal channels are being utilised for other aircraft;

(2) to provide a VHF communication channel between aircraft and aerodromes, not normally used by international air services, in case of an emergency condition arising;

(3) to provide a common VHF communication channel between aircraft, either civil or military, and between such aircraft and surface services, involved in common search and rescue operations, prior to changing when necessary to the appropriate frequency;

(4) to provide air–ground communication with aircraft when airborne equipment failure prevents the use of the regular channels;

(5) to provide a channel for the operation of emergency locator transmitters, and for communication between survival craft and aircraft engaged in search and rescue operations;

(6) to provide a common VHF channel for communication between civil aircraft and intercepting aircraft or intercept control units and between civil or intercepting aircraft and air traffic services units in the event of interception of the civil aircraft.

APPENDIX 1 UNMANNED FREE BALLOONS

(a) Classification of unmanned free balloons (see Figure APP1-1):

(1) Unmanned free balloons shall be classified as:

(i) *light:* an unmanned free balloon which carries a payload of one or more packages with a combined mass of less than 4 kg, unless qualifying as a heavy balloon in accordance with c) 2), 3) or 4) below; or

(ii) *medium:* an unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kg or more, but less than 6 kg, unless qualifying as a heavy balloon in accordance with c) 2), 3) or 4) below; or

(iii) *heavy:* an unmanned free balloon which carries a payload which:

(A) has a combined mass of 6 kg or more; or

(B) includes a package of 3 kg or more; or

(C) includes a package of 2 kg or more with an area density of more than 13 g per square centimetre; or

(D) uses a rope or other device for suspension of the payload that requires an impact force of 230 N or more to separate the suspended payload from the balloon.

(b) General operating rules

(1) An unmanned free balloon shall not be operated without appropriate authorization from the State from which the launch is made.

(2) An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the appropriate authority, shall not be operated across the territory of another State without appropriate authorization from the other State concerned.

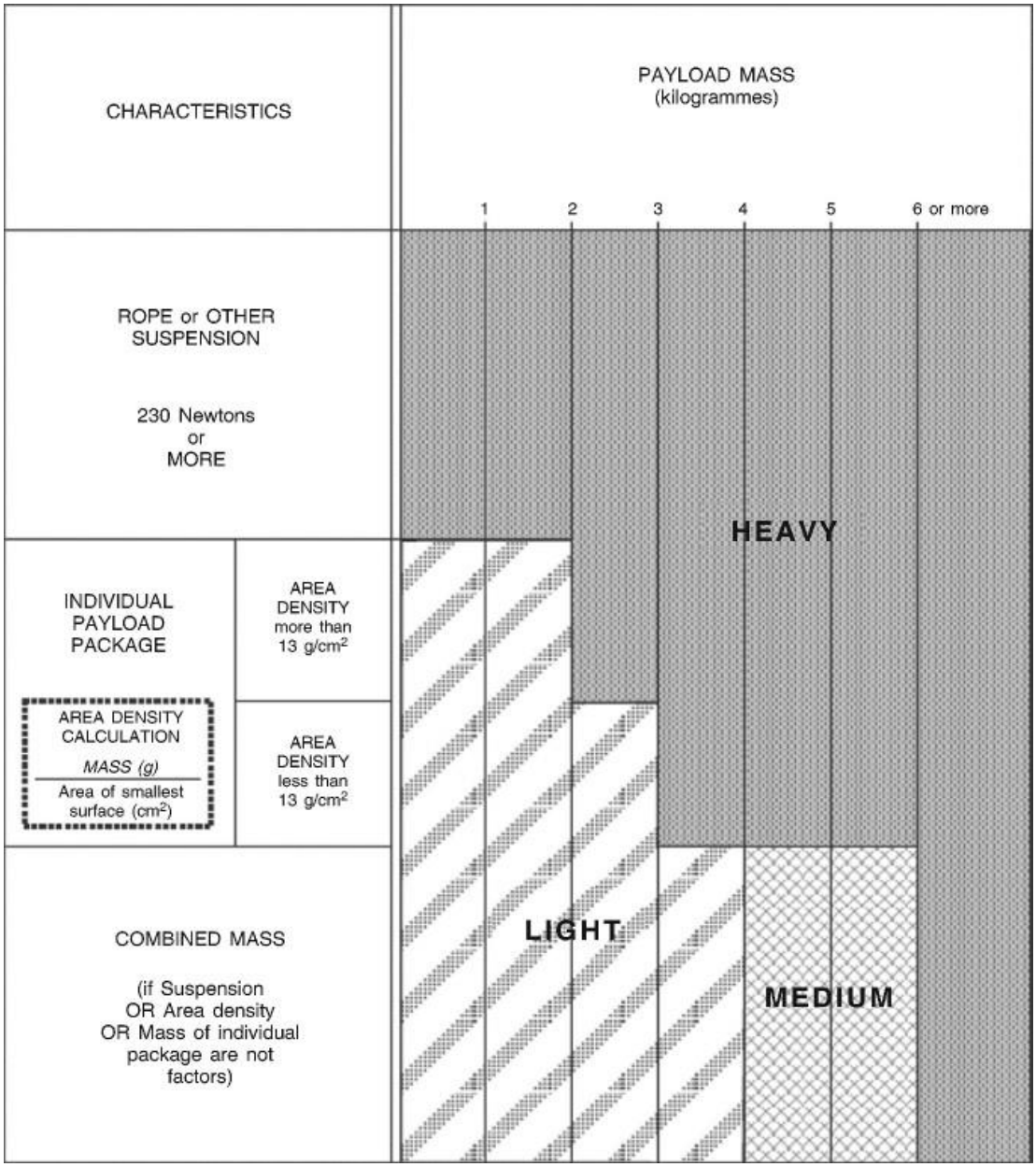
(3) The authorization referred to in (2) shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation, that the balloon may drift into airspace over the territory of another State. Such authorization may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

(4) An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be overflown.

(5) An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property not associated with the operation.

(6) A heavy unmanned free balloon shall not be operated over the high seas without prior coordination with the appropriate ATS authority.

Figure APP1-1



(c) OPERATING LIMITATIONS AND EQUIPMENT REQUIREMENTS

(1) A heavy unmanned free balloon shall not be operated without authorization from the ANSP(s) at or through any level below 18 000 m (60 000 ft) pressure-altitude at which:

(i) there are clouds or obscuring phenomena of more than four oktas coverage; or

(ii) the horizontal visibility is less than 8 km.

(2) A heavy or medium unmanned free balloon shall not be released in a manner that will cause it to fly lower than 300 m (1 000 ft) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.

(3) A heavy unmanned free balloon shall not be operated unless:

(i) it is equipped with at least two payload flight-termination devices or systems, whether automatic or operated by telecommand, that operate independently of each other;

(ii) for polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;

(iii) the balloon envelope is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.

(4) A heavy unmanned free balloon shall not be operated under the following conditions:

(i) in an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or

(ii) in an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

(5) An unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 N to break it at any point shall not be operated unless the antenna has coloured pennants or streamers that are attached at not more than 15 m intervals.

(6) A heavy unmanned free balloon shall not be operated below 18 000 m (60 000 ft) pressure-altitude at night or during any other period prescribed by the competent authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted.

(7) A heavy unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously coloured open parachute) more than 15 m long shall not be operated during night below 18 000 m (60 000 ft) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.

(d) TERMINATION

(1) The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by (c)(3)(i) and (ii):

(i) when it becomes known that weather conditions are less than those prescribed for the operation;

(ii) if a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or

(iii) prior to unauthorized entry into the airspace over another State's territory

(e) FLIGHT NOTIFICATION

(1) Pre-flight notification

(i) Early notification of the intended flight of an unmanned free balloon in the medium or heavy category shall be made to the appropriate air traffic services unit not less than seven days before the date of the intended flight.

(ii) Notification of the intended flight shall include such of the following information as may be required by the appropriate air traffic services unit:

(A) balloon flight identification or project code name;

(B) balloon classification and description

(C) SSR code, aircraft address or NDB frequency as applicable;

(D) operator's name and telephone number;

(E) launch site;

(F) estimated time of launch (or time of commencement and completion of multiple launches);

(G) number of balloons to be launched and the scheduled interval between launches (if multiple launches);

(H) expected direction of ascent;

(I) cruising level(s) (pressure-altitude);

(J) the estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location. If the operation consists of continuous launchings, the time to be included shall be the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z–130330Z);

(K) the estimated date and time of termination of the flight and the planned location of the impact/recovery area. In the case of balloons carrying out flights of long duration, as a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term 'long duration' shall be used. If there is to be more than one location of impact/recovery, each location shall be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included shall be the estimated time of the first and the last in the series (e.g. 070330Z–072300Z).

(iii) Any changes in the pre-launch information notified in accordance with point (e)(2) shall be forwarded to the ATS unit concerned not less than 6 hours before the estimated time of launch, or in the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation.

(2) Notification of launch

(i) Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the appropriate air traffic services unit of the following:

(A) balloon flight identification;

(B) launch site;

(C) actual time of launch;

(D) estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed, or the estimated time at which the cruising level will be

reached if at or below 18 000 m (60 000 ft), and the estimated location; and

(E) any changes to the information previously notified in accordance with (e)(2) (vii) and (viii)

(3) Notification of cancellation

(i) The operator shall notify the appropriate air traffic services unit immediately it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with paragraph (e)(1), has been cancelled

(f) POSITION RECORDING AND REPORTS

(1) The operator of a heavy unmanned free balloon operating at or below 18, 000 m (60,000 ft) pressure-altitude shall monitor the flight path of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 2 hours.

(2) The operator of a heavy unmanned free balloon operating above 18 000 m (60,000 ft) pressure-altitude shall monitor the flight progress of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 24 hours.

(3) If a position cannot be recorded in accordance with (f)(1) and (f)(2), the operator shall immediately notify the appropriate air traffic services unit. This notification shall include the last recorded position. The appropriate air traffic services unit shall be notified immediately when tracking of the balloon is re-established.

(4) One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate ATS unit the following information regarding the balloon:

(i) the current geographical position;

(ii) the current level (pressure-altitude);

(iii) the forecast time of penetration of 18,000 m (60,000 ft) pressure-altitude, if applicable;

(iv) the forecast time and location of ground impact.

(5) The operator of a heavy or medium unmanned free balloon shall notify the appropriate air traffic services unit when the operation is ended.

APPENDIX 2 SIGNALS

(a) DISTRESS AND URGENCY SIGNALS

(1) General

(i) Notwithstanding the provisions in (2) and (3), an aircraft in distress shall use any means at its disposal to attract attention, make known its position and obtain help.

(ii) The telecommunication transmission procedures for the distress and urgency signals shall be in accordance with Section 14.

(2) Distress signals

(i) The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

(A) a signal made by radiotelegraphy or by any other signalling method consisting of the group SOS (.. .— — — . .. in the Morse Code);

(B) a radiotelephony distress signal consisting of the spoken word MAYDAY;

(C) a distress message sent via data link which transmits the intent of the word MAYDAY;

(D) rockets or shells throwing red lights, fired one at a time at short intervals;

(E) a parachute flare showing a red light;

(F) setting of the transponder to Mode A Code 7700.

(3) Urgency signals

(i) The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:

(A) the repeated switching on and off of the landing lights; or

(B) the repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

(ii) The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:

(A) a signal made by radiotelegraphy or by any other signalling method consisting of the group XXX (—..— —..— —..— in the Morse Code);

(B) a radiotelephony urgency signal consisting of the spoken words PAN, PAN;

(C) an urgency message sent via data link which transmits the intent of the words PAN, PAN.

(b) VISUAL SIGNALS USED TO WARN AN UNAUTHORIZED AIRCRAFT FLYING IN OR ABOUT TO ENTER A RESTRICTED, PROHIBITED OR DANGER AREA

(1) When visual signals are used to warn unauthorized aircraft flying in or about to enter a restricted, prohibited or danger area by day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars shall indicate to an unauthorized aircraft that it is flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary

(c) SIGNALS FOR AERODROME TRAFFIC

(1) Light and pyrotechnic signals

(i) Instructions

Light		From Aerodrome Control to:	
		Aircraft in flight	Aircraft on the ground
Directed towards aircraft concerned (see Figure A1-1).	Steady green	Cleared to land	Cleared for take-off
	Steady red	Give way to other aircraft and continue circling	Stop
	Series of green flashes	Return for landing[1]	Cleared to taxi
	Series of red flashes	Aerodrome unsafe, do not land	Taxi clear of landing area in use
	Series of white flashes	Land at this aerodrome and proceed to apron[1]	Return to starting point on the aerodrome
Red pyrotechnic		Notwithstanding any previous instructions, do not land for the time being	

[1] : Clearances to land and to taxi will be given in due course.

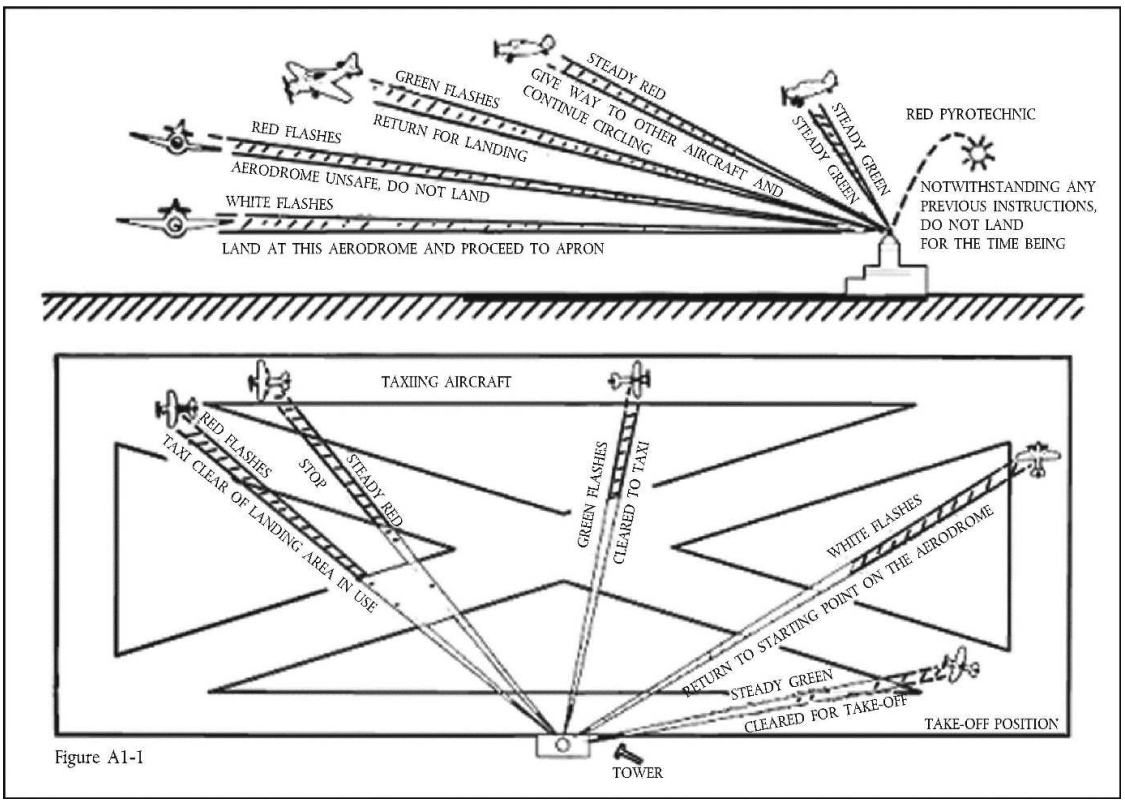


Figure A1-1

(ii) Acknowledgement by an aircraft

(A) When in flight:

a) during the hours of daylight:

i) by rocking the aircraft's wings, except for the base and final legs of the approach;

b) during the hours of darkness:

i) by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

(B) When on the ground:

a) during the hours of daylight:

i) by moving the aircraft's ailerons or rudder;

b) during the hours of darkness:

i) by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

(2) Visual ground signals

(i) Prohibition of landing

(A) A horizontal red square panel with yellow diagonals (Figure A1-2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.

Figure A1-2

(ii) Need for special precautions while approaching or landing

(A) horizontal red square panel with one yellow diagonal (Figure A1-3) when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.

Figure A1-3

(iii) Use of runways and taxiways

(A) A horizontal white dumb-bell (Figure A1-4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only

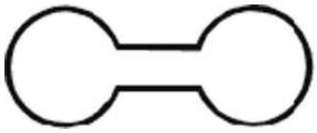


Figure A1-4

(B) The same horizontal white dumb-bell as in (A) but with a black bar placed perpendicular to the shaft across each circular portion of the dumbbell (Figure A1-5) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.

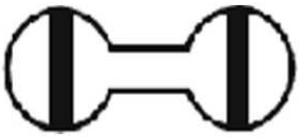


Figure A1-5

(iv) Closed runways or taxiways

(A) Crosses of a single contrasting colour, white on runways and yellow on taxiways (Figure A1-6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft.

Figure A1-6

(v) Directions for landing or take-off

(A) A horizontal white or orange landing T (Figure A1-7) indicates the direction to be used by aircraft for landing and take-off, which shall be in a direction parallel to the shaft of the T towards the cross arm. When used at night, the landing T shall be either illuminated or outlined in white lights.

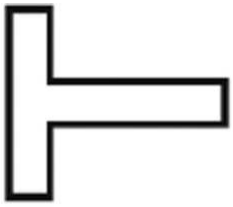


Figure A1-7

(B) A set of two digits (Figure A1-8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the manoeuvring area the direction for take-off, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

Figure A1-8

(vi) Right-hand traffic

(A) When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure A1-9) indicates that turns are to be made to the right before landing and after take-off.

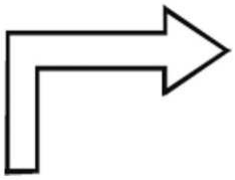


Figure A1-9

(vii) Air traffic services reporting office

(A) The letter C displayed vertically in black against a yellow background (Figure A1-10) indicates the location of the air traffic services reporting office.

Figure A1-10

(viii) Glider flights in operation

(A) A double white cross displayed horizontally (Figure A1-11) in the signal area indicates that the aerodrome is being used by gliders and that glider flights are being performed.

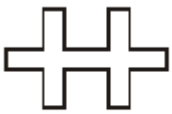


Figure A1-11

(d) MARSHALLING SIGNALS

(1) From a signalman to an aircraft

(i) The signals for use by the signalman/marshaller, with hands illuminated as

in a position shall be:

(A) for fixed-wing aircraft, on left side of aircraft, where best seen by the pilot; and

(B) for helicopters, where the signalman/marshaller can best be seen by the

(ii) Prior to using the following signals, the signalman/marshaller shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft, in complying with TCAR ANS Part - ROA.3301(a), might otherwise strike.

(iii) The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.

(iv) The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).

(v) Signals marked with an asterisk (*) are designed for use to hovering helicopters.

(vi) References to wands may also be read to refer to daylight-fluorescent table-tennis bats or gloves (daytime only).

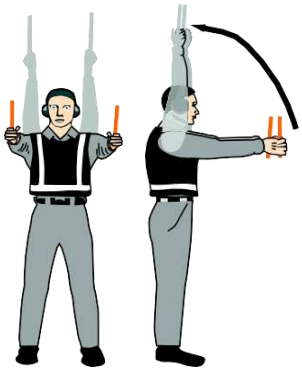
(vii) References to the signalman may also be read to refer to marshaller.

Note.— The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.

1. Wingwalker/guide

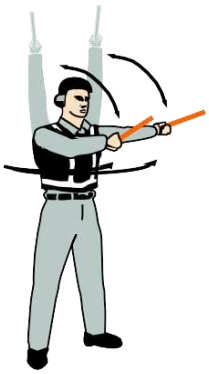
Raise right hand above head level with wand pointing up; move left-hand wand pointing down toward body.

Note.— This signal provides an indication by a person positioned at the aircraft wing tip, to the pilot/ marshaller/ push-back operator, that the aircraft movement on/off a parking position would be unobstructed.



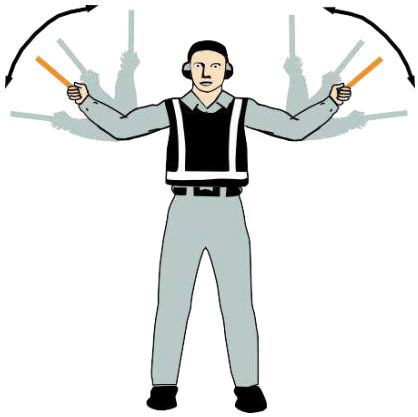
2. Identify gate

Raise fully extended arms straight above head with wands pointing up.



3. Proceed to next signalman or as directed by tower/ground control

Point both arms upward; move and extend arms outward to sides of body and point with wands to direction of next signalman or taxi area.



4. Straight ahead

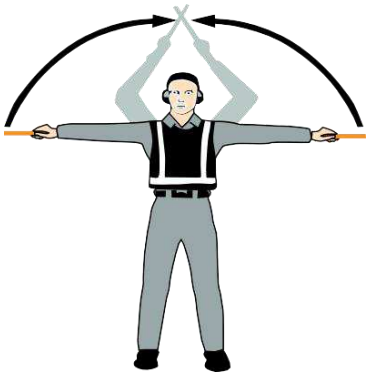
Bend extended arms at elbows and move wands up and down from chest height to head.

5 a). Turn left
(from pilot's point of view)

With right arm and wand extended at a 90-degree angle to body, make "come ahead" signal with left hand. The rate of signal motion indicates to pilot the rate of aircraft turn.

5 b). Turn right
(from pilot's point of view)

With left arm and wand extended at a 90-degree angle to body, make "come ahead" signal with right hand. The rate of signal motion indicates to pilot the rate of aircraft turn.

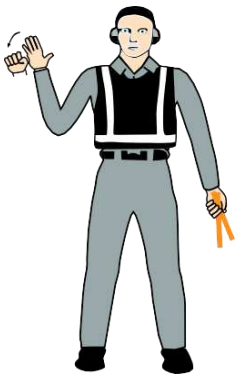


6 a). Normal stop

Fully extend arms and wands at a 90-degree angle to sides and slowly move to above head until wands cross.

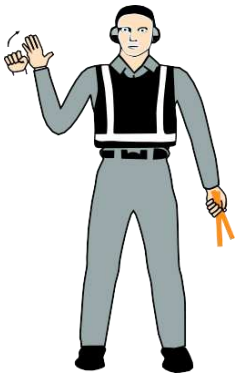
6 b). Emergency stop

Abruptly extend arms and wands to top of head, crossing wands.



7 a). Set brakes

Raise hand just above shoulder height with open palm. Ensuring eye contact with flight crew, close hand into a fist. **Do not** move until receipt of "thumbs up" acknowledgement from flight crew.



7 b). Release brakes

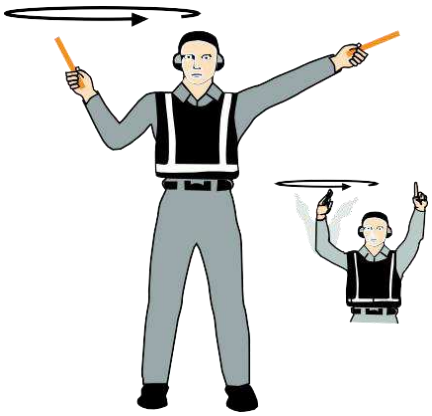
Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with flight crew, open palm. **Do not** move until receipt of "thumbs up" acknowledgement from flight crew.

8 a). Chocks inserted

With arms and wands fully extended above head, move wands inward in a "jabbing" motion until wands touch. **Ensure** acknowledgement is received from flight crew.

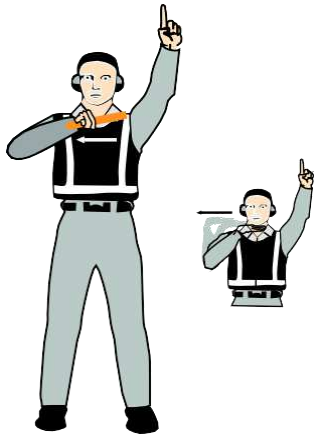
8 b). Chocks removed

With arms and wands fully extended above head, move wands outward in a "jabbing" motion. **Do not** remove chocks until authorized by flight crew.



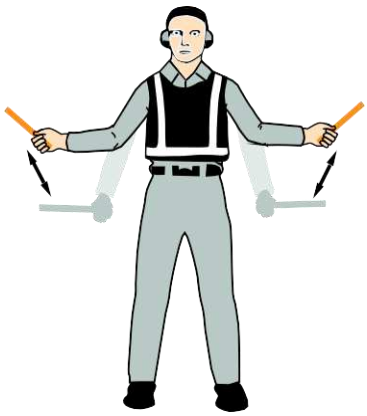
9. Start engine(s)

Raise right arm to head level with wand pointing up and start a circular motion with hand; at the same time, with left arm raised above head level, point to engine to be started.



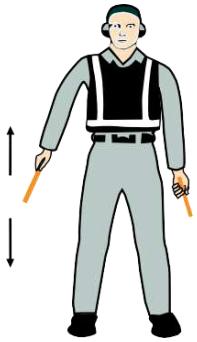
10. Cut engines

Extend arm with wand forward of body at shoulder level; move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.



11. Slow down

Move extended arms downwards in a “patting” gesture, moving wands up and down from waist to knees.



12. Slow down engine(s) on indicated side

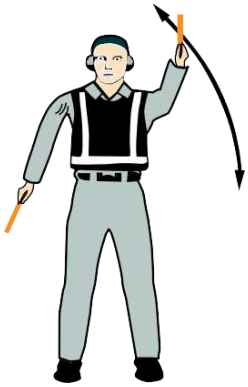
With arms down and wands toward ground, wave either *right* or *left* wand up and down indicating engine(s) on *left* or *right* side respectively should be slowed down.

13. Move back

With arms in front of body at waist height, rotate arms in a forward motion. To stop rearward movement, use signal 6 a) or 6 b).

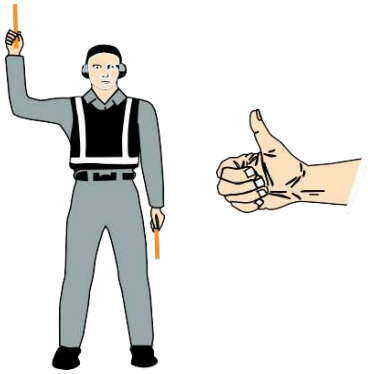
14 a). Turns while backing (for tail to starboard)

Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.



14 b). Turns while backing (for tail to port)

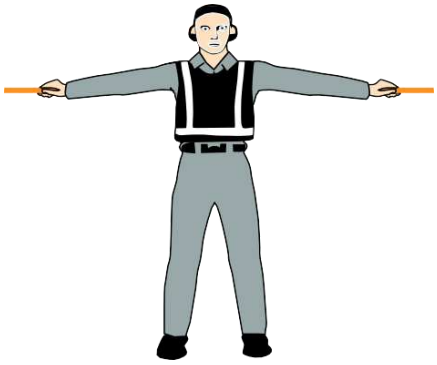
Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.



15. Affirmative/all clear

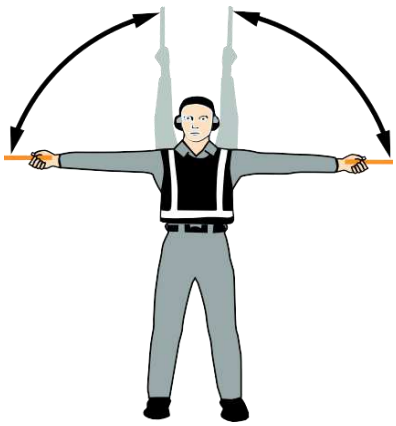
Raise right arm to head level with wand pointing up or display hand with “thumbs up”; left arm remains at side by knee.

Note.— This signal is also used as a technical/ servicing communication signal.



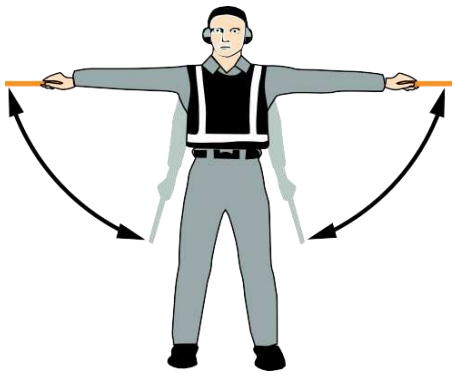
***16. Hover**

Fully extend arms and wands at a 90-degree angle to sides.



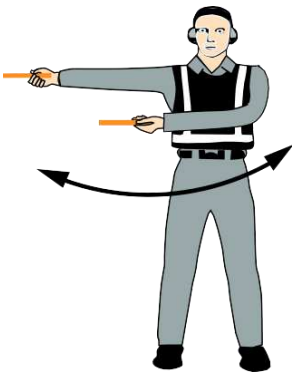
***17. Move upwards**

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned up, move hands upwards. Speed of movement indicates rate of ascent.



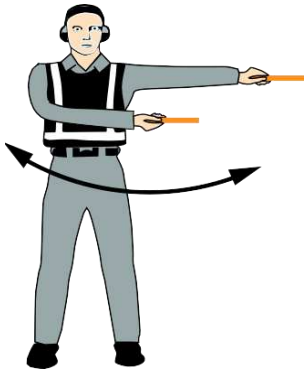
***18. Move downwards**

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned down, move hands downwards. Speed of movement indicates rate of descent.



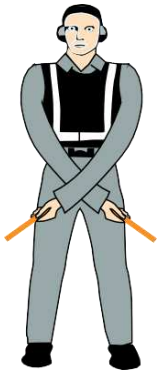
***19 a). Move horizontally left (from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to right side of body. Move other arm in same direction in a sweeping motion.



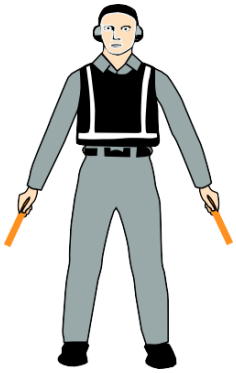
***19 b). Move horizontally right (from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to left side of body. Move other arm in same direction in a sweeping motion.



***20. Land**

Cross arms with wands downwards and in front of body.

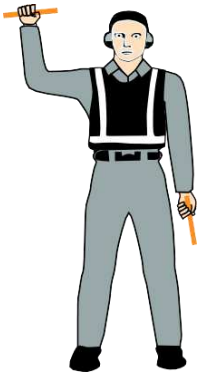


21. Hold position/stand by

Fully extend arms and wands downwards at a 45-degree angle to sides. Hold position until aircraft is clear for next manoeuvre.

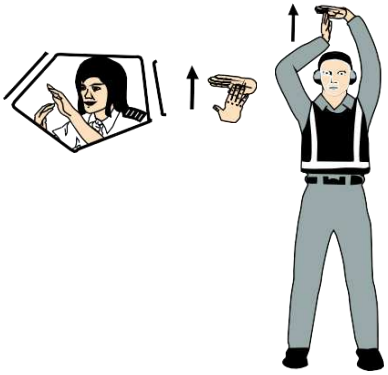
22. Dispatch aircraft

Perform a standard salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with flight crew until aircraft has begun to taxi.



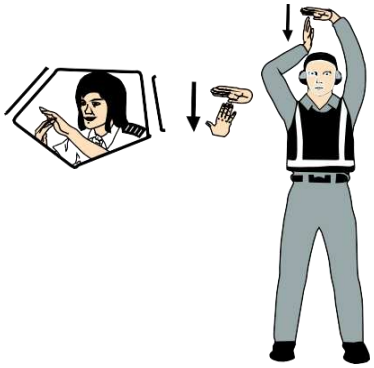
23. Do not touch controls (technical/servicing communication signal)

Extend right arm fully above head and close fist or hold wand in horizontal position; left arm remains at side by knee.



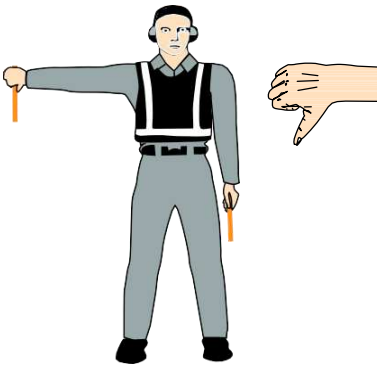
24. Connect ground power (technical/servicing communication signal)

Hold arms fully extended above head; open left hand horizontally and move finger tips of right hand into and touch open palm of left hand (forming a “T”). At night, illuminated wands can also be used to form the “T” above head.



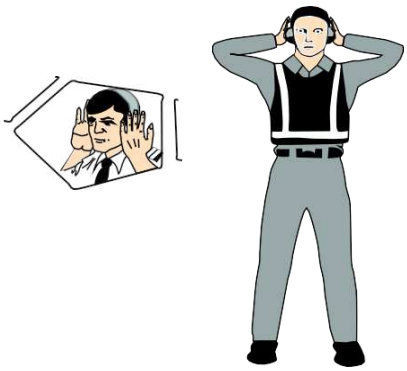
25. Disconnect power (technical/servicing communication signal)

Hold arms fully extended above head with finger tips of right hand touching open horizontal palm of left hand (forming a “T”); then move right hand away from the left. **Do not** disconnect power until authorized by flight crew. At night, illuminated wands can also be used to form the “T” above head.



26. Negative (technical/servicing communication signal)

Hold right arm straight out at 90 degrees from shoulder and point wand down to ground or display hand with “thumbs down”; left hand remains at side by knee.



27. Establish communication via interphone (technical/servicing communication signal)

Extend both arms at 90 degrees from body and move hands to cup both ears.

28. Open/close stairs (technical/servicing communication signal)

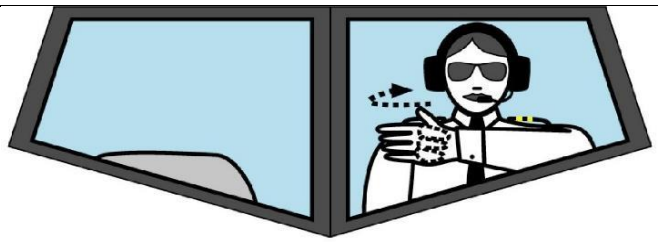
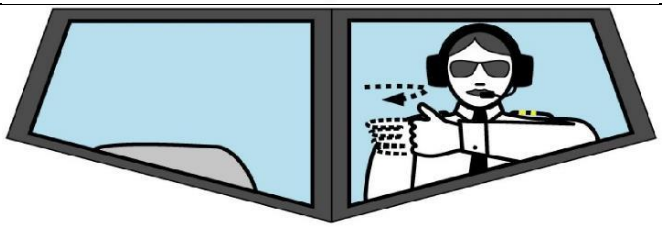
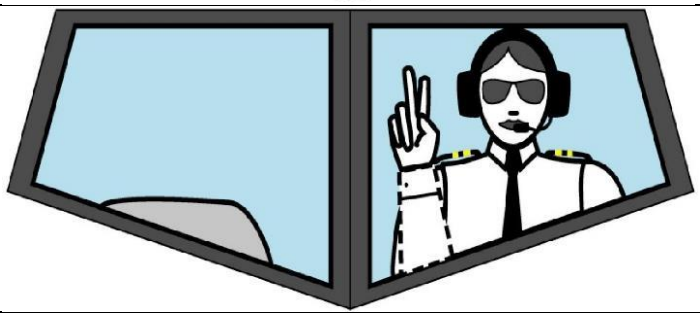
With right arm at side and left arm raised above head at a 45-degree angle, move right arm in a sweeping motion towards top of left shoulder.

Note.— This signal is intended mainly for aircraft with the set of integral stairs at the front.

(2) From the pilot of an aircraft to a signalman

(i) The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).

(ii) These signals shall be used by a pilot in the cockpit with hands plainly visible to the signalman/marshaller, and illuminated as necessary to facilitate observation by the signalman/marshaller.

	(A) Brakes engaged: raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.
	(B) Brakes released: raise arm, with fist clenched, horizontally in front of face, then extend fingers.
	(C) Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.
	(D) Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.
	(E) Ready to start engine(s): Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.

(3) Technical/servicing communication signals

(i) Manual signals shall only be used when verbal communication is not possible with respect to technical/servicing communication signals.

(ii) Signalmen shall ensure that an acknowledgement is received from the flight crew with respect to technical/servicing communication signals.

(iii) The technical/servicing communication signals are included in (1) to standardize the use of hand signals used to communicate to flight crews during the aircraft movement process that relate to servicing or handling functions

(e) STANDARD EMERGENCY HAND SIGNALS

(1) The following hand signals are established as the minimum required for emergency communication between the aircraft rescue and firefighting (ARFF) incident commander/ARFF firefighters and the cockpit and/or cabin crews of the incident aircraft. ARFF emergency hand signals should be given from the left front side of the aircraft for the flight crew.

(2) In order to communicate more effectively with the cabin crew, emergency hand signals may be given by ARFF firefighters from other positions.

1. Recommend evacuation

Evacuation recommended based on ARFF and incident commander's assessment of external situation.

Arm extended from body and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body.

Night — same with wands.

2. Recommended stop

Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress.

Arms in front of head, crossed at wrists.

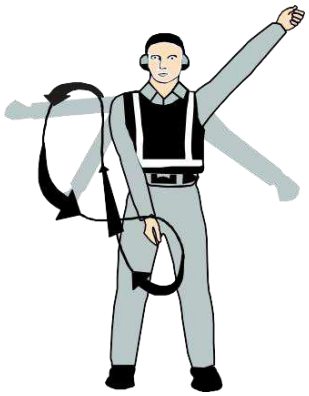
Night — same with wands.

3. Emergency contained

No outside evidence of dangerous conditions or “all-clear.”

Arms extended outward and down at a 45-degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position (umpire’s “safe” signal).

Night — same with wands.



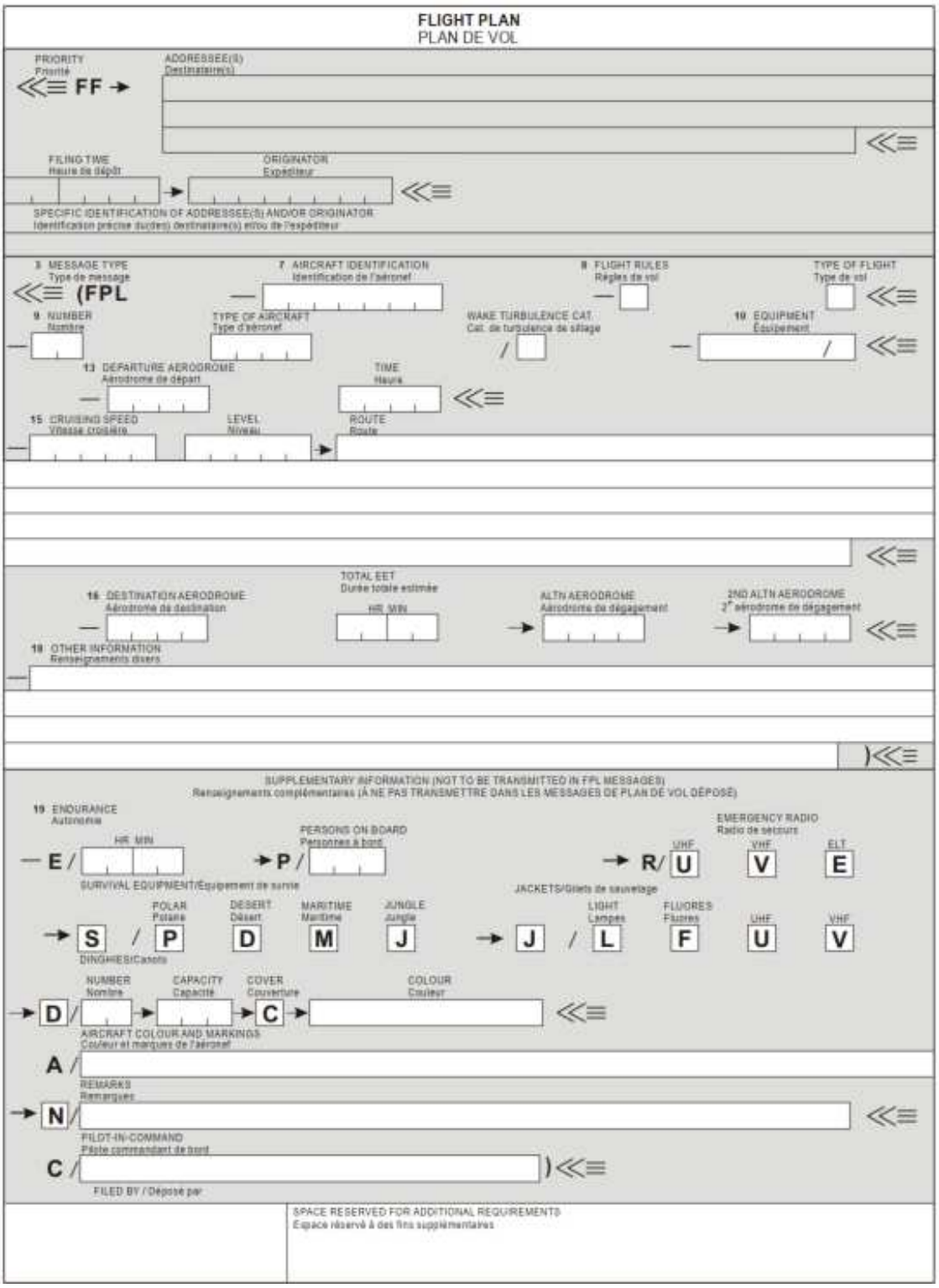
4. Fire

Move right-hand in a “fanning” motion from shoulder to knee, while at the same time pointing with left hand to area of fire.

Night — same with wands.

APPENDIX 3 FLIGHT PLAN

(a) ICAO model flight plan form



(b) Instructions for the completion of the flight plan form

(1) General

(i) Adhere closely to the prescribed formats and manner of specifying data.

(ii) Commence inserting data in the first space provided. Where excess space is available, leave unused spaces blank.
(iii) Insert all clock times in 4 figures UTC.
(iv) Insert all estimated elapsed times in 4 figures (hours and minutes).
(v) Shaded area preceding Item 3 — to be completed by ATS and COM services, unless the responsibility for originating flight plan messages has been delegated.

Note.— The term "aerodrome" where used in the flight plan is intended to cover also sites other than aerodromes which may be used by certain types of aircraft, e.g. helicopters or balloons.

(2) Instructions for insertion of ATS data
(i) Complete Items 7 to 18 as indicated hereunder.
(ii) Complete also Item 19 as indicated hereunder, when so required by the appropriate ATS authority or when otherwise deemed necessary.

Note 1.— Item numbers on the form are not consecutive, as they correspond to Field Type numbers in ATS messages.

Note 2.— Air traffic services data systems may impose communications or processing constraints on information in filed flight plans. Possible constraints may, for example, be limits with regard to item length, number of elements in the route item or total flight plan length. Significant constraints are documented in the relevant Aeronautical Information Publication.

ITEM 7: AIRCRAFT IDENTIFICATION (MAXIMUM 7 CHARACTERS)

INSERT one of the following aircraft identifications, not exceeding 7 alphanumeric characters and without hyphens or symbols:
(a) the ICAO designator for the aircraft operating agency followed by the flight identification (e.g. KLM511, NGA213, JTR25) when in radiotelephony the call sign to be used by the aircraft will consist of the ICAO telephony designator for the operating agency followed by the flight identification (e.g. KLM511, NIGERIA 213, JESTER 25); or
(b) the nationality or common mark and registration mark of the aircraft (e.g. EIAKO, 4XBCD, N2567GA), when:
(1) in radiotelephony the call sign to be used by the aircraft will consist of this identification alone (e.g. CGAJS), or preceded by the ICAO telephony designator for the aircraft operating agency (e.g. BLIZZARD CGAJS);
(2) the aircraft is not equipped with radio.

Note 1.— Standards for nationality, common and registration marks to be used are contained in Annex 7, section 3.

Note 2.— Provisions for the use of radiotelephony call signs are contained in Annex 10, Volume II, Chapter 5. ICAO designators and telephony designators for aircraft operating agencies are contained in Doc 8585 — Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

ITEM 8: FLIGHT RULES AND TYPE OF FLIGHT (ONE OR TWO CHARACTERS)

Flight rules

INSERT one of the following letters to denote the category of flight rules with which the pilot intends to comply:

I if it is intended that the entire flight will be operated under the IFR

V if it is intended that the entire flight will be operated under the VFR

Y if the flight initially will be operated under the IFR, followed by one or more subsequent changes of flight rules or

Z if the flight initially will be operated under the VFR, followed by one or more subsequent changes of flight rules

Specify in Item 15 the point or points at which a change of flight rules is planned.

Type of flight

INSERT one of the following letters to denote the type of flight when so required by the appropriate ATS authority:

S if scheduled air service

N if non-scheduled air transport operation

G if general aviation

M if military

X if other than any of the defined categories above.

Specify status of a flight following the indicator STS in Item 18, or when necessary to denote other reasons for specific handling by ATS, indicate the reason following the indicator RMK in Item 18.

ITEM 9: NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

Number of aircraft (1 or 2 characters)

INSERT the number of aircraft, if more than one.

Type of aircraft (2 to 4 characters)

INSERT the appropriate designator as specified in Doc 8643, Aircraft Type Designators,

OR, if no such designator has been assigned, or in case of formation flights comprising more than one type,

INSERT ZZZZ, and SPECIFY in Item 18, the (numbers and) type(s) of aircraft preceded by TYP/ .

Wake turbulence category (1 character)

INSERT an oblique stroke followed by one of the following letters to indicate the wake turbulence category of the aircraft:

J — SUPER, to indicate an aircraft type specified as such in Doc 8643, *Aircraft Type Designators*;

H — HEAVY, to indicate an aircraft type with a maximum certificated take-off mass of 136 000 kg or more, with the exception of aircraft types listed in Doc 8643 in the SUPER (J) category;

M— MEDIUM, to indicate an aircraft type with a maximum certificated take-off mass of less than 136 000 kg but more than 7 000 kg;

L — LIGHT, to indicate an aircraft type with a maximum certificated take-off mass of 7 000 kg or less.

ITEM 10: EQUIPMENT AND CAPABILITIES

Capabilities comprise the following elements:

(a) presence of relevant serviceable equipment on board the aircraft;
(b) equipment and capabilities commensurate with flight crew qualifications; and
(c) where applicable, authorization from the appropriate authority.

Radiocommunication, navigation and approach aid equipment and capabilities

INSERT one letter as follows:

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

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

AND/OR

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

A	GBAS landing system	J6	CPDLC FANS 1/A SATCOM (MTSAT)
B	LPV (APV with SBAS)	J7	CPDLC FANS 1/A SATCOM (Iridium)
C	LORAN C	K	MLS
D	DME	L	ILS
E1	FMC WPR ACARS	M1	ATC SATVOICE (INMARSAT)
E2	D-FIS ACARS	M2	ATC SATVOICE (MTSAT)
E3	PDC ACARS	M3	ATC SATVOICE (Iridium)
F	ADF	O	VOR
G	GNSS. If any portion of the flight is planned to be conducted under IFR, it refers to GNSS receivers that comply with the requirements of Annex 10, Volume I *(See Note 2)*	P1	CPDLC RCP 400 *(See Note 7)*
		P2	CPDLC RCP 240 *(See Note 7)*
		P3	SATVOICE RCP 400 *(See Note 7)*
		P4-P9	Reserved for RCP
H	HF RTF	R	PBN approved *(See Note 4)*
I	Inertial Navigation	T	TACAN
J1	CPDLC ATN VDL Mode 2 *(See Note 3)*	U	UHF RTF
		V	VHF RTF
J2	CPDLC FANS 1/A	W	RVSM approved

	HFDL	X	MNPS approved
J3	CPDLC FANS 1/A VDL Mode A	Y	VHF with 8.33 kHz channel spacing capability
J4	CPDLC FANS 1/A VDL Mode 2	Z	Other equipment carried or other capabilities *(See Note 5)*
J5	CPDLC FANS 1/A SATCOM (INMARSAT)		

Any alphanumeric characters not indicated above are reserved.

Note 1.— If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority.

Note 2.— If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.

Note 3.— See RTCA/EUROCAE Interoperability Requirements Standard for ATN Baseline 1 (ATN B1 INTEROP Standard – DO-280B/ED-110B) for data link services air traffic control clearance and information/air traffic control communications management/air traffic control microphone check.

Note 4.— If the letter R is used, the performance-based navigation levels that can be met are specified in Item 18 following the indicator PBN/. Guidance material on the application of performance-based navigation to a specific route segment, route or area is contained in the Performance-based Navigation (PBN) Manual (Doc 9613).

Note 5.— If the letter Z is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/ , NAV/ and/or DAT, as appropriate.

Note 6.— Information on navigation capability is provided to ATC for clearance and routing purposes.

Note 7.— Guidance material on the application of performance-based communication, which prescribes RCP to an air traffic service in a specific area, is contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869).

Surveillance equipment and capabilities

INSERT N if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,
OR

INSERT one or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board:

SSR Modes A and C	
A Transponder	Mode A (4 digits — 4 096 codes
C Transponder	Mode A (4 digits — 4 096 codes) and Mode C
SSR Mode S	
E Transponder	Mode S, including aircraft identification, pressure-altitude and extended squitter (ADS-B) capability
H Transponder	Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability
I Transponder	Mode S, including aircraft identification, but no pressure-altitude capability
L Transponder	Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance capability
P Transponder	Mode S, including pressure-altitude, but no aircraft identification capability
S Transponder	Mode S, including both pressure altitude and aircraft identification capability
X Transponder	Mode S with neither aircraft identification nor pressure-altitude capability

Note.— Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via a Mode S transponder.

ADS-B

B1	ADS-B with dedicated 1 090 MHz ADS-B “out” capability
B2	ADS-B with dedicated 1 090 MHz ADS-B out”and “in” capability
U1	ADS-B “out” capability using UAT
U2	ADS-B “out” and “in” capability using UAT
V1	ADS-B “out” capability using VDL Mode 4
V2	ADS-B “out” and “in” capability using VDL Mode 4

ADS-C

D1	ADS-C with FANS 1/A capabilities G1
G1	ADS-C with ATN capabilities

Alphanumeric characters not indicated above are reserved.

Example: ADE3RV/HB2U2V2G1

Note 1.— The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/. Guidance material on the application of performance-based surveillance, which prescribes RSP to an air traffic service in a specific area, is contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

Note 2.— Additional surveillance equipment or capabilities will be listed in Item 18 following the indicator SUR/, as required by the appropriate ATS authority.

ITEM 13: DEPARTURE AERODROME AND TIME (8 CHARACTERS)

INSERT the ICAO four-letter location indicator of the departure aerodrome as specified in Doc 7910, *Location Indicators*,

OR, if no location indicator has been assigned,

INSERT ZZZZ and *SPECIFY*, in Item 18, the name and location of the aerodrome preceded by DEP/ ,

OR, the first point of the route or the marker radio beacon preceded by DEP/…, if the aircraft has not taken off from the aerodrome,

OR, if the flight plan is received from an aircraft in flight,

INSERT AFIL, and *SPECIFY*, in Item 18, the ICAO four-letter location indicator of the location of the ATS unit from which supplementary flight plan data can be obtained, preceded by DEP/ .

THEN, WITHOUT A SPACE,

INSERT for a flight plan submitted before departure, the estimated off-block time (EOBT),

OR, for a flight plan received from an aircraft in flight, the actual or estimated time over the first point of the route to which the flight plan applies.

ITEM 15: ROUTE.

INSERT the *first cruising speed* as in (a) and the *first cruising level* as in (b), without a space between them.

THEN, following the arrow, *INSERT* the route description as in (c).

(a) Cruising speed (maximum 5 characters)

INSERT the *True airspeed* for the first or the whole cruising portion of the flight, in terms of:

Kilometres per hour, expressed as K followed by

4 figures (e.g. K0830), *or Knots,* expressed as N

followed by 4 figures (e.g. N0485), *or*

True Mach number, when so prescribed by the appropriate ATS authority, to the nearest hundredth of unit Mach, expressed as M followed by 3 figures (e.g. M082).

(b) Cruising level (maximum 5 characters)

INSERT the planned cruising level for the first or the whole portion of the route to be flown, in terms of:

Flight level, expressed as F followed by 3 figures (e.g. F085; F330), *or*

**Standard metric level in tens of metres,* expressed as S followed by 4 figures (e.g. S1130), *or*

Altitude in hundreds of feet, expressed as A followed by 3 figures (e.g. A045; A100), *or Altitude in tens of metres,* expressed as M followed by 4 figures (e.g. M0840), *or*

for uncontrolled VFR flights, the letters VFR.

(c) Route (including changes of speed, level and/or flight rules)

Flights along designated ATS routes

INSERT, if the departure aerodrome is located on or connected to the ATS route, the designator of the first ATS route,

OR, if the departure aerodrome is not on or connected to the ATS route, the letters DCT followed by the point of joining the first ATS route, followed by the designator of the ATS route.

THEN

INSERT each point at which either a change of speed and/or level is planned to commence, or a change of ATS route, and/or a change of flight rules is planned,

Note.— When a transition is planned between a lower and upper ATS route and the routes are oriented in the same direction, the point of transition need not be inserted.

FOLLOWED IN EACH CASE

by the designator of the next ATS route segment, even if the same as the previous one,

OR by DCT, if the flight to the next point will be outside a designated route, unless both points are defined by geographical coordinates.

Flights outside designated ATS routes

INSERT points normally not more than 30 minutes flying time or 370 km (200 NM) apart, including each point at which a change of speed or level, a change of track, or a change of flight rules is planned.

OR, when required by appropriate ATS authority(ies),

DEFINE the track of flights operating predominantly in an east-west direction between 70°N and 70°S by reference to significant points formed by the intersections of half or whole degrees of latitude with meridians spaced at

* When so prescribed by the appropriate ATS authorities.

intervals of 10 degrees of longitude. For flights operating in areas outside those latitudes the tracks shall be defined by significant points formed by the intersection of parallels of latitude with meridians normally spaced at 20 degrees of longitude. The distance between significant points shall, as far as possible, not exceed one hour's flight time. Additional significant points shall be established as deemed necessary.

For flights operating predominantly in a north-south direction, define tracks by reference to significant points formed by the intersection of whole degrees of longitude with specified parallels of latitude which are spaced at 5 degrees.

INSERT DCT between successive points unless both points are defined by geographical coordinates or by bearing and distance.

USE ONLY the conventions in (1) to (5) below and *SEPARATE* each sub-item by a space.

(1) ATS route (2 to 7 characters)

The coded designator assigned to the route or route segment including, where appropriate, the coded designator assigned to the standard departure or arrival route (e.g. BCN1, Bl, R14, UB10, KODAP2A).

Note.— Provisions for the application of route designators are contained in Annex 11, Appendix 1.

(2) Significant point (2 to 11 characters)

The coded designator (2 to 5 characters) assigned to the point (e.g. LN, MAY, HADDY),

or, if no coded designator has been assigned, one of the following ways:

— *Degrees only* (7 characters):

2 figures describing latitude in degrees, followed by “N” (North) or “S” (South), followed by 3 figures describing longitude in degrees, followed by “E” (East) or “W” (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 46N078W.

— *Degrees and minutes* (11 characters):

4 figures describing latitude in degrees and tens and units of minutes followed by “N” (North) or “S” (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by “E” (East) or “W” (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 4620N07805W.

— *Bearing and distance from a reference point*:

The identification of the reference point, followed by the bearing from

the point in the form of 3 figures giving degrees magnetic, followed by the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros — e.g. a point 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

(3) Change of speed or level (maximum 21 characters)

The point at which a change of speed (5% TAS or 0.01 Mach or more) or a change of level is planned to commence, expressed exactly as in (2) above, followed by an *oblique stroke and both the cruising speed and the cruising level*, expressed exactly as in (a) and (b) above, without a space between them, *even when only one of these quantities will be changed*.

Examples: LN/N0284A045
MAY/N0305Fl80
HADDY/N0420F330
4602N07805W/N0500F350
46N078W/M082F330
DUB180040/N0350M084
0

(4) Change of flight rules (maximum 3 characters)

The point at which the change of flight rules is planned, expressed exactly as in (2) or (3) above as appropriate, *followed by a space and one of the following*:

VFR if from
IFR to VFR
IFR if from
VFR to IFR

Examples: LN VFR
LN/N0
284A0
50 IFR

(5) Cruise climb (maximum 28 characters)

The letter C followed by an *oblique stroke*; *THEN the point at which cruise climb is planned to start*, expressed exactly as in (2) above, *followed by an oblique stroke; THEN the speed to be maintained during cruise climb*, expressed exactly as in (a) above, followed by *the two levels defining the layer to be occupied during cruise climb*, each level expressed exactly as in (b) above, *or the level above which cruise climb is planned followed by the letters PLUS*, without a space between them.

Examples: C/48N050W/M082F290F350
C/48N050W/M082F290PLUS
C/52N050W/M220F580F620.

ITEM 16: DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME, DESTINATION ALTERNATE AERODROME(S)

Destination aerodrome and total estimated elapsed time (8 characters)

INSERT the ICAO four-letter location indicator of the destination aerodrome as specified in Doc 7910, *Location Indicators*,

OR, if no location indicator has been assigned,

INSERT ZZZZ and *SPECIFY* in Item 18 the name and location of the aerodrome, preceded by DEST/ .

THEN WITHOUT A SPACE

INSERT the total estimated elapsed time.

Note.— For a flight plan received from an aircraft in flight, the total estimated elapsed time is the estimated time from the first point of the route to which the flight plan applies to the termination point of the flight plan.

Destination alternate aerodrome(s)

INSERT the ICAO four-letter location indicator(s) of not more than two destination alternate aerodromes, as specified in Doc 7910, *Location Indicators*, separated by a space,

OR, if no location indicator has been assigned to the destination alternate aerodrome(s),

INSERT ZZZZ and SPECIFY in Item 18 the name and location of the destination alternate aerodrome(s), preceded by ALTN/ .

ITEM 18: OTHER INFORMATION

Note.— Use of indicators not included under this item may result in data being rejected, processed incorrectly or lost.
Note 2.— Refer to the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965) for guidance on flight plan codes applicable during a transition period, as well as additional flight information that can be exchanged using the FF-ICE services.

Hyphens or oblique strokes should only be used as prescribed below.

INSERT 0 (zero) if no other information,

OR, any other necessary information in the sequence shown hereunder, in the form of the appropriate indicator selected from those defined hereunder followed by an oblique stroke and the information to be recorded:

STS/ Reason for special handling by ATS, e.g. a search and rescue mission, as follows:

ALTRV:	for a flight operated in accordance with an altitude reservation;
ATFMX:	for a flight approved for exemption from ATFM measures by the appropriate ATS authority;

FFR:	fire-fighting;
FLTCK:	flight check for calibration of navaids;
HAZMAT:	for a flight carrying hazardous material;
HEAD:	a flight with Head of State status;
HOSP:	for a medical flight declared by medical authorities;
HUM:	for a flight operating on a humanitarian mission;
MARSA:	for a flight for which a military entity assumes responsibility for separation of military aircraft;
MEDEVAC:	for a life critical medical emergency evacuation;
NONRVSM:	for a non-RVSM capable flight intending to operate in RVSM airspace;
SAR:	for a flight engaged in a search and rescue mission;
STATE:	for a flight engaged in military, customs or police services.

PBN/ Indication of RNAV and/or RNP capabilities. Include as many of the descriptors below, as apply to the flight, up to a maximum of 8 entries, i.e. a total of not more than 16 characters.

	RNAV SPECIFICATIONS
A1	RNAV 10 (RNP 10)
B1	RNAV 5 all permitted sensors
B2	RNAV 5 GNSS
B3	RNAV 5 DME/DME
B4	RNAV 5 VOR/DME
B5	RNAV 5 INS or IRS
B6	RNAV 5 LORANC
C1	RNAV 2 all permitted sensors
C2	RNAV 2 GNSS
C3	RNAV 2 DME/DME
C4	RNAV 2 DME/DME/IRU

D1	RNAV 1 all permitted sensors
D2	RNAV 1 GNSS
D3	RNAV 1 DME/DME
D4	RNAV 1 DME/DME/IRU
	RNP SPECIFICATIONS
L1	RNP 4
O1	Basic RNP 1 all permitted sensors
O2	Basic RNP 1 GNSS
O3	Basic RNP 1 DME/DME
O4	Basic RNP 1 DME/DME/IRU
S1	RNP APCH
S2	RNP APCH with BARO-VNAV
T1	RNP AR APCH with RF (special authorization required)
T2	RNP AR APCH without RF (special authorization required)

Combinations of alphanumeric characters not indicated above are reserved.

NAV/	Indicate navigation equipment and capabilities, other than those specified in Item 10 a) or PBN/, as required by the appropriate ATS authority. In the case of GNSS augmentation, when necessary to specify it, include ‘GBAS’ and/or ‘SBAS’ as appropriate.
COM/	Indicate communication equipment and capabilities not specified in Item 10), as required by the appropriate ATS authority
DAT/	Indicate data communication equipment and capabilities not specified in 10, as required by the appropriate ATS authority
SUR/	Indicate surveillance equipment and capabilities not specified in Item 10 b), as required by the appropriate ATS authority. In the case of required surveillance performance, when necessary to specify it, include the letters “RSP” followed by the appropriate performance level, such as RSP180
DEP/	Name and location of departure aerodrome, if ZZZZ is inserted in Item 13, or the ATS unit from which supplementary flight plan data can be obtained, if AFIL is inserted in Item 13. For

	aerodromes not listed in the relevant Aeronautical Information Publication, indicate location as follows: With 4 figures describing latitude in degrees and tens and units of minutes followed by “N” (North) or “S” (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by “E” (East) or “W” (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 4620N07805W (11 characters). *OR,* Bearing and distance from the nearest significant point, as follows: The identification of the significant point followed by the bearing from the point in the form of 3 figures giving degrees magnetic, followed by the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros, e.g. a point of 180° magnetic at a distance of 40 nautical miles from VOR “DUB” should be expressed as DUB180040. *OR,* The first point of the route (name or LAT/LONG) or the marker radio beacon, if the aircraft has not taken off from an aerodrome.
DEST/	Name and location of destination aerodrome, if ZZZZ is inserted in Item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described under DEP/ above.
DOF/	The date of flight departure in a six-figure format (YYMMDD, where YY equals the year, MM equals the month and DD equals the day).
REG/	The nationality or common mark and registration mark of the aircraft, if different from the aircraft identification in Item 7.
EET/	Significant points or FIR boundary designators and accumulated estimated elapsed times from take-off to such points or FIR boundaries, when so prescribed on the basis of

	regional air navigation agreements, or by the appropriate ATS authority. Examples: EET/CAP0745 XYZ0830 EET/EINN0204
SEL/	SELCAL Code, for aircraft so equipped.
TYP/	Type(s) of aircraft, preceded if necessary without a space by number(s) of aircraft and separated by one space, if ZZZZ is inserted in Item 9. Example: TYP/2F15 5F5 3B2
CODE/	Aircraft address (expressed in the form of an alphanumerical code of six hexadecimal characters) when required by the appropriate ATS authority. Example: “F00001” is the lowest aircraft address contained in the specific block administered by ICAO
DLE/	Enroute delay or holding, insert the significant point(s) on the route where a delay is planned to occur, followed by the length of delay using four-figure time in hours and minutes (hhmm). Example: DLE/MDG0030
OPR/	ICAO designator or name of the aircraft operating agency, if different from the aircraft identification in item 7
ORGN/	The originator’s 8 letter AFTN address or other appropriate contact details, in cases where the originator of the flight plan may not be readily identified, as required by the appropriate ATS authority. Note.— In some areas, flight plan reception centers may insert the ORGN/ identifier and originator’s AFTN address automatically.
PER/	Aircraft performance data, indicated by a single letter as specified in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume I — Flight Procedures, if so prescribed by the appropriate ATS authority.
ALTN/	Name of destination alternate aerodrome(s), if ZZZZ is inserted in Item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in

	LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above
RALT/	ICAO four letter indicator(s) for en-route alternate(s), as specified in Doc 7910, Location Indicators, or name(s) of en-route alternate aerodrome(s), if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.
TALT/	ICAO four letter indicator(s) for take-off alternate, as specified in Doc 7910, Location Indicators, or name of take-off alternate aerodrome, if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.
RIF/	The route details to the revised destination aerodrome, followed by the ICAO four-letter location indicator of the aerodrome. The revised route is subject to reclearance in flight. Examples: RIF/DTA HEC KLAX RIF/ESP G94 CLA YPPH
RMK/	Any other plain-language remarks when required by the appropriate ATS authority or deemed necessary.

ITEM 19: SUPPLEMENTARY INFORMATION

Endurance	
After E/	INSERT a 4-figure group giving the fuel endurance in hours and minutes.
Persons on board	
After P/	INSERT the total number of persons (passengers and crew) on board, when required by the appropriate ATS authority. INSERT TBN (to be notified) if the total number of persons is not known at the time of filing.
Emergency and survival equipment	
R/ (RADIO)	CROSS OUT U if UHF on frequency 243.0 MHz is not available. CROSS OUT V if VHF on frequency

	121.5 MHz is not available. CROSS OUT E if emergency locator transmitter (ELT) is not available.
S/ (SURVIVAL EQUIPMENT)	CROSS OUT all indicators if survival equipment is not carried. CROSS OUT P if polar survival equipment is not carried. CROSS OUT D if desert survival equipment is not carried. CROSS OUT M if maritime survival equipment is not carried. CROSS OUT J if jungle survival equipment is not carried.
J/ (JACKETS)	CROSS OUT all indicators if life jackets are not carried. CROSS OUT L if life jackets are not equipped with lights. CROSS OUT F if life jackets are not equipped with fluorescein. CROSS OUT U or V or both as in R/ above to indicate radio capability of jackets, if any.
D/ (DINGHIES) (NUMBER)	CROSS OUT indicators D and C if no dinghies are carried, or INSERT number of dinghies carried; and
(CAPACITY)	INSERT total capacity, in persons, of all dinghies carried
(COVER)	CROSS OUT indicator C if dinghies are not covered
(COLOUR)	INSERT colour of dinghies if carried.
A/ (AIRCRAFT COLOUR AND MARKINGS)	INSERT colour of aircraft and significant markings.
N/ (REMARKS)	CROSS OUT indicator N if no remarks, or INDICATE any other survival equipment carried and any other remarks regarding survival equipment.
C/ (PILOT)	INSERT name of pilot-in-command.

(3) Filed by

INSERT the name of the unit, agency or person filing the flight plan.

(4) Acceptance of the flight plan

Indicate acceptance of the flight plan in the manner prescribed by the appropriate ATS authority.

(5) Instructions for insertion of COM data

Items to be completed
COMPLETE the top two shaded lines of the form, and *COMPLETE* the third shaded line only when necessary, in accordance with the provisions in PANS-ATM, Chapter 11, 11.2.1.2, unless ATS prescribes otherwise.

(c) Instructions for the transmission of a filed flight plan (FPL) message

Correction of obvious errors

Unless otherwise prescribed, CORRECT obvious format errors and/or omissions (i.e. oblique strokes) to ensure adherence as specified in Section 2.

Items to be transmitted

TRANSMIT items as indicated hereunder, unless otherwise prescribed:

(1) the items in the shaded lines, above Item 3;

commencing with<<≡ (FPL of Item 3: all symbols and data in the unshaded boxes down to the) <<≡ at the end of Item 18,

additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 15 or 18. The alignment function is to be inserted only in lieu of a space so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

(2) the AFTN Ending, as described below:

End-of-Text Signal
(A) one LETTER SHIFT
(B) two CARRIAGE RETURNS, one LINE FEED
Page-feed Sequence
Seven LINE FEEDS

End-of-Message Signal
Four of the letter N.

(d) Instructions for the transmission of a supplementary flight plan (SPL) message

Items to be transmitted

Transmit items as indicated hereunder, unless otherwise prescribed:

(1) AFTN Priority Indicator, Addressee Indicators <<≡, Filing Time, Originator Indicator <<≡ and, if necessary, specific identification of addressees and/or originator;

(2) commencing with <<≡ (SPL:

all symbols and data in the unshaded areas of boxes 7, 13, 16 and 18, except that the ')' at the end of box 18 is *not* to be transmitted, and then the symbols in the unshaded area of box 19 down to and including the)<<□ of box 19,

additional alignment functions as necessary to prevent the inclusion of more than 69 characters in any line of Items 18 and 19. The alignment function is to be inserted only in lieu of a space so as not to break up a group of data,

letter shifts and figure shifts (not preprinted on the form) as necessary;

(3) the AFTN Ending, as described below:

End-of-Text Signal

(i) one LETTER SHIFT
(ii) two CARRIAGE RETURNS, one LINE FEED

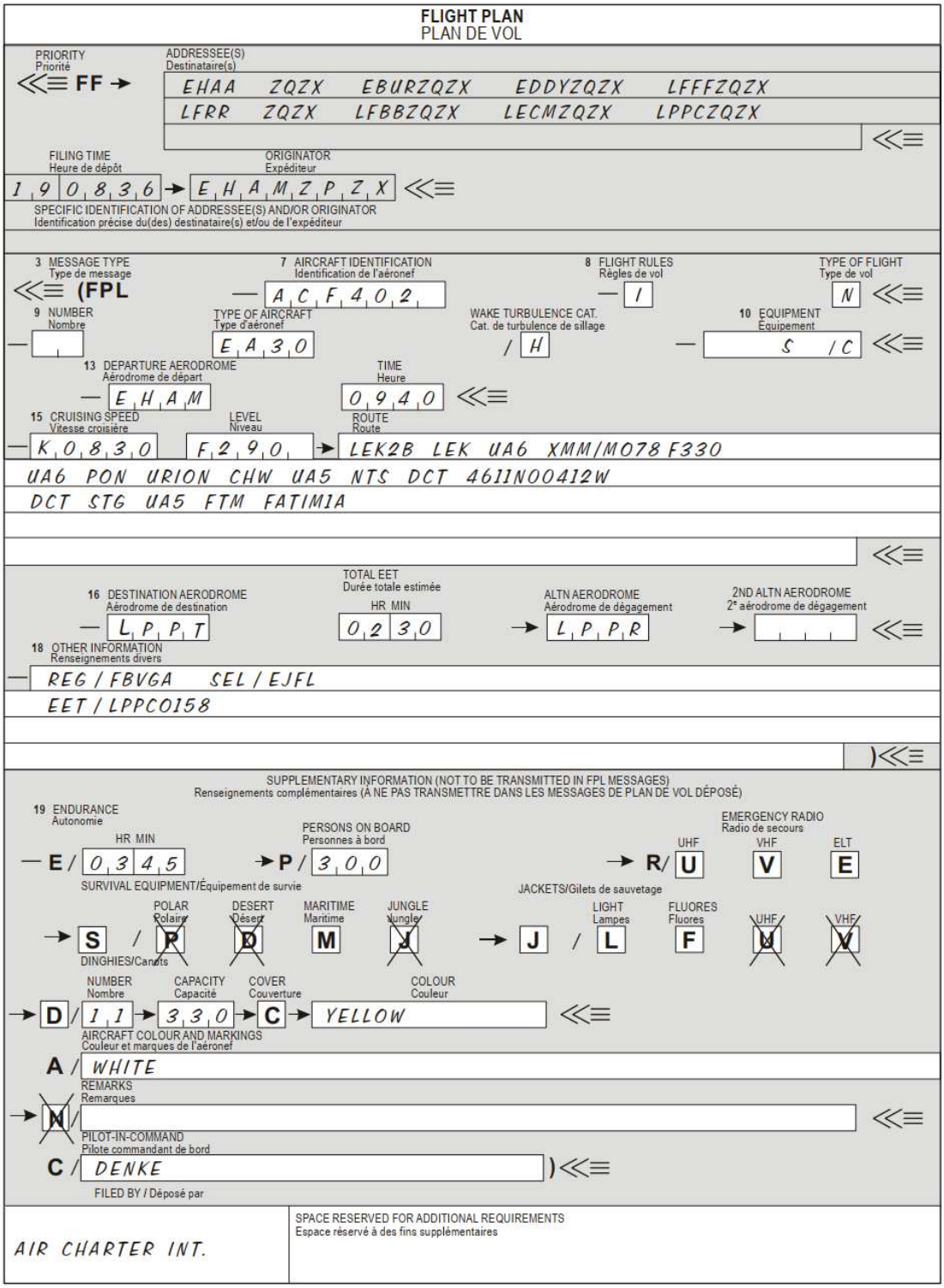
Page-feed sequence

Seven LINE FEEDS

End-of-Message Signal

Four of the letter N.

(e) Example of a completed flight plan form



FLIGHT PLAN
PLAN DE VOL

PRIORITY / Priorité: FF
ADDRESSEE(S) / Destinataire(s): EHAA ZQZX EBURZQZX EDDYZQZX LFFFZQZX
LFRR ZQZX LFBBZQZX LECMZQZX LPPCZQZX
FILING TIME / Heure de dépôt: 190836
ORIGINATOR / Expéditeur: EHAMZPZX
SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR / Identification précise du(des) destinataire(s) et/ou de l'expéditeur:

3 MESSAGE TYPE / Type de message: (FPL
7 AIRCRAFT IDENTIFICATION / Identification de l'aéronef: ACF402
8 FLIGHT RULES / Règles de vol: I
TYPE OF FLIGHT / Type de vol: N
9 NUMBER / Nombre:
TYPE OF AIRCRAFT / Type d'aéronef: E430
WAKE TURBULENCE CAT. / Cat. de turbulence de sillage: H
10 EQUIPMENT / Equipement: S /C
13 DEPARTURE AERODROME / Aérodrome de départ: EHAM
TIME / Heure: 0940
15 CRUISING SPEED / Vitesse croisière: K0830
LEVEL / Niveau: F290
ROUTE / Route: LEK2B LEK UA6 XMM/M078 F330
UA6 PON URION CHW UA5 NTS DCT 4611N00412W
DCT STG UA5 FTM FATIM1A

16 DESTINATION AERODROME / Aérodrome de destination: LPPT
TOTAL EET / Durée totale estimée HR MIN: 0230
ALTN AERODROME / Aérodrome de dégagement: LPPR
2ND ALTN AERODROME / 2e aérodrome de dégagement:
18 OTHER INFORMATION / Renseignements divers:
REG / FBVGA SEL / EJFL
EET / LPPC0158

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)
Renseignements complémentaires (À NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL DÉPOSÉ)

19 ENDURANCE / Autonomie HR MIN: E/0345
PERSONS ON BOARD / Personnes à bord: P/300
EMERGENCY RADIO / Radio de secours: R/U (UHF) V (VHF) E (ELT)
SURVIVAL EQUIPMENT/Équipement de survie: S/ (POLAR/Polaire) (DESERT/Désert) D (MARITIME/Maritime) M (JUNGLE/Jungle)
DINGHIES/Canots: D/11 (NUMBER/Nombre) 330 (CAPACITY/Capacité) C (COVER/Couverture) YELLOW (COLOUR/Couleur)
JACKETS/Gilets de sauvetage: J/L (LIGHT/Lampes) F (FLUORES/Fluores) (UHF) (VHF)
AIRCRAFT COLOUR AND MARKINGS / Couleur et marques de l'aéronef: A/WHITE
REMARKS / Remarques: N/
PILOT-IN-COMMAND / Pilote commandant de bord: C/DENKE
FILED BY / Déposé par

AIR CHARTER INT.

SPACE RESERVED FOR ADDITIONAL REQUIREMENTS
Espace réservé à des fins supplémentaires

APPENDIX 4 FF-ICE FLIGHT AND FLOW — INFORMATION FOR A COLLABORATIVE ENVIRONMENT (FF-ICE) SERVICES

(a) INTRODUCTION

Note.— The implementers of the Flight and Flow — Information for a Collaborative Environment (FF-ICE) services are not exempted from fulfilling requirements to exchange flight plan and other associated movement messages, in accordance with- provisions in Doc 4444 Chapter 4, section 4.4 and Chapter 11, with operators and ATS units that have not implemented FF-ICE services.

(1) The FF-ICE services may include any of the following:

(i) *planning service:* the evaluation of a preliminary flight plan (PFP) with respect to flight plan acceptability and, where practicable, the indication of applicable restrictions and resultant constraints on the flight;

(ii) filing service: the evaluation of a filed flight plan (eFPL) for the provision of air traffic services and indication of flight plan acceptability;

(iii) trial service: the evaluation of a trial request with respect to flight plan acceptability and, where practicable, the indication of applicable restrictions and resultant constraints on the flight;

Note.— The trial service offers an opportunity for an operator or designated representative to submit “what-if” scenarios and to receive feedback from an FF-ICE services unit, prior to submitting a PFP, eFPL or flight plan update.

(iv) flight data request service: the provision of data regarding a specific flight such as the latest version of a filed flight plan or search and rescue data upon request by an eligible recipient;

(v) notification service: the provision of data regarding a certain flight event such as departure and arrival to required recipients; and

(vi) publication service: the publication of flight and flow data for access by authorized subscribers.

Note.— Further details on the restrictions and constraints can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

(2) When any of the FF-ICE services in (a)(1) are to be implemented, the provision and use of such services shall be affected in accordance with the provisions of this Appendix.

(b) GENERAL PROVISIONS

(1) When it has been determined that FF-ICE services will be provided, the service provider shall:

(i) designate at least one FF-ICE services unit;

(ii) arrange for, as a minimum, the provision of the filing service and flight data request service;

(iii) ensure that the FF-ICE services unit(s) maintains the ability necessary to exchange ATS messages with operators and ATS units that have not implemented FF-ICE services, in accordance with provisions in Doc 4444 Chapter 11; and

(iv) arrange for the promulgation of information on the availability of FF-ICE services, associated procedures and conditions in the Aeronautical Information Publications (AIP).

(2) The associated procedures and conditions to be published in the AIP shall include, inter alia, the following:

(i) instructions for constructing valid flight plans for submission ((d)(1)(i) and (d)(1)(ii) refer);

(ii) the point in time and/or conditions after which procedures change for submission of a Flight Plan Update message ((d)(4)(i) refers);

(iii) if applicable, the period of time and point in time and/or conditions under which an update to the Planning Status and Filing Status messages is provided ((e)(5)(ii)refers);

(iv) if applicable, the types of flight data that can be requested via the FF-ICE flight data request service ((d)(7)(i) refers); and

(v) if applicable, the time limits for submission of a PFP message ((d)(2)(iii) refers).

(c) FLIGHT AND FLOW — INFORMATION FOR A COLLABORATIVE ENVIRONMENT (FF-ICE) MESSAGES

(1) The messages prescribed in Table APP 4-1 shall be used to exchange information as indicated in the procedures for FF-ICE services in (d).

(2) FF-ICE messages shall comply with the technical and interoperability requirements contained in (e).

(3) The content of an FF-ICE message shall allow for translation to a corresponding ATS message when necessary to meet the requirements of Doc 4444 Chapter 11. This includes the translation of:
(i) an eFPL message to an FPL message;
(ii) a Flight Plan Update message to a CHG or DLA message; and
(iii) a Flight Cancellation message to a CNL message.

Note 1.— See also (b)(1) c) concerning a required capability to support a mixed mode environment.

Note 2.— Additional data items defined for use in the FF-ICE messages that do not correspond to an existing data item in the ATS message may not be translated.

Note 3.— Information on data items requiring translation and guidance on the use of algorithms to minimize loss of data during translation are contained in the Manual on Flight and Flow — Information for a Collaborative Environment (*Doc 9965*).

(4) It is not the intention that personnel involved in the provision and use of the FF-ICE services see the whole content of FF-ICE messages, the majority of which are to be generated by computer systems. However, flight plan information shall be displayed or made available for verification, coordination and necessary modifications by those personnel, such as flight operations officer or flight data processing officer.

Table APP 4-1. Standard Flight and Flow — Information for a Collaborative Environment (FF-ICE) Messages

((c)(1) refers)

Note 1.— The term "message" refers to a discrete unit of communication, expressed electronically, and intended for consumption by a recipient or group of recipients.

Note 2.— Specific details on FF-ICE messages including content, format and data conventions are described in the Manual on Flight and Flow — Information for a Collaborative Environment (*Doc 9965*).

Message	***Description***
Submission Response	A response message indicating whether a submitted FF-ICE message is valid or not. In case of rejection, it also indicates the reason.
Preliminary Flight Plan (PFP)	A flight plan (to be) submitted for collaborative flight planning, prior to submitting a Filed Flight Plan (eFPL) message.
Planning Status	A response to a validated PFP message indicating the flight plan acceptability and, where practicable, applicable restrictions and constraints.
Trial Request	A query to evaluate a flight plan under consideration for an intended flight.
Trial Response	A response to a validated Trial Request message indicating the expected flight plan acceptability and, where practicable, applicable restrictions and constraints.
Filed Flight Plan (eFPL)	A flight plan (to be) submitted as a request for air traffic services.
Filing Status	A response to a validated eFPL message indicating the flight plan acceptability.
Flight Plan Update	An update to the information contained in a previously submitted flight plan (PFP or eFPL).
Flight Cancellation	An instruction to cancel and remove a previously submitted flight plan (PFP or eFPL).
Flight Data Request	A query for flight plan or search and rescue information for a particular flight.
Flight Data Response	A response to a validated Flight Data Request message, which includes the requested data.
Flight Departure	A notification that a flight has departed.
Flight Arrival	A notification that a flight has landed.

(d) PROCEDURES FOR FF-ICE SERVICES

(1) General

Note.— Each FF-ICE service has an applicable set of messages and associated procedures, and some procedures are used by more than one service.

(i) An originator shall ensure that an FF-ICE message complies with an applicable format and data conventions

(ii) A recipient shall validate the FF-ICE message by checking its compliance with the applicable format and data conventions and to the extent possible, for completeness and accuracy.

(iii) Each recipient shall respond to each of the messages identified below with a Submission Response message as soon as practicable after validation of a message pursuant to (d)(1)(ii):

(A) Preliminary Flight Plan (PFP);

(B) Filed Flight Plan (eFPL);

(C) Flight Plan Update;

(D) Trial Request;

(E) Flight Cancellation;

(F) Flight Departure;

(G) Flight Arrival; and

(H) Flight Data Request.

(iv) Upon receipt of a Submission Response indicating that the message has been rejected, the recipient of the Submission Response shall take action, as necessary.

(v) The originator of PFP, eFPL or Flight Plan Update messages shall include flight plan version information that allows a recipient to verify that the flight plan version in the message is more recent than previously received, and that no incremental updates were missed.

(vi) When the flight plan version of a received message is older than the one currently held, or incremental updates are missing, the recipient shall take action to obtain the latest version of the flight plan.

(2) Preliminary flight plan (PFP)

(i) The FF-ICE planning service shall be effected by the submission of a Preliminary Flight Plan (PFP) message by an operator or designated representative to each FF-ICE services unit from which evaluation is needed and that has indicated the availability of the service.

(ii) A PFP message shall include the following data items, as a minimum when first submitted, and be augmented as more information is available to the operator:
(A) globally unique flight identifier (GUFI);
(B) aircraft identification;
(C) departure aerodrome;
(D) estimated off-block date and time; and
(E) destination aerodrome.

Note.— Provisions on the generation and use of a GUFI are contained in Attachment A to this Appendix.

(iii) The time limits for submission of a PFP message determined by the service provider or, if applicable, on the basis of regional air navigation agreements shall be published in the AIP.

(iv) A PFP message shall be rejected if a filed flight plan exists for the given flight.

(v) FF-ICE services units shall evaluate the validated PFP message and provide an appropriate response in accordance with (d)(5).

(vi) Submission of a PFP message shall not substitute for the submission of an eFPL message.

(3) Filed flight plan (eFPL)

(i) The FF-ICE filing service shall be affected by the submission of a Filed Flight Plan (eFPL) message by an operator or designated representative.

(ii) Unless otherwise prescribed by the service provider, an operator or its designated representative electing to use FF-ICE services shall submit:
(A) an eFPL to each FF-ICE services unit concerned along the route of a flight; and
(B) an FPL to each ATS unit unable to process an eFPL, as directed by the AIP relevant to each airspace the flight is expected to traverse.

Note 1.— When so prescribed, the FF-ICE service unit may optionally offer related functionality, for example: an operator or its designated representative may submit an eFPL only to an FF-ICE services unit serving the departure aerodrome. The FF-ICE services unit may assume responsibility for the provision of the flight plan information and changes thereto in an appropriate format to all relevant units concerned along the route of flight, and for provision of appropriate responses back to an operator or its designated representative.

Note 2.— Acceptable methods for translating eFPL to FPL can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (Doc 9965).

(iii) An eFPL message shall include, as a minimum, the GUFI and the flight data items prescribed by the provisions in Appendix 3

Note.— Provisions on the generation and use of a GUFI are contained in Attachment A to this Appendix.

(iv) The FF-ICE services unit shall ensure that the filed flight plan is made available to all ATS units concerned within its area of responsibility.

(v) When so required by the agreement between the service providers to assist in the identification of flights and thereby eliminate or reduce the need for interceptions in the event of deviations from the assigned track, the FF-ICE services unit shall also provide an eFPL message to the FF-ICE services unit of each FIR or upper FIR in close proximity to specified routes or airspace the flight is expected to traverse.

(vi) The FF-ICE services units shall evaluate the validated filed flight plan and provide an appropriate response in accordance with (d)(5)

(4) Flight plan update

(i) An FF-ICE services unit shall publish in the AIP, pursuant to (b)(2), the applicable conditions which cause the procedures for the submission of a Flight Plan Update message to change.

Note.— Depending on a local arrangement between an FF-ICE services unit and an ATS unit formulating ATC clearances, flight plan updates may not be accepted after a certain point of time, which is important information to operators.

(ii) When any change is to be made to a previously submitted flight plan (PFP or eFPL, as appropriate), an operator or designated representative shall submit a Flight Plan Update message to all the recipients of the previously submitted flight plan.

(iii) When such a change results in additional entities not previously having received the flight plan concerned, the operator or designated representative shall submit a latest version of the complete flight plan (PFP or eFPL as appropriate), with all prior updates incorporated, to those recipients that are newly affected by the change.

(iv) When the submitted flight plan message (PFP or eFPL) includes a flight plan version number exactly one greater than the one

currently held, the flight plan message shall be processed as an update to the previously submitted flight plan.

(v) When a flight plan version number contained in a Flight Plan Update message is not exactly one greater than the one currently held, the Flight Plan Update message shall be rejected and the version mismatch shall be indicated to the operator.

(vi) When a rejection of a Flight Plan update message due to a version mismatch is received, the operator or designated representative shall submit the latest version of the complete flight plan (PFP or eFPL as appropriate).

(vii) When a flight plan has been provided pursuant to (d)(3)(iii) and (d)(3)(iiv), the FF-ICE services unit shall keep those recipients informed of any changes to the filed flight plan including the case when, following a change, the flight is no longer of concern to the recipients.

(viii) Upon validation of a flight plan update message, the FF-ICE services units shall evaluate the update to the previously submitted flight plans and provide an appropriate response in accordance with (d)(5).

(5) Flight plan evaluation

(i) Each individual FF-ICE services unit shall determine the acceptability of the flight plan or flight plan update, and send an appropriate FF-ICE message (Planning Status message or Filing Status message) as soon as practicable. In case of the Planning Status message, it shall be sent no later than three hours before the estimated off-blocks time.

Note 1. — Flight plan acceptability is determined based on a separate evaluation of semantics and the assessment of compliance with applicable restrictions and/or constraints.

Note 2. — The response messages resulted from the flight plan evaluation are additional to the Submission Response message provided pursuant to (d)(1)(iii).

(ii) The FF-ICE services unit may wish to provide an update to the Planning Status or Filing Status in order to reflect changes in relevant restrictions or applicable flight constraints. In such cases, the period of time and/or conditions under which an update to the Planning Status and Filing Status messages is provided shall be published in the AIP pursuant to (b)(2)

(iii) In response to the Planning Status or Filing Status message, the operator or designated representative shall evaluate the contents and take action as necessary.

(6) Flight cancellation

(i) To cancel a flight for which a preliminary or filed flight plan was previously submitted, an operator or designated representative shall submit a Flight Cancellation message to each FF-ICE services unit that was previously provided with the flight plan concerned.

(ii) Upon validation of a Flight Cancellation message, an FF-ICE services unit shall take necessary actions to ensure that the flight is not considered as an intended flight. Such actions may include, but are not limited to:

(A) not accepting any further FF-ICE messages that include the GUFI of the cancelled flight;

(B) notifying FF-ICE services units and/or ATS units that are aware of the flight; and

(C) removing the flight from ATC systems.

(iii) When a previously cancelled flight needs to be re-established, a flight plan shall be submitted in the same manner as it is for a new flight.

(7) Flight data request

(i) An FF-ICE services unit may make available any information about a flight that is deemed useful, but as a minimum, shall be capable of providing the following information, when applicable, upon request:

(A) the most recent version of a preliminary flight plan;

(B) the most recent version of a filed flight plan;

(C) supplementary search and rescue information;

(D) the latest planning status; or

(E) the latest filing status.

(ii) To obtain flight plan information about a specific flight such as listed in (7)(i), a Flight Data Request message shall be submitted to an appropriate FF-ICE services unit that has been identified as holding the desired information.

Note. — More use cases for the FF-ICE flight data request service can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

(iii) A Flight Data Request message submitted by an operator or designated representative shall concern only a flight under its operational control.

(iv) An FF-ICE services unit shall validate whether the received Flight Data Request message originates from an entity eligible for requesting such information.

(v) Upon validation of a Flight Data Request message, the FF-ICE services unit shall provide the requested flight data as soon as practicable.

(vi) When unable to provide the requested data, the FF-ICE services unit shall send a Submission Response Message - Reject and indicate the reasons for the inability to provide the requested data.

(8) Trial request

(i) The FF-ICE trial service shall be effected through the submission of a Trial Request message by an operator or designated representative to each FF-ICE services unit from which evaluation is needed and that has indicated provision of the service. A Trial Request message may be submitted to an FF-ICE services unit that was not along the original route of flight and did not previously receive the flight plan, in order to evaluate a reroute into the airspace for which the FF-ICE services unit is designated to serve.

(ii) Upon validation of a Trial Request message, an FF-ICE service unit shall, as soon as practicable, determine the acceptability of the potential changes to an intended flight, and send a Trial Response message.

(iii) The information contained in the Trial Request message shall not be used for the purpose of air traffic flow management or air traffic services.

(9) Notification

When it has been determined that the FF-ICE notification service will be used as a means to meet the requirements of transmitting the flight departure and arrival prescribed in Doc 4444 - 11.4.2.2.6 and 11.4.2.2.7, the Flight Departure message and Flight Arrival message shall be used in lieu of DEP and ARR messages.

(10) Publication

(To be developed)

(e) TECHNICAL AND INTEROPERABILITY REQUIREMENT

(1) FF-ICE services shall make use of information services.

Note 1. — In the context of system-wide information management, the information service addresses machine-to-machine interaction in a service-oriented architecture.

Note 2. — Procedures on information services are contained in the Procedures for Air Navigation Services - Information Management (PANS-IM, Doc 10199).

(2) The providers and users of the FF-ICE services shall adopt an information exchange model that:

(i) provides the structure and format of the required flight and flow data elements, including their properties, associations and data types, and data value constraints;

(ii) enables the construction and exchange of the standard FF-ICE messages in Table APP4-1; and

(iii) provides a mechanism by which additional flight and flow data and/or FF-ICE messages can be used without affecting global interoperability.

Note. — Details on the structure and format of the flight and flow data elements and FF-ICE messages are contained in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

ATTACHMENT A OF APPENDIX 4 -
GLOBALLY UNIQUE FLIGHT IDENTIFIER (GUFI)

Note.— Procedures and guidance concerning FF-ICE services and the use of GUFI are contained in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444) and the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

(a) The originator of a preliminary flight plan (PFP) or eFPL shall assign a single GUFI to a flight for which the flight plan is to be submitted.
Note. — In the context of GUFI assignment, a flight refers to a single intended operation of an aircraft with specified aircraft identification that starts at a specified departure aerodrome at a specified date and time and finishes at an arrival aerodrome.

(b) The originator of a PFP or eFPL shall ensure that all FF-ICE messages submitted for a flight are identified by the same GUFI.

(c) When providing a response to an FF-ICE message, an FF-ICE services unit shall identify the subject flight using the GUFI contained in the message.

(d) An FF-ICE services unit shall reject an FF-ICE message if the message includes a GUFI identical to that of another flight known to the FF-ICE services unit.

(e) The format of a GUFI shall include a unique identification of the entity that generated the GUFI.

(f) The originator of a PFP or eFPL shall ensure that the GUFI assigned to the flight does not duplicate any other GUFI submitted by that originator within the past 10 years.

APPENDIX 5 POSITION REPORTS

Reporting Instructions

MODEL AIREP SPECIAL

	ITEM	PARAMETER	TRANSMIT IN TELEPHONY as appropriate
	—	Message- type designator — special air-report	[AIREP] SPECIAL
Section 1	1	Aircraft identification	*(aircraft identification)*
	2	Position	POSITION *(latitude and longitude)* OVER *(significant point)* ABEAM *(significant point)* *(significant point) (bearing) (distance)*
	3	Time	*(time)*
	4	Level	FLIGHT LEVEL *(number)* or *(number)* METRES or FEET CLIMBING TO FLIGHT LEVEL *(number)* or *(number)* METRES or FEET DESCENDING TO FLIGHT LEVEL *(number)* or *(number)* METRES or FEET
	5	Next position and estimated time over	*(position) (time)*
	6	Ensuing significant point	*(position)* NEXT
Section 2	7	Estimated time of arrival	*(aerodrome) (time)*
	8	Endurance	ENDURANCE *(hours and minutes)*
Section 3	9	Phenomenon encountered or observed prompting a special air-report: — Moderate turbulence — Severe turbulence — Moderate icing — Severe icing — Severe mountain wave — Thunderstorms without hail — Thunderstorms with hail — Heavy dust/sandstorm — Volcanic ash cloud — Pre-eruption volcanic activity or volcanic eruption	 TURBULENCE MODERATE TURBULENCE SEVERE ICING MODERATE ICING SEVERE MOUTAINWAVE SEVERE THUNDERSTORMS THUNDERSTORMS WITH HAIL DUSTSTORM or SANDSTORM HEAVY VOLCANIC ASH CLOUD PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION

(a) CONTENTS OF AIR-REPORTS

(1) Position reports and special air-reports

(i) Section 1 of the model set out in point A is obligatory for position reports and special air-reports, although Items 5 and 6 thereof may be omitted. Section 2 shall be added, in whole or in part, only when

so requested by the operator or its designated representative, or when deemed necessary by the pilot-in-command. Section 3 shall be included in special air-reports.

(ii) Condition prompting the issuance of a special air-report are to be selected from the list presented in point TCAR ANS Part - ROA.12005(a).

(iii) In the case of special air-reports containing information on volcanic activity, a post-flight report shall be made using the volcanic activity reporting form (Model VAR) set out in point B. All elements which are observed shall be recorded and indicated respectively in the appropriate places on the form Model VAR.

(iv) Special air-reports shall be issued as soon as practicable after a phenomenon calling for a special air-report has been observed.

(b) DETAILED REPORTING INSTRUCTIONS

(1) Items of an air-report shall be reported in the order in which they are listed in the model AIREP SPECIAL form.

MESSAGE TYPE DESIGNATOR. Report 'SPECIAL' for a special air-report.

Section 1

Item 1 — AIRCRAFT IDENTIFICATION. Report the aircraft radiotelephony call sign as prescribed in point TCAR ANS Part - ROA.14050

Item 2 — POSITION. Report position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed by 'North' or 'South') and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics followed by 'East' or 'West'), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles from the point. Precede significant point with 'ABEAM', if applicable.

Item 3 — TIME. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) is prescribed on the basis of regional air navigation agreements. The time reported must be the actual time of the aircraft at the position and not the time of origination or transmission of the report. Time shall always be reported in hours and minutes UTC when issuing a special air-report.

Item 4 — FLIGHT LEVEL OR ALTITUDE. Report flight level by 3 numerics when on standard pressure altimeter setting. Report altitude in metres

followed by ‘METRES’ or in feet followed by ‘FEET’ when on QNH. Report ‘CLIMBING’ (followed by the level) when climbing or ‘DESCENDING’ (followed by the level) when descending to a new level after passing the significant point.

Item 5 — NEXT POSITION AND ESTIMATED TIME OVER. Report the next reporting point and the estimated time over such reporting point, or report the estimated position that will be reached one hour later, according to the position reporting procedures in force. Use the data conventions specified in Item 2 for position. Report the estimated time over this position. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) as prescribed by regional air navigation agreements.

Item 6 — ENSUING SIGNIFICANT POINT. Report the ensuing significant point following the ‘next position and estimated time over’.

Section 2

Item 7 — ESTIMATED TIME OF ARRIVAL. Report the name of the aerodrome of the first intended landing, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

Item 8 — ENDURANCE. Report ‘ENDURANCE’ followed by fuel endurance in hours and minutes (4 numerics).

Section 3

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Report one of the following phenomena encountered or observed:

(A) moderate turbulence as ‘TURBULENCE MODERATE’, and
(B) severe turbulence as ‘TURBULENCE SEVERE’.

The following specifications apply:

Moderate - Conditions in which moderate changes in aircraft attitude and/or altitude may occur but the aircraft remains in positive control at all times. Usually, small variations in airspeed. Changes in accelerometer readings of 0,5 g to 1,0 g at the aircraft's center of gravity. Difficulty in walking. Occupants feel strain against seat belts. Loose objects move about.

Severe - Conditions in which abrupt changes in aircraft attitude and/or altitude occur; aircraft may be out of control for short periods. Usually, large variations in airspeed. Changes in accelerometer readings greater than 1,0 g at the aircraft's center

of gravity. Occupants are forced violently against seat belts. Loose objects are tossed about.

(C) moderate icing as 'ICING MODERATE', severe icing as 'ICING SEVERE';

The following specifications apply:

Moderate - Conditions in which change of heading and/or altitude may be considered desirable.

Severe - Conditions in which immediate change of heading and/or altitude is considered essential.

(D) Severe mountain wave as 'MOUNTAIN WAVE SEVERE';

The following specification applies:

Severe - Conditions in which the accompanying downdraft is 3,0 m/s (600 ft/min) or more and/or severe turbulence is encountered.

(E) Thunderstorm without hail as 'THUNDERSTORM', thunderstorm with hail as 'THUNDERSTORM WITH HAIL';

The following specification applies:

Only report those thunderstorms which are:

a) obscured in haze, or
b) embedded in cloud, or
c) widespread, or
d) forming a squall line.

(F) Heavy duststorm or sandstorm as 'DUSTSTORM HEAVY' or 'SANDSTORM HEAVY';

(G) Volcanic ash cloud as 'VOLCANIC ASH CLOUD';

(H) Pre-eruption volcanic activity or a volcanic eruption as 'PRE-ERUPTION VOLCANIC ACTIVITY' or 'VOLCANIC ERUPTION';

The following specification applies:

a) 'Pre-eruption volcanic activity' in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

(2) Information recorded on the volcanic activity reporting form (Model VAR) is not for transmission by RTF but, on arrival at an aerodrome, is to be delivered without delay by the operator or a flight crew member to the aerodrome meteorological office. If such an office is not easily accessible, the completed form shall be delivered in accordance with local

arrangements agreed upon between MET and ATS providers and the aircraft operator.

(c) FORWARDING OF METEOROLOGICALINFORMATION RECEIVED BY VOICE COMMUNICATIONS

When receiving special air-reports, ATS units shall forward these air-reports without delay to the associated meteorological watch office (MWO). In order to ensure assimilation of air-reports in ground-based automated systems, the elements of such reports shall be transmitted using the data conventions specified below and in the order prescribed.

- ADDRESSEE. Record the station called and, when necessary, relay required.
- MESSAGE TYPE DESIGNATOR. Record ‘ARS’ for a special air-report.
- AIRCRAFT IDENTIFICATION. Record the aircraft identification using the data convention specified for Item 7 of the flight plan, without a space between the operator's designator and the aircraft registration or flight identification, if used.

Section 1

Item 0 — POSITION. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed, without a space, by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles (3 numerics) from the point. Precede significant point with ‘ABEAM’, if applicable.

Item 1 — TIME. Record time in hours and minutes UTC (4 numerics).

Item 2 — FLIGHT LEVEL OR ALTITUDE. Record ‘F’ followed by 3 numerics (e.g. ‘F310’) when a flight level is reported. Record altitude in metres followed by ‘M’ or in feet followed by ‘FT’ when an altitude is reported. Record ‘ASC’ (level) when climbing or ‘DES’ (level) when descending.

Section 2

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

- moderate turbulence as ‘TURB MOD’,

- severe turbulence as ‘TURB SEV’,
- moderate icing as ‘ICE MOD’,
- severe icing as ‘ICE SEV’,
- severe mountain wave as ‘MTW SEV’,
- thunderstorm without hail as ‘TS’,
- thunderstorm with hail as ‘TSGR’,
- heavy duststorm or sandstorm as ‘HVY SS’,
- volcanic ash cloud as ‘VA CLD’,
- pre-eruption volcanic activity or a volcanic eruption as ‘VA’,
- hail as ‘GR’,
- cumulonimbus clouds as ‘CB’.
- TIME TRANSMITTED. Record only when Section 3 is transmitted.

(d) SPECIFIC PROVISIONS RELATED TO REPORTING WIND SHEAR AND VOLCANIC ASH

(1) Reporting of wind shear

(i) When reporting aircraft observations of wind shear encountered during the climb-out and approach phases of flight, the aircraft type shall be included.

(ii) Where wind shear conditions in the climb-out or approach phases of flight were reported or forecast but not encountered, the pilot-in-command shall advise the appropriate ATS unit as soon as practicable unless the pilot-in- command is aware that the appropriate ATS unit has already been so advised by a preceding aircraft.

(2) Post-flight reporting of volcanic activity

(i) On arrival of a flight at an aerodrome, the completed report of volcanic activity shall be delivered by the aircraft operator or a flight crew member, without delay, to the aerodrome meteorological office, or if such office is not easily accessible to arriving flight crew members, the completed form shall be dealt with in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

(ii) The completed report of volcanic activity received by an aerodrome meteorological office shall be transmitted without delay to the meteorological watch office responsible for the provision of meteorological watch for the flight information region in which the volcanic activity was observed.

APPENDIX 6 TRAFFIC INFORMATION BROADCASTS BY AIRCRAFT AND RELATED OPERATING PROCEDURES

(a) Details of broadcasts

(1) VHF RTF frequency to be used

(i) During normal ATS operation, TIBA frequency is as promulgated for that designated airspace.

(ii) During the disruption of ATS, TIBA frequency is 128.95 MHz

(iii) Where VHF is used for air-ground communications with ATS and an aircraft has only two serviceable VHF sets, one should be tuned to the appropriate ATS frequency and the other to the TIBA frequency.

(2) Listening watch

(i) A listening watch should be maintained on the TIBA frequency 10 minutes before entering the designated airspace until leaving this airspace. For an aircraft taking off from an aerodrome located within the lateral limits of the designated airspace, listening watch should start as soon as appropriate after take-off and be maintained until leaving the airspace.

(3) Time of broadcasts

A broadcast should be made:

(i) 10 minutes before entering the designated airspace or, for a pilot taking off from an aerodrome located within the lateral limits of the designated airspace, as soon as appropriate after take-off;

(ii) 10 minutes prior to crossing a reporting point;

(iii) 10 minutes prior to crossing or joining an ATS route;

(iv) at 20-minute intervals between distant reporting points;

(v) 2 to 5 minutes, where possible, before a change in flight level;

(vi) at the time of a change in flight level; and

(vii) at any other time considered necessary by the pilot

(4) Forms of broadcast

(i) The broadcasts other than those indicating changes in flight level, i.e. the broadcasts referred to in (3) (i), (ii),(iii), (iv) and (vii), should be in the following form:

- ALL STATIONS (necessary to identify a traffic information broadcast)
- (call sign)
- FLIGHT LEVEL (number) (or CLIMBING* TO FLIGHT LEVEL (number))
- (direction)
- (ATS route) (or DIRECT FROM (position) TO (position))
- POSITION (position**) AT (time)
- ESTIMATING (next reporting point, or the point of crossing or joining a designated ATS route) AT (time) (call sign)
- FLIGHT LEVEL (number)
- (direction)

* For the broadcast referred to in (3)(i) in the case of an aircraft taking off from an aerodrome located within the lateral limits of the designated airspace

** For broadcasts made when the aircraft is not near an ATS significant point, the position should be given as accurately as possible and in any case to the nearest 30 minutes of latitude and longitude.

example:
"ALL STATIONS WINDAR 671 FLIGHT LEVEL 350 NORTHWEST BOUND DIRECT FROM PUNTA SAGA TO PAMPA POSITION 5040 SOUTH 2010 EAST AT 2358 ESTIMATING CROSSING ROUTE LIMA THREE ONE AT 4930 SOUTH 1920 EAST AT 0012 WINDAR 671 FLIGHT LEVEL 350 NORTHWEST BOUND OUT"

(ii) Before a change in flight level, the broadcast (referred to in (3)(e)) should be in the following form:

- ALL STATIONS
- (call sign)
- (direction)
- (ATS route) (or DIRECT FROM (position) TO (position))
- LEAVING FLIGHT LEVEL (number) FOR FLIGHT LEVEL (number) AT (position and time)

(iii) Except as provided in (iv), the broadcast at the time of a change in flight level (referred to in (3)(vi)) should be in the following form:

- ALL STATIONS
- (call sign)
- (direction)
- (ATS route) (or DIRECT FROM (position) TO (position))
- LEAVING FLIGHT LEVEL (number) NOW FOR FLIGHT LEVEL (number)

followed by:

- ALL STATIONS
- (call sign)
- MAINTAINING FLIGHT LEVEL (number)

(iv) Broadcasts reporting a temporary flight level change to avoid an imminent collision risk should be in the following form:

- ALL STATIONS
- (call sign)
- LEAVING FLIGHT LEVEL (number) NOW FOR FLIGHT LEVEL (number)

followed as soon as practicable by:

- ALL STATIONS - (call sign) - RETURNING TO FLIGHT LEVEL (number) NOW

(5) Acknowledgement of the broadcasts

The broadcasts should not be acknowledged unless a potential collision risk is perceived.

(b) Related operating procedures

(1) Changes of cruising level

(i) Cruising level changes should not be made within the designated airspace, unless considered necessary by pilots to avoid traffic conflicts, for weather avoidance or for other valid operational reasons.

(ii) When cruising level changes are unavoidable, all available aircraft lighting which would improve the visual detection of the aircraft should be displayed while changing levels.

(2) Collision avoidance

If, on receipt of a traffic information broadcast from another aircraft, a pilot decides that immediate action is necessary to avoid an imminent collision risk, and this cannot be achieved in accordance with the right-of-way, the pilot should:

(i) unless an alternative manoeuvre appears more appropriate, immediately descend 150 m (500 ft), or 300 m (1 000 ft) if above FL 290 in an area where a vertical separation minimum of 600 m (2 000 ft) is applied;

(ii) display all available aircraft lighting which would improve the visual detection of the aircraft;

(iii) as soon as possible, reply to the broadcast advising action being taken;

(iv) notify the action taken on the appropriate ATS frequency; and

(v) as soon as practicable, resume normal flight level, notifying the action on the appropriate ATS frequency.

(3) Normal position reporting procedures

Normal position reporting procedures should be continued at all times, regardless of any action taken to initiate or acknowledge a traffic information broadcast.

APPENDIX 7 SIGNAL FOR USE IN THE EVENT OF INTERCEPTION

(a) Signals initiated by intercepting aircraft and responses by intercepted aircraft

Series	***INTERCEPTING Aircraft Signals***	***Meaning***	***INTERCEPTED Aircraft Responds***	***Meaning***
1	DAY or NIGHT — Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading. *Note 1.— Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.* *Note 2.— If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race- track patterns and to rock the aircraft each time it passes the intercepted aircraft.*	You have been intercepted. Follow me.	DAY or NIGHT — Rocking aircraft, flashing navigational lights at irregular intervals and following. *Note.— Additional action required to be taken by intercepted aircraft is prescribed in Chapter 3, 3.8.*	Understood, will comply.
2	DAY or NIGHT — An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	DAY or NIGHT — Rocking the aircraft	Understood, will comply.
3	DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.	Land at this aerodrome.	DAY or NIGHT — Lowering landing gear, (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing area, landing is considered safe, proceeding to land.	Understood, will comply.
4	DAY or NIGHT — Raising landing gear (if fitted) and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300 m (1 000 ft) but not exceeding 600 m (2 000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft) but not exceeding 100 m (330 ft)) above the aerodrome level, and continuing to circle runway in use or helicopter landing area.	Aerodrome you have designated is inadequate.	DAY or NIGHT — If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals	Understood, follow me. Understood, you may proceed

Series	*INTERCEPTING Aircraft Signals*	*Meaning*	*INTERCEPTED Aircraft Responds*	*Meaning*
	If unable to flash landing lights, flash any other lights available.		prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	
5	DAY or NIGHT — Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	DAY or NIGHT — Irregular flashing of all available lights.	In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.

APPENDIX 8 - PHRASES AND PRONUNCIATIONS DURING INTERCEPTION

If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table APP8-1 and transmitting each phrase twice:

Table APP8-1

Phrases for use by INTERCEPTING aircraft			*Phrases for use by INTERCEPTED aircraft*		
Phrase	*Pronunciation*[1]	*Meaning*	*Phrase*	*Pronunciation*[1]	*Meaning*
CALL SIGN FOLLOW	KOL SA-IN FOL-LO	What is your call sign? Follow me	CALL SIGN (call sign)[2]	KOL SA-IN (call sign)	My call sign is (call sign)
DESCEND	DEE-SEND	Descend for landing	WILCO Will comply	VILL-KO	Understood
YOU LAND	YOU LAAND	Land at this aerodrome	CAN NOT	KANN NOTT	Unable to comply
PROCEED	PRO-SEED	You may proceed	REPEAT	REE-PEET	Repeat your instruction
			AM LOST	AM LOSST	Position unknown
			MAYDAY	MAYDAY	I am in distress
			HIJACK[3]	HI-JACK	I have been hijacked
			LAND (place name)	LAAND (place name)	I request to land at (place name)
			DESCEND	DEE-SEND	I require descent

1. *In the second column, syllables to be emphasized are underlined.*

2. *The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.*

3. *Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".*

APPENDIX 9 TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

(a) REPORTING INSTRUCTIONS

MODEL AIREP SPECIAL

	ITEM	PARAMETER	TRANSMIT IN TELEPHONY as appropriate
	-	Message-type designator – special air-report	[AIREP] SPECIAL
Section 1	1	Aircraft identification	(aircraft identification)
	2	Position	POSITION (latitude and longitude) OVER (significant point) ABEAM (significant point) (significant point) (bearing) (distance)
	3	Time	(time)
		Level	FLIGHT LEVEL (number) or (number) METERS or FEET CLIMBING TO FLIGHT LEVEL (number) or (number) METERS or FEET DESCENDING TO FLIGHT LEVEL (number) or (number) METERS or FEET
	5	Next position and estimated time over	(position) (time)
	6	Ensuing significant point	(position) NEXT
Section 2	7	Estimated time of arrival	(aerodrome) (time)
	8	Endurance	ENDURANCE (hours and minutes)
Section 3	9	Phenomenon encountered or observed prompting a special air-report	
		- Moderate turbulence	TURBULENCE MODERATE
		- Severe turbulence	TURBULENCE SEVERE
		- Moderate icing	ICING MODERATE
		- Severe icing	ICING SEVERE
		- Severe mountain wave	MOUNTAIN WAVE SEVERE
		- Thunderstorms without hail	THUNDERSTORMS
		- Thunderstorms with hail	THUNDERSTORMS WITH HAIL
		- Heavy dust/sandstorm	DUSTSTORM or SANDSTORM HEAVY
		- Volcanic ash cloud	VOLCANIC ASH CLOUD
		- Pre- eruption volcanic activity or volcanic eruption	PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION
		Runway braking action	GOOD
		- Good	GOOD TO MEDIUM
		- Good to medium	MEDIUM
		- Medium	MEDIUM TO POOR
		- Medium to poor	POOR
		- Poor	LESS THAN POOR
		- Less than poor	

(1) CONTENTS OF AIR-REPORTS

(i) Position reports and special air-reports

(A) Section 1 of the model set out in point A is obligatory for position reports and special air-reports, although Items 5 and 6 thereof may be omitted. Section 2 shall be added, in whole or in part, only when so requested by the operator or its designated representative, or when deemed necessary by the pilot-in-command. Section 3 shall be included in special air-reports.

(B) Condition prompting the issuance of a special air-report are to be selected from the list presented in point TCAR ANS Part - ROA.12005(a).

(C) In the case of special air-reports containing information on volcanic activity, a post-flight report shall be made using the volcanic activity reporting form (Model VAR) set out in point B. All elements which are observed shall be recorded and indicated respectively in the appropriate places on the form Model VAR.

(D) Special air-reports shall be issued as soon as practicable after a phenomenon calling for a special air-report has been observed.

(2) DETAILED REPORTING INSTRUCTIONS

(i) Items of an air-report shall be reported in the order in which they are listed in the model AIREP SPECIAL form.

– MESSAGE TYPE DESIGNATOR. Report “SPECIAL” for a special air-report.

Section 1

Item 1 – AIRCRAFT IDENTIFICATION. Report the aircraft radiotelephony call sign as prescribed in point SERA.14050.

Item 2 – POSITION. Report position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed by “North” or “South”) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics followed by “East” or “West”), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles from the point. Precede significant point with “ABEAM”, if applicable.

Item 3 – TIME. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) is

prescribed on the basis of regional air navigation agreements. The time reported must be the actual time of the aircraft at the position and not the time of origination or transmission of the report. Time shall always be reported in hours and minutes UTC when issuing a special air-report.

Item 4 – FLIGHT LEVEL OR ALTITUDE. Report flight level by 3 numerics when on standard pressure altimeter setting. Report altitude in metres followed by “METRES” or in feet followed by “FEET” when on QNH. Report “CLIMBING” (followed by the level) when climbing or “DESCENDING” (followed by the level) when descending to a new level after passing the significant point.

Item 5 – NEXT POSITION AND ESTIMATED TIME OVER. Report the next reporting point and the estimated time over such reporting point, or report the estimated position that will be reached one hour later, according to the position reporting procedures in force. Use the data conventions specified in Item 2 for position. Report the estimated time over this position. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) as prescribed by regional air navigation agreements.

Item 6 – ENSUING SIGNIFICANT POINT. Report the ensuing significant point following the “next position and estimated time over”

Section 2

Item 7 – ESTIMATED TIME OF ARRIVAL. Report the name of the aerodrome of the first intended
landing, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC
(4 numerics).

Item 8 – ENDURANCE. Report “ENDURANCE” followed by fuel/energy endurance in hours and
minutes (4 numerics).

Section 3

Item 9 – PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Report one of the following phenomena encountered or observed:

— Moderate turbulence as “TURBULENCE MODERATE”
Severe turbulence as “TURBULENCE SEVERE”
The following specifications apply:

- Moderate – Conditions in which moderate changes in aircraft attitude and/or altitude may occur but the aircraft remains in positive control at all times. Usually, small variations in airspeed. Changes in accelerometer readings of 0.5 g to 1.0 g at the aircraft’s centre of gravity. Difficulty in walking. Occupants feel strain against seat belts. Loose objects move about.
- Severe – Conditions in which abrupt changes in aircraft attitude and/or altitude occur; aircraft may be out of control for short periods. Usually, large variations in airspeed. Changes in accelerometer readings greater than 1,0 g at the aircraft’s centre of gravity. Occupants are forced violently against seat belts. Loose objects are tossed about.

— Moderate icing as “ICING MODERATE”
Severe icing as “ICING SEVERE”
The following specifications apply:

- Moderate – Conditions in which change of heading and/or altitude may be considered desirable.
- Severe – Conditions in which immediate change of heading and/or altitude is considered essential.

— Severe mountain wave as “MOUNTAIN WAVE SEVERE”
The following specification applies:

- Severe – Conditions in which the accompanying downdraft is 3.0 m/s (600 ft/min) or more and/or severe turbulence is encountered.

— Thunderstorm without hail as “THUNDERSTORM”
Thunderstorm with hail as “THUNDERSTORM WITH HAIL”
The following specification applies:
Only report those thunderstorms which are:

- obscured in haze, or
- embedded in cloud, or
- widespread, or
- forming a squall line.

- Heavy duststorm or sandstorm as “DUSTSTORM HEAVY” or “SANDSTORM HEAVY”
- Volcanic ash cloud as “VOLCANIC ASH CLOUD”
- Pre-eruption volcanic activity or a volcanic eruption as “PREERUPTION VOLCANIC ACTIVITY” or “VOLCANIC ERUPTION”

  The following specification applies:

  “Pre-eruption volcanic activity” in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

- Good braking action as “BRAKING ACTION GOOD”
- Good to medium braking action as “BRAKING ACTION GOOD TO MEDIUM”
- Medium braking action as “BRAKING ACTION MEDIUM”
- Medium to poor braking action as “BRAKING ACTION MEDIUM TO POOR”
- Poor braking action as “BRAKING ACTION POOR”
- Less than poor braking action as “BRAKING ACTION LESS THAN POOR”

  The following specifications apply:

  - Good – Braking deceleration is normal for the wheel braking effort applied, and directional control is normal.
  - Good to medium – Braking deceleration or directional control is between good and medium.
  - Medium – Braking deceleration is noticeably reduced for the wheel braking effort applied, or directional control is noticeably reduced.
  - Medium to poor – Braking deceleration or directional control is between medium and poor.
  - Poor – Braking deceleration is significantly reduced for the wheel braking effort applied, or directional control is significantly reduced.
  - Less than poor – Braking deceleration is minimal to non-existent for the wheel braking effort applied, or directional control is uncertain

(ii) Information recorded on the volcanic activity reporting form (Model VAR) is not for transmission by RTF but, on arrival at an aerodrome, is to be delivered without delay by the operator or a flight crew member to the aerodrome meteorological office. If such an office is not easily accessible, the completed form shall be delivered in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

(3) FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

When receiving special air-reports, ATS units shall forward these air-reports without delay to the associated meteorological watch office (MWO). In order to ensure assimilation of air reports in ground-based automated systems, the elements of such reports shall be transmitted using the data conventions specified below and in the order prescribed.

- ADDRESSEE. Record the station called and, when necessary, relay required.
- MESSAGE TYPE DESIGNATOR. Record “ARS” for a special air-report.
- AIRCRAFT IDENTIFICATION. Record the aircraft identification using the data convention specified for Item 7 of the flight plan, without a space between the operator’s designator and the aircraft registration or flight identification, if used

Section 1

Item 0 – POSITION. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed, without a space, by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles (3 numerics) from the point. Precede significant point with “ABEAM”, if applicable

Item 1 – TIME. Record time in hours and minutes UTC (4 numerics).

Item 2 – FLIGHT LEVEL OR ALTITUDE. Record “F” followed by 3 numerics (e.g. “F310”) when a flight level is reported. Record altitude in metres followed by “M” or in feet followed by “FT” when an altitude is reported. Record “ASC” (level) when climbing or “DES” (level) when descending.

Section 3

Item 9 – PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

- moderate turbulence as “TURB MOD”,
- severe turbulence as “TURB SEV”,
- moderate icing as “ICE MOD”,
- severe icing as “ICE SEV”,
- severe mountain wave as “MTW SEV”,
- thunderstorm without hail as “TS”,
- thunderstorm with hail as “TSGR”,
- heavy sandstorm as “HVY SS”,
- heavy duststorm as “HVY DS”,
- volcanic ash cloud as “VA CLD”,
- pre-eruption volcanic activity or a volcanic eruption as “VA”, — hail as “GR”,
- cumulonimbus clouds as “CB”.

TIME TRANSMITTED. Record only when Section 3 is transmitted.

(4) SPECIFIC PROVISIONS RELATED TO REPORTING WIND SHEAR AND VOLCANIC ASH

(i) Reporting of wind shear

(A) When reporting aircraft observations of wind shear encountered during the climb out and approach phases of flight, the aircraft type shall be included.

(B) Where windshear conditions in the climb-out or approach phases of flight were reported or forecast but not encountered, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable unless the pilot-in command is aware that the appropriate air traffic services unit has already been so advised by a preceding aircraft.

(ii) Post-flight reporting of volcanic activity

(A) On arrival of a flight at an aerodrome, the completed report of volcanic activity shall be delivered by the aircraft operator or a flight crew member, without delay, to the aerodrome meteorological office, or if such office is not easily accessible to arriving flight crew members, the completed form shall be dealt with in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

(B) The completed report of volcanic activity received by an aerodrome meteorological office shall be transmitted without delay to the meteorological watch office responsible for the provision of meteorological watch for the flight information region in which the volcanic activity was observed.

(b) SPECIAL AIR-REPORT OF VOLCANIC ACTIVITY FORM (MODEL VAR)

MODEL VAR : to be used for post-flight reporting

VOLCANIC ACTIVITY REPORT

Air-reports are critically important in assessing the hazards which volcanic ash cloud presents to aircraft operations.

OPERATOR:			A/C IDENTIFICATION: (as indicated on flight plan)		
PILOT-IN-COMMAND:					
DEP FROM:	DATE:	TIME; UTC:	ARR AT:	DATE:	TIME; UTC:
ADDRESSEE			AIREP SPECIAL		
Items 1–8 are to be reported immediately to the ATS unit that you are in contact with.					
1) AIRCRAFT IDENTIFICATION			2) POSITION		
3) TIME			4) FLIGHT LEVEL OR ALTITUDE		
5) VOLCANIC ACTIVITY OBSERVED AT (position or bearing, estimated level of ash cloud and distance from aircraft)					
6) AIR TEMPERATURE			7) SPOT WIND		
8) SUPPLEMENTARY INFORMATION SO_2 detected Yes ☐ No ☐ Ash encountered Yes ☐ No ☐			Other _____ (Brief description of activity especially vertical and lateral extent of ash cloud and, where possible, horizontal movement, rate of growth, etc.)		
After landing complete items 9–16 then fax form to: (Fax number to be provided by the meteorological authority based on local arrangements between the meteorological authority and the operator concerned.)					
9) DENSITY OF ASH CLOUD	☐ (a) Wispy		☐ (b) Moderate dense		☐ (c) Very dense
10) COLOUR OF ASH CLOUD	☐ (a) White		☐ (b) Light grey		☐ (c) Dark grey
☐	(d) Black		☐ (e) Other _____		
11) ERUPTION	☐ (a) Continuous		☐ (b) Intermittent		☐ (c) Not visible
12) POSITION OF ACTIVITY	☐ (a) Summit		☐ (b) Side		☐ (c) Single
	☐ (d) Multiple		☐ (e) Not observed		
13) OTHER OBSERVED	☐ (a) Lightning		☐ (b) Glow		☐ (c) Large rocks
FEATURES OF ERUPTION	☐ (d) Ash fallout		☐ (e) Mushroom cloud		☐ (f) All
14) EFFECT ON AIRCRAFT	☐ (a) Communication		☐ (b) Navigation systems		☐ (c) Engines
	☐ (d) Pitot static		☐ (e) Windscreen		☐ (f) Windows
15) OTHER EFFECTS	☐ (a) Turbulence		☐ (b) St. Elmo's Fire		☐ (c) Other fumes
16) OTHER INFORMATION (Any information considered useful.)					

APPENDIX 10 STANDARD PHRASEOLOGIES

(a) COMMUNICATIONS PROCEDURES

The communications procedures shall be in accordance with Volume II of Annex 10 — *Aeronautical Telecommunications*, and pilots, ATS personnel and other ground personnel shall be thoroughly familiar with the radiotelephony procedures contained therein.

(b) GENERAL

Note.— Requirements for readback of clearances and safety-related information are provided in Doc 4444, Chapter 4, 4.5.7.5.

(1) Most phraseologies contained in Section (c) of this Chapter show the text of a complete message without call signs. They are not intended to be exhaustive, and when circumstances differ, pilots, ATS personnel and other ground personnel will be expected to use plain language, which should be as clear and concise as possible, to the level specified in the ICAO language proficiency requirements contained in Annex 1 — Personnel Licensing, in order to avoid possible confusion by those persons using a language other than one of their national languages.

(2) The phraseologies are grouped according to types of air traffic service for convenience of reference. However, users shall be familiar with, and use as necessary, phraseologies from groups other than those referring specifically to the type of air traffic service being provided. All phraseologies shall be used in conjunction with call signs (aircraft, ground vehicle, ATC or other) as appropriate. In order that the phraseologies listed should be readily discernible in Section (c), call signs have been omitted. Provisions for the compilation of RTF messages, call signs and procedures are contained in Annex 10, Volume II, Chapter 5.

(3) Section (c) includes phrases for use by pilots, ATS personnel and other ground personnel.

(4) During operations in or vertical transit through reduced vertical separation minimum (RVSM) airspace with aircraft not approved for RVSM operations, pilots shall report non-approved status in accordance with REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS as follows:

(i) at initial call on any channel within RVSM airspace;

(ii) in all requests for level changes; and
(iii) in all readbacks of level clearances.

(5) Air traffic controllers shall explicitly acknowledge receipt of messages from aircraft reporting RVSM non-approved status.

(6) Phraseologies for the movement of vehicles on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word “PROCEED” shall be substituted for the word “TAXI” when communicating with vehicles.

(7) Conditional phrases, such as “behind landing aircraft” or “after departing aircraft”, shall not be used for movements affecting the active runway(s), except when the aircraft or vehicles concerned are seen by the appropriate controller and pilot. The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/vehicle to pass in front of the other aircraft concerned. In all cases a conditional clearance shall be given in the following order and consist of:
(i) identification;
(ii) the condition;
(iii) the clearance; and
(iv) brief reiteration of the condition,

For example:

“SAS 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND”.

Note.— This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.

(8) The phraseology in Section (c) does not include phrases and regular radiotelephony procedure words contained in Annex 10, Volume II.

(9) Words in parentheses indicate that specific information, such as a level, a place or a time, etc., must be inserted to complete the phrase, or alternatively that optional phrases may be used. Words in square parentheses indicate optional additional words or information that may be necessary in specific instances.

(10) Examples of the application of the phraseologies may be found in the Manual of Radiotelephony (Doc 9432).

(c) ATC PHRASEOLOGIES

(1) General

	Circumstances	Phraseologies
Description of levels (SUBSEQUENTLY REFERRED TO AS "(LEVEL)")		(a) FLIGHT LEVEL (number); or (b) (number) METRES; or *(c)* (number) FEET.
LEVEL CHANGES, REPORTS AND RATES		(a) CLIMB (or DESCEND); *followed as necessary by:* (1) TO (level);
	... instruction that a climb (or descent) to a level within the vertical range defined is to commence	(2) TO AND MAINTAIN BLOCK (level) TO (level); (3) TO REACH (level) AT (or BY) (time or significant point); (4) REPORT LEAVING (or REACHING, or PASSING) (level); (5) AT (number) METRES PER SECOND (or FEET PER MINUTE) [OR GREATER (or OR LESS)];
	... for SST aircraft only	(6) REPORT STARTING ACCELERATION (or DECELERATION). (b) MAINTAIN AT LEAST (number) METRES (or FEET) ABOVE (or BELOW) (aircraft call sign); (c) REQUEST LEVEL (or FLIGHT LEVEL or ALTITUDE) CHANGE FROM (name of unit) [AT (time or significant point)]; (d) STOP CLIMB (or DESCENT) AT (level); (e) CONTINUE CLIMB (or DESCENT) TO (level); (f) EXPEDITE CLIMB (or DESCENT) [UNTIL PASSING (level)]; (g) WHEN READY CLIMB (or DESCEND) TO (level); (h) EXPECT CLIMB (or DESCENT) AT (time or significant point); (i) *REQUEST DESCENT AT (time);
	... to require action at a specific time or place	(j) IMMEDIATELY; (k) AFTER PASSING (significant point); (l) AT (time or significant point);
	... to require action when convenient	(m) WHEN READY (instruction);

	Circumstances	Phraseologies
	... to require an aircraft to climb or descend maintaining own separation and VMC	(n) MAINTAIN OWN SEPARATION AND VMC [FROM (level)] [TO (level)]; (o) MAINTAIN OWN SEPARATION AND VMC ABOVE (or BELOW, or TO) (level);
	... when there is doubt that an aircraft can comply with a clearance or instruction	(p) IF UNABLE (alternative instructions) AND ADVISE;
	... when a pilot is unable to comply with a clearance or instruction	(q) *UNABLE;
	... after a flight crew starts to deviate from any ATC clearance or instruction to comply with an ACAS resolution advisory (RA) (Pilot and controller interchange)	(r) *TCAS RA; (s) ROGER;
	... after the response to an ACAS RA is completed and a return to the ATC clearance or instruction is initiated (Pilot and controller Interchange)	(t) *CLEAR OF CONFLICT, RETURNING TO (assigned clearance); (u) ROGER (or alternative instructions);
	... when there is doubt that an aircraft can comply with a clearance or instruction	(v) *CLEAR OF CONFLICT (assigned clearance) RESUMED; (w) ROGER (or alternative instructions);
	… after an ATC clearance or instruction contradictory to the ACAS RA is received, the flight crew will follow the RA and inform ATC directly (Pilot and controller interchange)	(x) *UNABLE, TCAS RA; (y) ROGER;

	Circumstances	Phraseologies
	... clearance to climb on a SID which has published level and/or speed restrictions, where the pilot is to climb to the cleared level and comply with published level restrictions, follow the lateral profile of the SID and comply with published speed restrictions or ATC issued speed control instructions as applicable.	(z) CLIMB VIA SID TO (level).
	... clearance to cancel level restriction(s) of the vertical profile of a SID during climb	(aa) [CLIMB VIA SID TO (level)], CANCEL LEVEL RESTRICTION(S);
	... clearance to cancel specific level restriction(s) of the vertical profile of a SID during climb	(bb) [CLIMB VIA SID TO (level)], CANCEL LEVEL RESTRICTION(S) AT (point(s));
	... clearance to cancel speed restrictions of a SID during climb	(cc) [CLIMB VIA SID TO (level)], CANCEL SPEED RESTRICTION(S);
	... clearance to cancel specific speed restrictions of a SID during climb	(dd) [CLIMB VIA SID TO (level)], CANCEL SPEED RESTRICTION(S) AT (point(s));
	…clearance to climb and to cancel speed and level restrictions of a SID	(ee) CLIMB UNRESTRICTED TO (level) (or) CLIMB TO (level), CANCEL LEVEL AND SPEED RESTRICTIONS;
	... clearance to descend on a STAR which has published level and/or speed restrictions, where the pilot is to descend to the cleared level and comply with published level restrictions,	(ff) DESCEND VIA STAR TO (level);

	Circumstances	Phraseologies
	follow the lateral profile of the STAR and comply with published speed restrictions or ATC issued speed control instructions	
	... clearance to cancel level restrictions of a STAR during descent	(gg) [DESCEND VIA STAR TO (level)], CANCEL LEVEL RESTRICTION(S);
	... clearance to cancel specific level restrictions of a STAR during descent	(hh) [DESCEND VIA STAR TO (level)], CANCEL LEVEL RESTRICTION(S) AT (point(s));
	... clearance to cancel speed restrictions of a STAR during descent	(ii) [DESCEND VIA STAR TO (level)], CANCEL SPEED RESTRICTION(S);
	... clearance to cancel specific speed restrictions of a STAR during descent	(jj) [DESCEND VIA STAR TO (level)], CANCEL SPEED RESTRICTION(S) AT (point(s));
	... clearance to descend and to cancel speed and level restrictions of a STAR	(kk) DESCEND UNRESTRICTED TO (level) or DESCEND TO * Denotes pilot transmission.
MINIMUM FUEL	*... indication of minimum fuel*	(a) MINIMUM FUEL; (b) ROGER [NO DELAY EXPECTED or EXPECT (delay information)]. * Denotes pilot transmission.

	Circumstances	Phraseologies
TRANSFER OF CONTROL AND/OR FREQUENCY CHANGE	*Note.— An aircraft may be requested to "STAND BY" on a frequency when it is intended that the ATS unit will initiate communications soon and to "MONITOR" a frequency when information is being broadcast thereon.*	(a) CONTACT (unit call sign) (frequency) [NOW]; (b) AT (or OVER) (time or place) [or WHEN] [PASSING/LEAVING/REACHING (level)] CONTACT (unit call sign) (frequency); (c) IF NO CONTACT (instructions); (d) STAND BY FOR (unit call sign) (frequency); (e) *REQUEST CHANGE TO (frequency); (f) FREQUENCY CHANGE APPROVED; (g) MONITOR (unit call sign) (frequency); (h) *MONITORING (frequency); (i) WHEN READY CONTACT (unit call sign) (frequency); (j) REMAIN THIS FREQUENCY. * Denotes pilot transmission.
8.33 KHZ CHANNEL SPACING	*Note.— In this paragraph, the term "point" is used only in the context of naming the 8.33 kHz channel spacing concept and does not constitute any change to existing ICAO provisions or phraseology regarding the use of the term "decimal".*	
	... to request confirmation of 8.33 kHz capability	(a) CONFIRM EIGHT POINT THREE THREE;
	... to indicate 8.33 kHz capability	(b) *AFFIRM EIGHT POINT THREE THREE;
	... to indicate lack of 8.33 kHz capability	(c) *AFFIRM EIGHT POINT THREE THREE;
	... to request UHF capability	(d) CONFIRM UHF;
	... to indicate UHF capability	(e) *AFFIRM UHF;
	... to indicate lack of UHF capability	(f) *NEGATIVE UHF;
	... to request status in respect of 8.33 kHz exemption	(g) CONFIRM EIGHT POINT THREE THREE EXEMPTED;

	Circumstances	Phraseologies
	... to indicate 8.33 kHz exempted status	(h) *AFFIRM EIGHT POINT THREE THREE EXEMPTED;
	... to indicate 8.33 kHz non-exempted status	(i) *NEGATIVE EIGHT POINT THREE THREE EXEMPTED;
	... to indicate that a certain clearance is given because otherwise a non-equipped and/or non-exempted aircraft would enter airspace of mandatory carriage	(j) DUE EIGHT POINT THREE THREE REQUIREMENT. * Denotes pilot transmission.
CHANGE OF CALL SIGN	*... to instruct an aircraft to change its type of call sign*	(a) CHANGE YOUR CALL SIGN TO (new call sign) [UNTIL FURTHER ADVISED];
	... to advise an aircraft to revert to the call sign indicated in the flight plan	(b) REVERT TO FLIGHT PLAN CALL SIGN (call sign) [AT (significant point)].
TRAFFIC INFORMATION	*... to pass traffic information*	(a) TRAFFIC (information); (b) NO REPORTED TRAFFIC;
	... to acknowledge traffic information	(c) *LOOKING OUT; (d) *TRAFFIC IN SIGHT; (e) *NEGATIVE CONTACT [reasons]; (f) [ADDITIONAL] TRAFFIC (direction) BOUND (type of aircraft) (level) ESTIMATED (or OVER) (significant point) AT (time); (g) TRAFFIC IS (classification) UNMANNED FREE BALLOON(S) WAS [or ESTIMATED] OVER (place) AT (time) REPORTED (level(s)) [or LEVEL UNKNOWN] MOVING (direction) (other pertinent information, if any). * Denotes pilot transmission.
METEOROLOGICAL CONDITIONS		(a) [SURFACE] WIND (number) DEGREES (speed) (units); (b) WIND AT (level) (number) DEGREES (number) KILOMETRES PER HOUR (or KNOTS); Note.— Wind is always expressed by giving the mean direction and speed and any significant variations thereof.

	Circumstances	Phraseologies
		(c) VISIBILITY (distance) (units) [direction]; (d) RUNWAY VISUAL RANGE (or RVR) [RUNWAY (number)] (distance) (units); (e) RUNWAY VISUAL RANGE (or RVR) RUNWAY (number) NOT AVAILABLE (or NOT REPORTED);
	... for multiple RVR observations	(f) RUNWAY VISUAL RANGE (or RVR) [RUNWAY (number)] (first position) (distance) (units), (second position) (distance) (units), (third position) (distance) (units); Note 1.— Multiple RVR observations are always representative of the touchdown zone, midpoint zone and the roll-out/stop end zone, respectively. Note 2.— Where reports for three locations are given, the indication of these locations may be omitted, provided that the reports are passed in the order of touchdown zone, followed by the midpoint zone and ending with the roll-out/stop end zone report.
	... in the event that RVR information on any one position is not available this information will be included in the appropriate sequence	(g) RUNWAY VISUAL RANGE (or RVR) [RUNWAY (number)] (first position) (distance) (units), (second position) NOT AVAILABLE, (third position) (distance) (units); (h) PRESENT WEATHER (details); (i) CLOUD (amount, [(type)] and height of base) (units) (or SKY CLEAR); Note.— Details of the means to describe the amount and type of cloud are in Doc 4444, Chapter 11, 11.4.3.2.3. (j) CAVOK; Note.— CAVOK pronounced CAV-O-KAY. (k) TEMPERATURE [MINUS] (number) (and/or DEWPOINT [MINUS] (number)); (l) QNH (number) [units]; (m) QFE (number) [(units)]; (n) (aircraft type) REPORTED (description) ICING (or TURBULENCE) [IN CLOUD] (area) (time); (o) REPORT FLIGHT CONDITIONS.

	Circumstances	Phraseologies
POSITION REPORTING		(a) NEXT REPORT AT (significant point);
	... to omit position reports until a specified position	(b) OMIT POSITION REPORTS [UNTIL (specify)]; (c) RESUME POSITION REPORTING.
ADDITIONAL REPORTS		(a) REPORT PASSING (significant point);
	... to request a report at a specified place or distance	(b) REPORT (distance) MILES (GNSS or DME) FROM (name of DME station) (or significant point);
	... to report at a specified place or distance	(c) *(distance) MILES (GNSS or DME) FROM (name of DME station) (or significant point); (d) REPORT PASSING (three digits) RADIAL (name of VOR) VOR;
	... to request a report of present position	(e) REPORT (GNSS or DME) DISTANCE FROM (significant point) or (name of DME station);
	… to report present position	(f) *(distance) MILES (GNSS or DME) FROM (name of DME station) (or significant point). * Denotes pilot transmission.
AERODROME INFORMATION (Applicable until 3 November 2021)		(a) [(location)] RUNWAY SURFACE CONDITION RUNWAY (number) (condition); (b) [(location)] RUNWAY SURFACE CONDITION RUNWAY (number) NOT CURRENT; (c) LANDING SURFACE (condition); (d) CAUTION CONSTRUCTION WORK (location); (e) CAUTION (specify reasons) RIGHT (or LEFT), (or BOTH SIDES) OF RUNWAY [number]; (f) CAUTION WORK IN PROGRESS (or OBSTRUCTION) (position and any necessary advice); (g) RUNWAY REPORT AT (observation time) RUNWAY (number) (type of precipitant) UP TO (depth of deposit) MILLIMETRES. ESTIMATED SURFACE FRICTION GOOD (or MEDIUM TO GOOD, or MEDIUM, or MEDIUM TO POOR, or POOR;

	Circumstances	Phraseologies
		(h) BRAKING ACTION REPORTED BY (aircraft type) AT (time) GOOD (or MEDIUM to GOOD, or MEDIUM, or MEDIUM to POOR, or POOR); (i) RUNWAY (or TAXIWAY) (number) WET [or STANDING WATER, or SNOW REMOVED (length and width as applicable), or TREATED, or COVERED WITH PATCHES OF DRY SNOW (or WET SNOW, or COMPACTED SNOW, or SLUSH, or FROZEN SLUSH, or ICE, or WET ICE, or ICE UNDERNEATH, or ICE AND SNOW, or SNOWDRIFTS, or FROZEN RUTS AND RIDGES)]; (j) TOWER OBSERVES (weather information); (k) PILOT REPORTS (weather information).
AERODROME INFORMATION (Applicable as of 4 November 2021) Note 1.— See 11.4.3.4.3 for requirements for passing runway condition reports (RCRs) to pilots. Note 2.— This information is provided for runway thirds or the full runway, as applicable.		(a) [(location)] RUNWAY (number) SURFACE CONDITION [CODE (three digit number)] followed as necessary by: (1) ISSUED AT (date and time UTC); (2) DRY, or WET ICE, or WATER ON TOP OF COMPACTED SNOW, or DRY SNOW, or DRY SNOW ON TOP OF ICE, or WET SNOW ON TOP OF ICE, or ICE, or SLUSH, or STANDING WATER, or COMPACTED SNOW, or WET SNOW, or DRY SNOW ON TOP OF COMPACTED SNOW, or WET SNOW ON TOP OF COMPACTED SNOW, or WET, or FROST; (3) DEPTH ((depth of deposit) MILLIMETRES or NOT REPORTED); (4) COVERAGE ((number) PER CENT or NOT REPORTED); (5) ESTIMATED SURFACE FRICTION (GOOD, or GOOD TO MEDIUM, or MEDIUM, or MEDIUM TO POOR, or POOR, or LESS THAN POOR); (6) AVAILABLE WIDTH (number) METRES; (7) LENGTH REDUCED TO (number) METRES; (8) DRIFTING SNOW; (9) LOOSE SAND; (10) CHEMICALLY TREATED;

	Circumstances	Phraseologies
		(11) SNOWBANK (number) METRES [LEFT, or RIGHT, or LEFT AND RIGHT] [OF or FROM] CENTERLINE; (12) TAXIWAY (identification of taxiway) SNOWBANK (number) METRES [LEFT, or RIGHT, or LEFT AND RIGHT] [OF or FROM] CENTERLINE; (13) ADJACENT SNOWBANKS; (14) TAXIWAY (identification of taxiway) POOR; (15) APRON (identification of apron) POOR; (16) Plain language remarks; (b) [(location)] RUNWAY SURFACE CONDITION RUNWAY (number) NOT CURRENT; (c) LANDING SURFACE (condition); (d) CAUTION CONSTRUCTION WORK (location); (e) CAUTION (specify reasons) RIGHT (or LEFT), (or BOTH SIDES) OF RUNWAY [(number)]; (f) CAUTION WORK IN PROGRESS (or OBSTRUCTION) (position and any necessary advice); (g) BRAKING ACTION REPORTED BY (aircraft type) AT (time) GOOD (or GOOD TO MEDIUM, or MEDIUM, or MEDIUM TO POOR, or POOR); (h) TAXIWAY (identification of taxiway) WET [or STANDING WATER, or SNOW REMOVED (length and width as applicable), or CHEMICALLY TREATED, or COVERED WITH PATCHES OF DRY SNOW (or WET SNOW, or COMPACTED SNOW, or SLUSH, or FROZEN SLUSH, or ICE, or WET ICE, or ICE UNDERNEATH, or ICE AND SNOW, or SNOWDRIFTS, or FROZEN RUTS AND RIDGES or LOOSE SAND)]; (i) TOWER OBSERVES (weather information); (j) PILOT REPORTS (weather information).

	Circumstances	Phraseologies
REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	*... to ascertain RVSM approval status of an aircraft*	(a) CONFIRM RVSM APPROVED;
	... to report RVSM approved status	(b) AFFIRM RVSM;
	... to report RVSM non-approved status followed by supplementary information *Note.— See 12.2.4 and 12.2.5 for procedures relating to operations in RVSM airspace by aircraft with non-approved status.*	(c) *NEGATIVE RVSM [(supplementary information, e.g. State aircraft)];
	... to deny ATC clearance into RVSM airspace	(d) UNABLE ISSUE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [or DESCEND TO, or CLIMB TO] (level);
	... to report when severe turbulence affects the capability of an aircraft to maintain height-keeping requirements for RVSM	(e) *UNABLE RVSM DUE EQUIPMENT;
	... to report that the equipment of an aircraft has degraded below minimum aviation system performance standards	(f) *UNABLE RVSM DUE EQUIPMENT;
	...to request an aircraft to provide information as soon as RVSM-approved status has been regained or the pilot is ready to resume RVSM operations	(g) REPORT WHEN ABLE TO RESUME RVSM;

	Circumstances	Phraseologies
	... to request confirmation that an aircraft has regained RVSM-approved status or a pilot is ready to resume RVSM operations	(h) CONFIRM ABLE TO RESUME RVSM;
	... to report ability to resume RVSM operations after an equipment or weather-related contingency	(i) *READY TO RESUME RVSM. *Denotes pilot transmission.
GNSS SERVICE STATUS		(a) GNSS REPORTED UNRELIABLE (or GNSS MAY NOT BE AVAILABLE [DUE TO INTERFERENCE]); (1) IN THE VICINITY OF (location) (radius) [BETWEEN (levels)]; or (2) IN THE AREA OF (description) (or IN (name) FIR) [BETWEEN (levels)]; (b) BASIC GNSS (or SBAS, or GBAS) UNAVAILABLE FOR (specify operation) [FROM (time) TO (time) (or UNTIL FURTHER NOTICE)]; (c) *BASIC GNSS UNAVAILABLE [DUE TO (reason, e.g. LOSS OF RAIM or RAIM ALERT)]; (d) *GBAS (or SBAS) UNAVAILABLE; (e) CONFIRM GNSS NAVIGATION; and (f) *AFFIRM GNSS NAVIGATION. * Denotes pilot transmission.
DEGRADATION OF AIRCRAFT NAVIGATION PERFORMANCE		UNABLE RNP (specify type) (or RNAV) [DUE TO (reason, e.g. LOSS OF RAIM or RAIM ALERT)].

Area control services

	Circumstances	Phraseologies
ISSUANCE OF A CLEARANCE		(a) (name of unit) CLEARS (aircraft call sign); (b) (aircraft call sign) CLEARED TO; (c) RECLEARED (amended clearance details) [REST OF CLEARANCE UNCHANGED]; (d) RECLEARED (amended route portion) TO (significant point of original route) [REST OF CLEARANCE UNCHANGED]; (e) ENTER CONTROLLED AIRSPACE (or CONTROL ZONE) [VIA (significant point or route)] AT (level) [AT (time)]; (f) LEAVE CONTROLLED AIRSPACE (or CONTROL ZONE) [VIA (significant point or route)] AT (level) (or CLIMBING, or DESCENDING); *(g)* JOIN (specify) AT (significant point) AT (level) [AT (time)].
INDICATION OF ROUTE AND CLEARANCE LIMIT		(a) FROM (location) TO (location); (b) TO (location), followed as necessary by: (1) DIRECT; (2) VIA (route and/or significant points); (3) FLIGHT PLANNED ROUTE; Note.— Conditions associated with the use of this phrase are in Chapter 4, 4.5.7.2. (4) VIA (distance) DME ARC (direction) OF (name of DME station); (c) (route) NOT AVAILABLE DUE (reason) ALTERNATIVE[S] IS/ARE (routes) ADVISE.
MAINTENANCE OF SPECIFIED LEVELS		(a) MAINTAIN (level) [TO (significant point)]; (b) MAINTAIN (level) UNTIL PASSING (significant point); (c) MAINTAIN (level) UNTIL (minutes) AFTER PASSING(significant point); (d) MAINTAIN (level) UNTIL (time); (e) MAINTAIN (level) UNTIL ADVISED BY (name of unit); (f) MAINTAIN (level) UNTIL FURTHER ADVISED;

	Circumstances	Phraseologies
		(g) MAINTAIN (level) WHILE IN CONTROLLED AIRSPACE; (h) MAINTAIN BLOCK (level) TO (level). Note.— The term "MAINTAIN" is not to be used in lieu of "DESCEND" or "CLIMB" when instructing an aircraft to change level.
SPECIFICATION OF CRUISING LEVELS		(a) CROSS (significant point) AT (or ABOVE, or BELOW) (level); (b) CROSS (significant point) AT (time) OR LATER (or BEFORE) AT (level); (c) CRUISE CLIMB BETWEEN (levels) (or ABOVE (level)); (d) CROSS (distance) MILES, (GNSS or DME) [(direction)] OF (name of DME station) OR (distance) [(direction)] OF (significant point) AT (or ABOVE or BELOW) (level).
EMERGENCY DESCENT		(a) *EMERGENCY DESCENT (intentions); (b) ATTENTION ALL AIRCRAFT IN THE VICINITY OF [or AT] (significant point or location) EMERGENCY DESCENT IN PROGRESS FROM (level) (followed as necessary by specific instructions, clearances, traffic information, etc.). * Denotes pilot transmission.
IF CLEARANCE CANNOT BE ISSUED IMMEDIATELY UPON REQUEST		EXPECT CLEARANCE (or type of clearance) AT (time).
WHEN CLEARANCE FOR DEVIATION CANNOT BE ISSUED		UNABLE, TRAFFIC (direction) BOUND (type of aircraft) (level) ESTIMATED (or OVER) (significant point) AT (time) CALL SIGN (call sign) ADVISE INTENTIONS.
SEPARATION INSTRUCTIONS		(a) CROSS (significant point) AT (time) [OR LATER (or OR BEFORE)]; (b) ADVISE IF ABLE TO CROSS (significant point) AT (time or level); (c) MAINTAIN MACH (number) [OR GREATER (or OR LESS)] [UNTIL (significant point)]; (d) DO NOT EXCEED MACH (number).

	Circumstances	Phraseologies
	Note.— When used to apply a lateral VOR/GNSS separation confirmation of zero offset is required (see 5.4.1.2).	(e) CONFIRM ESTABLISHED ON THE TRACK BETWEEN (significant point) AND (significant point) [WITH ZERO OFFSET]; (f) *ESTABLISHED ON THE TRACK BETWEEN (significant point) AND (significant point) [WITH ZERO OFFSET]; (g) MAINTAIN TRACK BETWEEN (significant point) AND (significant point). REPORT ESTABLISHED ON THE TRACK; (h) *ESTABLISHED ON THE TRACK; (i) CONFIRM ZERO OFFSET; (j) *AFFIRM ZERO OFFSET. * Denotes pilot transmission.
INSTRUCTIONS ASSOCIATED WITH FLYING A TRACK (OFFSET), PARALLEL TO THE CLEARED ROUTE		(a) ADVISE IF ABLE TO PROCEED PARALLEL OFFSET; (b) PROCEED OFFSET (distance) RIGHT/LEFT OF (route) (track) [CENTER LINE] [AT (significant point or time)] [UNTIL (significant point or time)]; (c) CANCEL OFFSET (instructions to rejoin cleared flight route or other information).

(2) Approach control services

	Circumstances	Phraseologies
DEPARTURE INSTRUCTIONS		(a) [AFTER DEPARTURE] TURN RIGHT (or LEFT) HEADING (three digits) (or CONTINUE RUNWAY HEADING) (or TRACK EXTENDED CENTER LINE) TO (level or significant point) [(other instructions as required)]; (b) AFTER REACHING (or PASSING) (level or significant point) (instructions); (c) TURN RIGHT (or LEFT) HEADING (three digits) TO (level) [TO INTERCEPT (track, route, airway, etc.)]; (d) (standard departure name and number) DEPARTURE; (e) TRACK (three digits) DEGREES [MAGNETIC (or TRUE)] TO (or FROM) (significant point) UNTIL (time, or REACHING (fix or significant point or level)) [BEFORE PROCEEDING ON COURSE]; (f) CLEARED (designation) DEPARTURE; Note.— Conditions associated with the use of this phrase are in Chapter 4, 4.5.7.2.
	…clearance to proceed direct with advance notice of a future instruction to rejoin the SID	(g) CLEARED DIRECT (waypoint), CLIMB TO (level), EXPECT TO REJOIN SID [(SID designator)] [AT (waypoint)], then REJOIN SID [(SID designator)] [AT (waypoint)]; (h) CLEARED DIRECT (waypoint),CLIMB TO (level), then REJOIN SID (SID designator) AT (waypoint).
APPROACH INSTRUCTIONS		(a) CLEARED (designation) ARRIVAL; (b) CLEARED TO (clearance limit) (designation); (c) CLEARED (or PROCEED) (details of route to be followed);
	…clearance to proceed direct with advance notice of a future instruction to rejoin the STAR	(d) CLEARED DIRECT (waypoint), DESCEND TO (level), EXPECT TO REJOIN STAR [(STAR designator)] AT (waypoint), then

	Circumstances	Phraseologies
		REJOIN STAR [(STAR designator)] [AT (waypoint)]; (e) CLEARED DIRECT (waypoint), DESCEND TO (level), then REJOIN STAR (STAR designator) AT (waypoint); (f) CLEARED (type of approach) APPROACH [RUNWAY (number)]; (g) CLEARED (type of approach) RUNWAY (number) FOLLOWED BY CIRCLING TO RUNWAY (number); (h) CLEARED APPROACH [RUNWAY (number)]; (i) COMMENCE APPROACH AT (time); (j) *REQUEST STRAIGHT-IN [(type of approach)] APPROACH [RUNWAY (number)]; (k) CLEARED STRAIGHT-IN [(type of approach)] APPROACH [RUNWAY (number)]; (l) REPORT VISUAL; (m) REPORT RUNWAY [LIGHTS] IN SIGHT;
	… when a pilot requests a visual approach	(n) * REQUEST VISUAL APPROACH; (o) CLEARED VISUAL APPROACH RUNWAY (number);
	… to request if a pilot is able to accept a visual approach *Note.—See 6.5.3 for provisions relating to visual approach procedures.*	(p) ADVISE ABLE TO ACCEPT VISUAL APPROACH RUNWAY (number);
	… in case of successive visual approaches when the pilot of a succeeding aircraft has reported having the preceding aircraft in sight	(q) CLEARED VISUAL APPROACH RUNWAY (number), MAINTAIN OWN SEPARATION FROM PRECEDING (aircraft type and wake turbulence category as appropriate) [CAUTION WAKE TURBULENCE]; (r) REPORT (significant point); [OUTBOUND, or INBOUND]; (s) REPORT COMMENCING PROCEDURE TURN; (t) *REQUEST VMC DESCENT; (u) MAINTAIN OWN SEPARATION; (v) MAINTAIN VMC;

	Circumstances	Phraseologies
		(w) ARE YOU FAMILIAR WITH (name) APPROACH PROCEDURE; (x) *REQUEST (type of approach) APPROACH [RUNWAY (number)]; * Denotes pilot transmission.
HOLDING CLEARANCES	*... visual*	(a) HOLD VISUAL [OVER] (position), (or BETWEEN (two prominent landmarks));
	... published holding procedure over a facility or fix	(b) CLEARED (or PROCEED) TO (significant point, name of facility or fix) [MAINTAIN (or CLIMB or DESCEND TO) (level)] HOLD [(direction)] AS PUBLISHED EXPECT APPROACH CLEARANCE (or FURTHER CLEARANCE) AT (time); (c) *REQUEST HOLDING INSTRUCTIONS;
	... when a detailed holding clearance is required	(d) CLEARED (or PROCEED) TO (significant point, name of facility or fix) [MAINTAIN (or CLIMB or DESCEND TO) (level)] HOLD [(direction)] [(specified) RADIAL, COURSE, INBOUND TRACK (three digits) DEGREES] [RIGHT (or LEFT) HAND PATTERN] [OUTBOUND TIME (number) MINUTES] EXPECT APPROACH CLEARANCE (or FURTHER CLEARANCE) AT (time) (additional instructions, if necessary); (e) CLEARED TO THE (three digits) RADIAL OF THE (name) VOR AT (distance) DME FIX [MAINTAIN (or CLIMB or DESCEND TO) (level)] HOLD [(direction)] [RIGHT (or LEFT) HAND PATTERN] [OUTBOUND TIME (number) MINUTES] EXPECT APPROACH CLEARANCE (or FURTHER CLEARANCE) AT (time) (additional instructions, if necessary); (f) CLEARED TO THE (three digits) RADIAL OF THE (name) VOR AT (distance) DME FIX [MAINTAIN (or CLIMB or DESCEND TO) (level)] HOLD BETWEEN (distance) AND (distance) DME [RIGHT (or LEFT) HAND PATTERN] EXPECT APPROACH CLEARANCE (or FURTHER (g) CLEARANCE) AT (time) (additional instructions, if necessary). * Denotes pilot transmission.

	Circumstances	Phraseologies
EXPECTED APPROACH TIME		(a) NO DELAY EXPECTED; (b) EXPECTED APPROACH TIME (time); (c) REVISED EXPECTED APPROACH TIME (time); (d) DELAY NOT DETERMINED (reasons).

(3) Phraseologies for use on and in the vicinity of the aerodrome

	Circumstances	Phraseologies
IDENTIFICATION OF AIRCRAFT		SHOW LANDING LIGHTS.
ACKNOWLEDGEMENT BY VISUAL MEANS		(a) ACKNOWLEDGE BY MOVING AILERONS (or RUDDER); (b) ACKNOWLEDGE BY ROCKING WINGS; (c) ACKNOWLEDGE BY FLASHING LANDING LIGHTS.
STARTING PROCEDURES	*... to request permission to start engines*	(a) *[aircraft location] REQUEST START UP; (b) *[aircraft location] REQUEST START UP, INFORMATION (ATIS identification);
	... ATC replies	(c) START UP APPROVED; (d) START UP AT (time); (e) EXPECT START UP AT (time); (f) START UP AT OWN DISCRETION; (g) EXPECT DEPARTURE (time) START UP AT OWN DISCRETION. * Denotes pilot transmission.
PUSHBACK PROCEDURES	*Note.— When local procedures so prescribe, authorization for pushback should be obtained from the control tower.*	(a) [aircraft location] REQUEST PUSHBACK; (b) PUSHBACK APPROVED; (c) STAND BY; (d) PUSHBACK AT OWN DISCRETION; (e) EXPECT (number) MINUTES DELAY DUE (reason). * Denotes pilot transmission.
TOWING PROCEDURES		(a) †REQUEST TOW [company name] (aircraft type) FROM (location) TO (location);
	... ATC response	(b) TOW APPROVED VIA (specific routing to be followed); (c) HOLD POSITION; (d) STAND BY. † Denotes transmission from aircraft/tow vehicle combination.

	Circumstances	Phraseologies
TO REQUEST TIME CHECK AND/OR AERODROME DATA FOR DEPARTURE		(a) REQUEST TIME CHECK; (b) TIME (time);
	... when no ATIS broadcast is available	(c) *REQUEST DEPARTURE INFORMATION; (d) RUNWAY (number), WIND (direction and speed) (units) QNH (or QFE) (number) [(units)] TEMPERATURE [MINUS] (number), [VISIBILITY (distance) (units) (or RUNWAY VISUAL RANGE (or RVR) (distance) (units))] [TIME (time)]. Note.— If multiple visibility and RVR observations are available, those that represent the roll-out/stop end zone should be used for take-off. * Denotes pilot transmission.
TAXI PROCEDURES	*... for departure*	(a) [aircraft type] [wake turbulence category if "super" or "heavy"] [aircraft location] REQUEST TAXI [intentions]; (b) *[aircraft type] [wake turbulence category if "super" or "heavy"] [aircraft location] (flight rules) TO (aerodrome of destination) REQUEST TAXI [intentions]; (c) TAXI TO HOLDING POINT [number] [RUNWAY (number)] [HOLD SHORT OF RUNWAY (number) (or CROSS RUNWAY (number))] [TIME (time)];
	... where detailed taxi instructions are required	(d) [aircraft type] [wake turbulence category if "super" or "heavy"] REQUEST DETAILED TAXI INSTRUCTIONS; (e) TAXI TO HOLDING POINT [number] [RUNWAY (number)] VIA (specific route to be followed) [TIME (time)] [HOLD SHORT OF RUNWAY (number) (or CROSS RUNWAY (number))];

	Circumstances	Phraseologies
	... where aerodrome information is not available from an alternative source such as ATIS	(f) TAXI TO HOLDING POINT [number] (followed by aerodrome information as applicable) [TIME (time)]; (g) TAKE (or TURN) FIRST (or SECOND) LEFT (or RIGHT); (h) TAXI VIA (identification of taxiway); (i) TAXI VIA RUNWAY (number); (j) TAXI TO TERMINAL (or other location, e.g. GENERAL AVIATION AREA) [STAND (number)];
	... for helicopter operations	(k) *REQUEST AIR-TAXIING FROM (or VIA) TO (location or routing as appropriate); (l) AIR-TAXI TO (or VIA) (location or routing as appropriate) [CAUTION (dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.)]; (m) AIR TAXI VIA (direct, as requested, or specified route) TO (location, heliport, operating or movement area, active or inactive runway). AVOID (aircraft or vehicles or personnel);
	... after landing	(n) REQUEST BACKTRACK; (o) BACKTRACK APPROVED; (p) BACKTRACK RUNWAY (number);
	... general	(q) *[(aircraft location)] REQUEST TAXI TO (destination on aerodrome); (r) TAXI STRAIGHT AHEAD; (s) TAXI WITH CAUTION; (t) GIVE WAY TO (description and position of other aircraft); (u) *GIVING WAY TO (traffic); (v) *TRAFFIC (or type of aircraft) IN SIGHT; (w) TAXI INTO HOLDING BAY; (x) FOLLOW (description of other aircraft or vehicle); (y) VACATE RUNWAY; (z) *RUNWAY VACATED; (aa) EXPEDITE TAXI [(reason)]; (bb) EXPEDITING; (cc) [CAUTION] TAXI SLOWER [reason]; (dd) * SLOWING DOWN. * Denotes pilot transmission.

	Circumstances	Phraseologies
HOLDING		(a) ‡HOLD (direction) OF (position, runway number, etc.); (b) ‡HOLD POSITION; (c) ‡HOLD (distance) FROM (position);
	... to hold not closer to a runway than specified in Chapter 7, 7.6.3.1.3.1	(d) HOLD SHORT OF (position); (e) *HOLDING; (f) *HOLDING SHORT. ‡ Requires specific acknowledgement from the pilot. * Denotes pilot transmission. The procedure words ROGER and WILCO are insufficient acknowledgement of the instructions HOLD, HOLD POSITION and HOLD SHORT OF (position). In each case the acknowledgement shall be by the phraseology HOLDING or HOLDING SHORT, as appropriate.
TO CROSS A RUNWAY	*Note.— The pilot will, when requested, report "RUNWAY VACATED" when the entire aircraft is beyond the relevant runway-holding position.*	(a) REQUEST CROSS RUNWAY (number); Note.— If the control tower is unable to see the crossing aircraft (e.g. night, low visibility), the instruction should always be accompanied by a request to report when the aircraft has vacated the runway. (b) CROSS RUNWAY (number) [REPORT VACATED]; (c) EXPEDITE CROSSING RUNWAY (number) TRAFFIC (aircraft type) (distance) KILOMETRES (or MILES) FINAL; (d) TAXI TO HOLDING POINT [number] [RUNWAY (number)] VIA (specific route to be followed), [HOLD SHORT OF RUNWAY (number)] or [CROSS RUNWAY (number)]; (e) RUNWAY VACATED. * Denotes pilot transmission.
PREPARATION FOR TAKE-OFF		(a) UNABLE TO ISSUE (designator) DEPARTURE (reasons); (b) REPORT WHEN READY [FOR DEPARTURE];

	Circumstances	Phraseologies
		(c) ARE YOU READY [FOR DEPARTURE]?; (d) ARE YOU READY FOR IMMEDIATE DEPARTURE?; (e) *READY;
	... clearance to enter runway and await take-off clearance	(f) LINE UP [AND WAIT]; (g) †LINE UP RUNWAY (number); (h) LINE UP. BE READY FOR IMMEDIATE DEPARTURE;
	... conditional clearances	(i) ‡ (condition) LINE UP (brief reiteration of the condition);
	... acknowledgement of a conditional clearance	(j) *(condition) LINING UP (brief reiteration of the condition);
	... confirmation or otherwise of the readback of conditional clearance	(k) [THAT IS] CORRECT (or NEGATIVE) [I SAY AGAIN] ... (as appropriate). * Denotes pilot transmission. † When there is the possibility of confusion during multiple runway operations. ‡ Provisions concerning the use of conditional clearances are contained in 12.2.7.
TAKE-OFF CLEARANCE		(a) RUNWAY (number) CLEARED FOR TAKE-OFF [REPORT AIRBORNE];
	... when reduced runway separation is used	(b) (traffic information) RUNWAY (number) CLEARED FOR TAKE-OFF;
	... when take-off clearance has not been complied with	(c) TAKE OFF IMMEDIATELY OR VACATE RUNWAY [(instructions)]; (d) TAKE OFF IMMEDIATELY OR HOLD SHORT OF RUNWAY;
	... to cancel a take-off clearance	(e) HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF (reasons); (f) *HOLDING;
	... to stop a take-off after an aircraft has commenced take-off roll	(g) STOP IMMEDIATELY [(repeat aircraft call sign) STOP IMMEDIATELY]; (h) *STOPPING;

	Circumstances	Phraseologies
	... for helicopter operations	(i) CLEARED FOR TAKE-OFF [FROM (location)] (present position, taxiway, final approach and take-off area, runway and number); (j) *REQUEST DEPARTURE INSTRUCTIONS; (k) AFTER DEPARTURE TURN RIGHT (or LEFT, or CLIMB) (instructions as appropriate). * Denotes pilot transmission. HOLDING and STOPPING are the procedural responses to e) and g) respectively.
TURN OR CLIMB INSTRUCTIONS AFTER TAKE-OFF		(a) *REQUEST RIGHT (or LEFT) TURN; (b) RIGHT (or LEFT) TURN APPROVED; (c) WILL ADVISE LATER FOR RIGHT (or LEFT) TURN;
	... to request airborne time	(d) REPORT AIRBORNE; (e) AIRBORNE (time); (f) AFTER PASSING (level) (instructions);
	... heading to be followed	(g) CONTINUE RUNWAY HEADING (instructions);
	... when a specific track is to be followed	(h) TRACK EXTENDED CENTER LINE (instructions); (i) CLIMB STRAIGHT AHEAD (instructions). * Denotes pilot transmission.
ENTERING AN AERODROME TRAFFIC CIRCUIT		(a) [aircraft type] (position) (level) FOR LANDING; (b) JOIN [(direction of circuit)] (position in circuit) (runway number) [SURFACE] WIND (direction and speed) (units) [TEMPERATURE [MINUS] (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)]; (c) MAKE STRAIGHT-IN APPROACH, RUNWAY (number) [SURFACE] WIND (direction and speed) (units) [TEMPERATURE [MINUS] (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)];

	Circumstances	Phraseologies
	... when ATIS information is available	(d) *(aircraft type) (position) (level) INFORMATION (ATIS identification) FOR LANDING; (e) JOIN (position in circuit) [RUNWAY (number)] QNH (or QFE) (number) [(units)] [TRAFFIC (detail)]. * Denotes pilot transmission.
IN THE CIRCUIT		(a) *(position in circuit, e.g. DOWNWIND/FINAL); (b) NUMBER ... FOLLOW (aircraft type and position) [additional instructions if required]. * Denotes pilot transmission.
APPROACH INSTRUCTIONS	*Note.— The report "LONG FINAL" is made when aircraft turn on to final approach at a distance greater than 7 km (4 NM) from touchdown or when an aircraft on a straight-in approach is 15 km (8 NM) from touchdown. In both cases a report "FINAL" is required at 7 km (4 NM) from touchdown.*	(a) MAKE SHORT APPROACH; (b) MAKE LONG APPROACH (or EXTEND DOWNWIND); (c) REPORT BASE (or FINAL, or LONG FINAL); (d) CONTINUE APPROACH [PREPARE FOR POSSIBLE GO AROUND].
LANDING CLEARANCE		(a) RUNWAY (number) CLEARED TO LAND;
	... when reduced runway separation is used	(b) (traffic information) RUNWAY (number) CLEARED TO LAND;
	... special operations	(c) CLEARED TOUCH AND GO; (d) MAKE FULL STOP;
	… to make an approach along, or parallel to a runway, descending to an agreed minimum level	(e) *REQUEST LOW APPROACH (reasons); (f) CLEARED LOW APPROACH [RUNWAY (number)] [(altitude restriction if required) (go around instructions)];
	... to fly past the control tower or other observation point for the purpose of visual	(g) *REQUEST LOW PASS (reasons); (h) CLEARED LOW PASS [as in f)];

	Circumstances	Phraseologies
	inspection by persons on the ground	
	... for helicopter operations	(i) * REQUEST STRAIGHT-IN (or CIRCLING APPROACH, LEFT (or RIGHT) TURN TO (location)); (j) MAKE STRAIGHT-IN (or CIRCLING APPROACH, LEFT (or RIGHT) TURN TO (location, runway, taxiway, final approach and take-off area)) [ARRIVAL (or ARRIVAL ROUTE) (number, name, or code)]. [HOLD SHORT OF (active runway, extended runway center line, other)]. [REMAIN (direction or distance) FROM (runway, runway center line, other helicopter or aircraft)]. [CAUTION (power lines, unlighted obstructions, wake turbulence, etc.)]. CLEARED TO LAND. * Denotes pilot transmission.
DELAYING AIRCRAFT		(a) CIRCLE THE AERODROME; (b) ORBIT (RIGHT, or LEFT) [FROM PRESENT POSITION]; (c) MAKE ANOTHER CIRCUIT.
MISSED APPROACH		(a) GO AROUND; (b) *GOING AROUND. * Denotes pilot transmission.
INFORMATION TO AIRCRAFT	*... when pilot requested visual inspection of landing gear*	(a) LANDING GEAR APPEARS DOWN; (b) RIGHT (or LEFT, or NOSE) WHEEL APPEARS UP (or DOWN); (c) WHEELS APPEAR UP; (d) RIGHT (or LEFT, or NOSE) WHEEL DOES NOT APPEAR UP (or DOWN);
	... wake turbulence	(e) CAUTION WAKE TURBULENCE [FROM ARRIVING (or DEPARTING) (type of aircraft)] [additional information as required];
	... jet blast on apron or taxiway	(f) CAUTION JET BLAST;
	... propeller-driven aircraft slipstream	(g) CAUTION SLIPSTREAM.

	Circumstances	Phraseologies
RUNWAY VACATING AND COMMUNICATIONS AFTER LANDING		(a) CONTACT GROUND (frequency); (b) WHEN VACATED CONTACT GROUND (frequency); (c) EXPEDITE VACATING; (d) YOUR STAND (or GATE) (designation); (e) TAKE (or TURN) FIRST (or SECOND, or CONVENIENT) LEFT (or RIGHT) AND CONTACT GROUND (frequency);
	... for helicopter operations	(f) AIR-TAXI TO HELICOPTER STAND (or) HELICOPTER PARKING POSITION (area); (g) AIR-TAXI TO (or VIA) (location or routing as appropriate) [CAUTION (dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.)]; (h) AIR-TAXI VIA (direct, as requested, or specified route) TO (location, heliport, operating or movement area, active or inactive runway). AVOID (aircraft or vehicles or personnel).

(4) Coordination between ATS units

	Circumstances	Phraseologies
ESTIMATES AND REVISIONS		(a) ESTIMATE [direction of flight] (aircraft call sign) [SQUAWKING (SSR code)] (type) ESTIMATED (significant point) (time) (level) (or DESCENDING FROM (level) TO (level)) [SPEED (filed TAS)] (route) [REMARKS];
	... sending unit	(b) ESTIMATE (significant point) ON (aircraft call sign);
	... receiving unit reply (if flight plan details are not available)	(c) NO DETAILS;
	... receiving unit reply (if flight plan details are available)	(aircraft type) (destination);
	... sending unit reply	[SQUAWKING (SSR code)] [ESTIMATED] (significant point) (time) AT (level); Note.— In the event that flight plan details are not available the receiving station shall reply to b) NO DETAILS and transmitting station shall pass full estimate as in a). (d) ESTIMATE UNMANNED FREE BALLOON(S) (identification and classification) ESTIMATED OVER (place) AT (time) REPORTED FLIGHT LEVEL(S) (figure or figures) [or FLIGHT LEVEL UNKNOWN] MOVING (direction) ESTIMATED GROUND SPEED (figure) (other pertinent information, if any); (e) REVISION (aircraft call sign) (details as necessary).
TRANSFER OF CONTROL		(a) REQUEST RELEASE OF (aircraft call sign); (b) (aircraft call sign) RELEASED [AT (time)] [conditions/restrictions]; (c) IS (aircraft call sign) RELEASED [FOR CLIMB (or DESCENT)]; (d) (aircraft call sign) NOT RELEASED [UNTIL (time or significant point)]; (e) UNABLE (aircraft call sign) [TRAFFIC IS (details)].

	Circumstances	Phraseologies
CHANGE OF CLEARANCE		(a) MAY WE CHANGE CLEARANCE OF (aircraft call sign) TO (details of alteration proposed); (b) AGREED TO (alteration of clearance) OF (aircraft call sign); (c) UNABLE (aircraft call sign); (d) UNABLE (desired route, level, etc.) [FOR (aircraft call sign)] [DUE (reason)] (alternative clearance proposed).
APPROVAL REQUEST		(a) APPROVAL REQUEST (aircraft call sign) ESTIMATED DEPARTURE FROM (significant point) AT (time); (b) (aircraft call sign) REQUEST APPROVED [(restriction if any)]; (c) (aircraft call sign) UNABLE (alternative instructions).
INBOUND RELEASE		[INBOUND RELEASE] (aircraft call sign) [SQUAWKING (SSR code)] (type) FROM (departure point) RELEASED AT (significant point, or time, or level) CLEARED TO AND ESTIMATING (clearance limit) (time) AT (level) [EXPECTED APPROACH TIME or NO DELAY EXPECTED] CONTACT AT (time).
HANDOVER		HANDOVER (aircraft call sign) [SQUAWKING (SSR code)] POSITION (aircraft position) (level).
EXPEDITION OF CLEARANCE		(a) EXPEDITE CLEARANCE (aircraft call sign) EXPECTED DEPARTURE FROM (place) AT (time); (b) EXPEDITE CLEARANCE (aircraft call sign) [ESTIMATED] OVER (place) AT (time) REQUESTS (level or route, etc.).
REDUCED VERTICAL SEPARATION MINIMUM (RVSM) OPERATIONS	*... to verbally supplement estimate messages of aircraft non-approved for RVSM or to verbally supplement an automated estimate message exchange that does not automatically transfer information from Item 18 of the flight plan followed*	(a) NEGATIVE RVSM [(supplementary information, e.g. State aircraft)];

	Circumstances	Phraseologies
	by supplementary information, as appropriate	
	... to communicate the cause of a contingency relating to an aircraft that is unable to conduct RVSM operations due to severe turbulence or other severe meteorological phenomena or equipment failure, as applicable	(b) UNABLE RVSM DUE TURBULENCE (or EQUIPMENT, as applicable).

(5) Phraseologies to be used related to CPDLC

	Circumstances	Phraseologies
OPERATIONAL STATUS	*... failure of CPDLC*	(a) [ALL STATIONS] CPDLC FAILURE (instructions);
	... failure of a single CPDLC message	(b) CPDLC MESSAGE FAILURE (appropriate clearance, instruction, information or request);
	... to correct CPDLC clearances, instructions, information or requests	(c) DISREGARD CPDLC (message type) MESSAGE, BREAK (correct clearance, instruction, information or request);
	... to instruct all stations or a specific flight to avoid sending CPDLC requests for a limited period of time	(d) [ALL STATIONS] STOP SENDING CPDLC REQUESTS [UNTIL ADVISED] [(reason)];
	... to resume normal use of CPDLC	(e) [ALL STATIONS] RESUME NORMAL CPDLC OPERATIONS.

(d) ATS SURVEILLANCE SERVICE PHRASEOLOGIES

Note.— The following comprise phraseologies specifically applicable when an ATS surveillance system is used in the provision of air traffic services. The phraseologies detailed in the sections above for use in the provision of air traffic services are also applicable, as appropriate, when an ATS surveillance system is used.

(1) General ATS surveillance service phraseologies

	Circumstances	Phraseologies
IDENTIFICATION OF AIRCRAFT		(a) REPORT HEADING [AND FLIGHT LEVEL (or ALTITUDE)]; (b) FOR IDENTIFICATION TURN LEFT (or RIGHT) HEADING (three digits); (c) TRANSMIT FOR IDENTIFICATION AND REPORT HEADING; (d) RADAR CONTACT [position]; (e) IDENTIFIED [position]; (f) NOT IDENTIFIED [reason], [RESUME (or CONTINUE) OWN NAVIGATION].
POSITION INFORMATION		POSITION (distance) (direction) OF (significant point) (or OVER or ABEAM (significant point)).
VECTORING INSTRUCTIONS		(a) LEAVE (significant point) HEADING (three digits); (b) CONTINUE HEADING (three digits); (c) CONTINUE PRESENT HEADING; (d) FLY HEADING (three digits); (e) TURN LEFT (or RIGHT) HEADING (three digits) [reason]; (f) TURN LEFT (or RIGHT) (number of degrees) DEGREES [reason]; (g) STOP TURN HEADING (three digits); (h) FLY HEADING (three digits), WHEN ABLE PROCEED DIRECT (name) (significant point); (i) HEADING IS GOOD.
TERMINATION OF VECTORING		(a) RESUME OWN NAVIGATION (position of aircraft) (specific instructions); (b) RESUME OWN NAVIGATION [DIRECT] (significant point) [MAGNETIC TRACK (three digits) DISTANCE (number) KILOMETRES (or MILES)].
MANOEUVRES		(a) MAKE A THREE SIXTY TURN LEFT (or RIGHT) [reason]; (b) ORBIT LEFT (or RIGHT) [reason];

	Circumstances	Phraseologies
	... (in case of unreliable directional instruments on board aircraft)	(c) MAKE ALL TURNS RATE ONE (or RATE HALF, or (number) DEGREES PER SECOND) START AND STOP ALL TURNS ON THE COMMAND "NOW";
Note.— When it is necessary to specify a reason for vectoring or for the above manoeuvres, the following phraseologies should be used: a) DUE TRAFFIC; b) FOR SPACING; c) FOR DELAY; d) FOR DOWNWIND (or BASE, or FINAL).		(d) TURN LEFT (or RIGHT) NOW; (e) STOP TURN NOW.
SPEED CONTROL		(a) REPORT SPEED; (b) *SPEED (number) KILOMETRES PER HOUR (or KNOTS); (c) MAINTAIN (number) KILOMETRES PER HOUR (or KNOTS) [OR GREATER (or OR LESS)] [UNTIL (significant point)]; (d) DO NOT EXCEED (number) KILOMETRES PER HOUR (or KNOTS); (e) MAINTAIN PRESENT SPEED; (f) INCREASE (or REDUCE) SPEED TO (number) KILOMETRES PER HOUR (or KNOTS) [OR GREATER (or OR LESS)]; (g) INCREASE (or REDUCE) SPEED BY (number) KILOMETRES PER HOUR (or KNOTS); (h) RESUME NORMAL SPEED; (i) REDUCE TO MINIMUM APPROACH SPEED; (j) REDUCE TO MINIMUM CLEAN SPEED; (k) RESUME PUBLISHED SPEED; (l) NO [ATC] SPEED RESTRICTIONS. * Denotes pilot transmission.
POSITION REPORTING	*... to omit position reports*	(a) OMIT POSITION REPORTS [UNTIL (specify)]; (b) NEXT REPORT AT (significant point); (c) REPORTS REQUIRED ONLY AT (significant point(s)); (d) RESUME POSITION REPORTING.
TRAFFIC INFORMATION AND AVOIDING ACTION		(a) TRAFFIC (number) O'CLOCK (distance) (direction of flight) [any other pertinent information]:

	Circumstances	Phraseologies
	... (if known)	(1) UNKNOWN; (2) SLOW MOVING; (3) FAST MOVING; (4) CLOSING; (5) OPPOSITE (or SAME) DIRECTION; (6) OVERTAKING; (7) CROSSING LEFT TO RIGHT (or RIGHT TO LEFT); (8) (aircraft type); (9) (level); (10) CLIMBING (or DESCENDING);
	... to request avoiding action	(b) * REQUEST VECTORS; (c) DO YOU WANT VECTORS?;
	... when passing unknown traffic	(d) CLEAR OF TRAFFIC [appropriate instructions];
	... for avoiding action	(e) TURN LEFT (or RIGHT) IMMEDIATELY HEADING (three digits) TO AVOID [UNIDENTIFIED] TRAFFIC (bearing by clock-reference and distance); (f) TURN LEFT (or RIGHT) (number of degrees) DEGREES IMMEDIATELY TO AVOID [UNIDENTIFIED] TRAFFIC AT (bearing by clock-reference and distance). * Denotes pilot transmission.
COMMUNICATIONS AND LOSS OF COMMUNICATIONS		(a) [IF] RADIO CONTACT LOST (instructions); (b) IF NO TRANSMISSIONS RECEIVED FOR (number) MINUTES (or SECONDS) (instructions); (c) REPLY NOT RECEIVED (instructions);
	... if loss of communications suspected	(d) IF YOU READ [manoeuvre instructions or SQUAWK (code or IDENT)]; (e) (manoeuvre, SQUAWK or IDENT) OBSERVED. POSITION (position of aircraft). [(instructions)].
TERMINATION OF RADAR AND/OR ADS-B SERVICE		(a) RADAR SERVICE (or IDENTIFICATION) TERMINATED [DUE (reason)] (instructions); (b) WILL SHORTLY LOSE IDENTIFICATION (appropriate instructions or information); (c) IDENTIFICATION LOST [reasons] (instructions).

	Circumstances	Phraseologies
RADAR AND/OR ADS-B EQUIPMENT DEGRADATION		(a) SECONDARY RADAR OUT OF SERVICE (appropriate information as necessary); (b) PRIMARY RADAR OUT OF SERVICE (appropriate information as necessary); (c) ADS-B OUT OF SERVICE (appropriate information as necessary).

(2) Radar in approach control service

	Circumstances	Phraseologies
VECTORING FOR APPROACH		(a) VECTORING FOR (type of pilot-interpreted aid) APPROACH RUNWAY (number); (b) VECTORING FOR VISUAL APPROACH RUNWAY (number) REPORT FIELD (or RUNWAY) IN SIGHT; (c) VECTORING FOR (positioning in the circuit); (d) VECTORING FOR SURVEILLANCE RADAR APPROACH RUNWAY (number); (e) VECTORING FOR PRECISION APPROACH RUNWAY (number); (f) (type) APPROACH NOT AVAILABLE DUE (reason) (alternative instructions).
VECTORING FOR ILS AND OTHER PILOT-INTERPRETED AIDS		(a) POSITION (number) KILOMETRES (or MILES) from (fix). TURN LEFT (or RIGHT) HEADING (three digits); (b) YOU WILL INTERCEPT (radio aid or track) (distance) FROM (significant point or TOUCHDOWN);
	... when a pilot wishes to be positioned a specific distance from touchdown	(c) *REQUEST (distance) FINAL; (d) CLEARED FOR (type of approach) APPROACH RUNWAY (number);
	... instructions and information	(e) REPORT ESTABLISHED ON [ILS] LOCALIZER (or ON GBAS/SBAS/MLS APPROACH COURSE); (f) CLOSING FROM LEFT (or RIGHT) [REPORT ESTABLISHED]; (g) TURN LEFT (or RIGHT) HEADING (three digits) [TO INTERCEPT] or [REPORT ESTABLISHED]; (h) EXPECT VECTOR ACROSS (localizer course or radio aid) (reason); (i) THIS TURN WILL TAKE YOU THROUGH (localizer course or radio aid) [reason]; (j) TAKING YOU THROUGH (localizer course or radio aid) [reason]; (k) MAINTAIN (altitude) UNTIL GLIDE PATH INTERCEPTION;

	Circumstances	Phraseologies
		(l) REPORT ESTABLISHED ON GLIDE PATH; (m) INTERCEPT (localizer course or radio aid) [REPORT ESTABLISHED]. * Denotes pilot transmission.
MANOEUVRE DURING INDEPENDENT AND DEPENDENT PARALLEL APPROACHES		(a) CLEARED FOR (type of approach) APPROACH RUNWAY (number) LEFT (or RIGHT); (b) YOU HAVE CROSSED THE LOCALIZER (or GBAS/SBAS/MLS FINAL APPROACH COURSE). TURN LEFT (or RIGHT) IMMEDIATELYAND RETURN TO THE LOCALIZER (or GBAS/SBAS/MLS FINAL APPROACH COURSE); (c) ILS (or MLS) RUNWAY (number) LEFT (or RIGHT) LOCALIZER (or MLS) FREQUENCY IS (frequency);
	... for avoidance action when an aircraft is observed penetrating the NTZ	(d) TURN LEFT (or RIGHT) (number) DEGREES (or HEADING) (three digits) IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH], CLIMB TO (altitude);
	... for avoidance action below 120 m (400 ft) above the runway threshold elevation where parallel approach obstacle assessment surfaces (PAOAS) criteria are being applied	(e) CLIMB TO (altitude) IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH] (further instructions).
Surveillance Radar Approach		
PROVISION OF SERVICE		(a) THIS WILL BE A SURVEILLANCE RADAR APPROACH RUNWAY (number) TERMINATING AT (distance) FROM TOUCHDOWN, OBSTACLE CLEARANCE ALTITUDE (or HEIGHT) (number) METRES (or FEET) CHECK YOUR MINIMA [IN CASE OF GO AROUND (instructions)];

	Circumstances	Phraseologies
		(b) APPROACH INSTRUCTIONS WILL BE TERMINATED AT (distance) FROM TOUCHDOWN.
ELEVATION		(a) COMMENCE DESCENT NOW [TO MAINTAIN A (number) DEGREE GLIDE PATH]; (b) (distance) FROM TOUCHDOWN ALTITUDE (or HEIGHT) SHOULD BE (numbers and units).
POSITION		(distance) FROM TOUCHDOWN.
CHECKS		(a) CHECK GEAR DOWN [AND LOCKED]; (b) OVER THRESHOLD.
COMPLETION OF APPROACH		(a) REPORT VISUAL; (b) REPORT RUNWAY [LIGHTS] IN SIGHT; (c) APPROACH COMPLETED [CONTACT (unit)].
PAR Approach		
PROVISION OF SERVICE		(a) THIS WILL BE A PRECISION RADAR APPROACH RUNWAY (number); (b) PRECISION APPROACH NOT AVAILABLE DUE (reason) (alternative instructions); (c) IN CASE OF GO AROUND (instructions).
COMMUNICATIONS		(a) DO NOT ACKNOWLEDGE FURTHER TRANSMISSIONS; (b) REPLY NOT RECEIVED. WILL CONTINUE INSTRUCTIONS.
AZIMUTH		(a) CLOSING [SLOWLY (or QUICKLY)] [FROM THE LEFT (or FROM THE RIGHT)]; (b) HEADING IS GOOD; (c) ON TRACK; (d) SLIGHTLY (or WELL, or GOING) LEFT (or RIGHT) OF TRACK; (e) (number) METRES LEFT (or RIGHT) OF TRACK.
ELEVATION		(a) APPROACHING GLIDE PATH; (b) COMMENCE DESCENT NOW [AT (number) METRES PER SECOND OR (number) FEET PER MINUTE (or ESTABLISH A (number) DEGREE GLIDE PATH)]; (c) RATE OF DESCENT IS GOOD; (d) ON GLIDE PATH;

	Circumstances	Phraseologies
		(e) SLIGHTLY (or WELL, or GOING) ABOVE (or BELOW) GLIDE PATH; (f) [STILL] (number) METRES (or FEET) TOO HIGH (or TOO LOW); (g) ADJUST RATE OF DESCENT; (h) COMING BACK [SLOWLY (or QUICKLY)] TO THE GLIDE PATH; (i) RESUME NORMAL RATE OF DESCENT; (j) ELEVATION ELEMENT UNSERVICEABLE (to be followed by appropriate instructions); (k) (distance) FROM TOUCHDOWN. ALTITUDE (or HEIGHT) SHOULD BE (numbers and units).
POSITION		(a) (distance) FROM TOUCHDOWN; (b) OVER APPROACH LIGHTS; (c) OVER THRESHOLD.
CHECKS		(a) CHECK GEAR DOWN AND LOCKED; (b) CHECK DECISION ALTITUDE (or HEIGHT).
COMPLETION OF APPROACH		(a) REPORT VISUAL; (b) REPORT RUNWAY [LIGHTS] IN SIGHT; (c) APPROACH COMPLETED [CONTACT (unit)].
MISSED APPROACH		(a) CONTINUE VISUALLY OR GO AROUND [missed approach instructions]; (b) GO AROUND IMMEDIATELY [missed approach instructions] (reason); (c) ARE YOU GOING AROUND?; (d) IF GOING AROUND (appropriate instructions); (e) *GOING AROUND. * Denotes pilot transmission.

(3) Secondary surveillance radar (SSR) and ADS-B phraseologies

	Circumstances	Phraseologies
TO REQUEST THE CAPABILITY OF THE SSR EQUIPMENT		(a) ADVISE TRANSPONDER CAPABILITY; (b) *TRANSPONDER (as shown in the flight plan); (c) *NEGATIVE TRANSPONDER. * Denotes pilot transmission.
TO REQUEST THE CAPABILITY OF THE ADS-B EQUIPMENT		(a) ADVISE ADS-B CAPABILITY; (b) *ADS-B TRANSMITTER (data link); (c) *ADS-B RECEIVER (data link); (d) *NEGATIVE ADS-B. * Denotes pilot transmission.
TO INSTRUCT SETTING OF TRANSPONDER		(a) FOR DEPARTURE SQUAWK (code); (b) SQUAWK (code).
TO REQUEST THE PILOT TO RESELECT THE ASSIGNED MODE AND CODE		(a) RESET SQUAWK [(mode)] (code); (b) *RESETTING (mode) (code). * Denotes pilot transmission.
TO REQUEST RESELECTION OF AIRCRAFT IDENTIFICATION		RE-ENTER [ADS-B or MODE S] AIRCRAFT IDENTIFICATION.
TO REQUEST THE PILOT TO CONFIRM THE CODE SELECTED ON THE AIRCRAFT'S TRANSPONDER		(a) CONFIRM SQUAWK (code); (b) *SQUAWKING (code). * Denotes pilot transmission.
TO REQUEST THE OPERATION OF THE IDENT FEATURE		(a) SQUAWK [(code)] [AND] IDENT; (b) SQUAWK LOW; (c) SQUAWK NORMAL; (d) TRANSMIT ADS-B IDENT.
TO REQUEST TEMPORARY SUSPENSION OF TRANSPONDER OPERATION		SQUAWK STANDBY.
TO REQUEST EMERGENCY CODE		SQUAWK MAYDAY [CODE SEVEN-SEVEN-ZERO-ZERO].
TO REQUEST TERMINATION OF TRANSPONDER AND/OR ADS-B		(a) STOP SQUAWK [TRANSMIT ADS-B ONLY]; (b) STOP ADS-B TRANSMISSION [SQUAWK (code) ONLY].

	Circumstances	Phraseologies
TRANSMITTER OPERATION Note.— Independent operations of Mode S transponder and ADS-B may not be possible in all aircraft (e.g. where ADS-B is solely provided by 1 090 MHz extended squitter emitted from the transponder). In such cases, aircraft may not be able to comply with ATC instructions related to ADS-B operation.		
TO REQUEST TRANSMISSION OF PRESSURE-ALTITUDE		(a) SQUAWK CHARLIE; (b) TRANSMIT ADS-B ALTITUDE.
TO REQUEST PRESSURE SETTING CHECK AND CONFIRMATION OF LEVEL		CHECK ALTIMETER SETTING AND CONFIRM (level).
TO REQUEST TERMINATION OF PRESSURE-ALTITUDE TRANSMISSION BECAUSE OF FAULTY OPERATION		(a) STOP SQUAWK CHARLIE WRONG INDICATION; (b) STOP ADS-B ALTITUDE TRANSMISSION [(WRONG INDICATION, or reason)].
TO REQUEST LEVEL CHECK		(a) CONFIRM (level).

(e) AUTOMATIC DEPENDENT SURVEILLANCE — CONTRACT (ADS-C) PHRASEOLOGIES

(1) General ADS-C phraseologies

	Circumstances	Phraseologies
ADS-C DEGRADATION		ADS-C (or ADS-CONTRACT) OUT OF SERVICE (appropriate information as necessary).

(f) ALERTING PHRASEOLOGIES

(1) Alerting phraseologies

	Circumstances	Phraseologies
LOW ALTITUDE WARNING		(aircraft call sign) LOW ALTITUDE WARNING, CHECK YOUR ALTITUDE IMMEDIATELY, QNH IS (number) [(units)]. [THE MINIMUM FLIGHT ALTITUDE IS (altitude)].
TERRAIN ALERT		(aircraft call sign) TERRAIN ALERT, (suggested pilot action, if possible).

(g) GROUND CREW/FLIGHT CREW PHRASEOLOGIES

(1) Ground crew/flight crew phraseologies

	Circumstances	Phraseologies
STARTING PROCEDURES (GROUND CREW/COCKPIT)		(a) ([ARE YOU] READY TO START UP?; (b) STARTING NUMBER (engine number(s)). Note 1.— The ground crew should follow this exchange by either a reply on the intercom or a distinct visual signal to indicate that all is clear and that the start-up as indicated may proceed. Note 2.— Unambiguous identification of the parties concerned is essential in any communications between ground crew and pilots. * Denotes pilot transmission.
PUSHBACK PROCEDURES	*... (ground crew/cockpit)*	(a) ARE YOU READY FOR PUSHBACK?; (b) *READY FOR PUSHBACK; (c) CONFIRM BRAKES RELEASED; (d) *BRAKES RELEASED; (e) COMMENCING PUSHBACK; (f) PUSHBACK COMPLETED; (g) *STOP PUSHBACK; (h) CONFIRM BRAKES SET; (i) *BRAKES SET; (j) *DISCONNECT; (k) DISCONNECTING STAND BY FOR VISUAL AT YOUR LEFT (or RIGHT). Note.— This exchange is followed by a visual signal to the pilot to indicate that disconnect is completed and all is clear for taxiing. * Denotes pilot transmission.

(2) De/anti-icing operations

	Circumstances	Phraseologies
PRIOR TO DE-ICING/ANTI-ICING (GROUND CREW (ICEMAN) / FLIGHT CREW		(a) STANDING BY TO DE-ICE. CONFIRM BRAKES SET AND TREATMENT REQUIRED; (b) *[AFFIRM] BRAKES SET, REQUEST (type of de/anti-icing treatment and areas to be treated); * Denotes pilot transmission.
	…aircraft configuration confirmation	(c) HOLD POSITION AND CONFIRM AIRCRAFT CONFIGURED; (d) *[AFFIRM] AIRCRAFT CONFIGURED, READY FOR DE-ICING; (e) DE-ICING STARTS NOW. * Denotes pilot transmission.
UPON CONCLUDING DE-ICING/ANTI-ICING PROCEDURE		
	…for de-icing operation	(a) DE-ICING ON (areas treated) COMPLETE. ADVISE WHEN READY FOR INFORMATION; (b) TYPE OF FLUID (Type I or II or III or IV); (c) HOLDOVER TIME STARTED AT (time); (d) ANTI-ICING CODE (appropriate anti-icing code) Note.— Anti-icing code example:
	…for a two-step de-icing/anti-icing operation	A de-icing/anti-icing procedure whose last step is the use of a mixture of 75% of a Type II fluid and 25% water, commencing at 13:35 local time, is recorded as follows: TYPE II/75 13:35 (followed by complete name of anti-icing fluid FINAL STEP STARTED AT (time);
	… De-icing/anti-icing complete	(e) POST DE-ICING CHECK COMPLETED; PERSONNEL AND EQUIPMENT CLEAR OF AIRCRAFT

	Circumstances	(a) Phraseologies
ABNORMAL OPERATIONS	*… for spray nozzle proximity sensor activation*	(b) BE ADVISED NOZZLE PROXIMITY ACTIVATION ON (significant point on aircraft) [NO VISUAL DAMAGE or DAMAGE (description of damage) OBSERVED] [SAY INTENTIONS];
	… for other aircraft having an emergency on the de-icing bay	(c) EMERGENCY IN DE-ICING BAY (de-icing bay number) [SHUT DOWN ENGINES or STANDBY FOR FURTHER INSTRUCTIONS].