ANNEX E TO PP 2207AS

Tabular comparison – Part 172 MOS Ch 10-14 – Current vs proposed

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.1.1.1	**Chapter 10: Standards for the Provision of Air Traffic Services** **Section 10.1 General** **10.1.1 Purpose** This Chapter contains the standards, rules and procedures for the provision of air traffic services that are additional to, or expand upon, or specify additional conditions for, the standards, rules and procedures contained in ICAO Annex 11, PANS-OPS Volume II, ICAO Doc 8168, ICAO Doc 7030 and ICAO PANS-ATM Doc 4444.		No equivalent	Nil
10.1.2.1	**10.1.2 Air Traffic Services Commensurate with Airspace Classification** Unless otherwise authorised by CASA, air traffic services must be provided commensurate with the airspace classifications as notified in the AIP.		No equivalent	ANNEX 11 & Doc. 4444 ANNEX 11 2.6 Classification of airspaces ... Doc. 4444 4.1 RESPONSIBILITY FOR THE PROVISION OF AIR TRAFFIC CONTROL SERVICE... Doc. 4444 4.2 RESPONSIBILITY FOR THE PROVISION OF FLIGHT INFORMATION SERVICE AND ALERTING SERVICE...
10.1.3.1	**10.1.3 Traffic Priorities** Aircraft in a state of emergency must be given priority over all other traffic.		No equivalent	ANNEX 11 2.24 Service to aircraft in the event of an emergency An aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, shall be given maximum consideration, assistance and priority over other aircraft as may be necessitated by the circumstances.
10.1.4.1	**10.1.4 Relaxation of Speed Restrictions** Subject to subsection 10.1.4.2, in providing an air traffic service in Class D airspace, including a Class D CTR, ATC may permit an aircraft to exceed the 200 KT Class D airspace speed limit. Note: *The 200 KT speed limit for Class D airspace is a CASA direction to pilots under subregulation 99AA (5) of the Civil Aviation Regulations 1988.*		**4.400 Relaxation of Class D airspace speed restrictions** (1) Subject to paragraph (2), in providing an air traffic service in Class D airspace, including a Class D control zone, ATC may permit an aircraft to exceed the 200 kt Class D airspace speed limit.	
10.1.4.2	After taking account of air traffic conditions, ATC may permit: (a) a maximum speed limit of 250 KT; or (b) if the pilot in command of an aircraft informs ATC that a speed greater than 250 KT is an operational requirement — a maximum speed limit of greater than 250 KT.		(2) After taking account of air traffic conditions, ATC may permit: (a) a maximum speed limit of 250 kts; or; or (b) if the pilot in command of an aircraft informs ATC that a speed greater than 250 kts is an operational requirement — a maximum speed limit of greater than 250 kts.	
10.1.5.1	**10.1.5 SARWATCH for IFR Aircraft conducting VFR Operations** The unit providing an ATS to an IFR aircraft must provide a SARWATCH service for the aircraft if it is conducting any of the following: (a) a departure, climb or descent under the VFR; (b) a VFR-on-top procedure.	3.0505.01	**3.505 SARWATCH service** (1) The unit providing ATS must provide a SARWATCH service for all aircraft: (a) receiving an air traffic control service; or (b) operating in Class E airspace under the IFR and conducting any of the following: (i) a departure, climb or descent under the VFR;	ANNEX 11 5.1.1 Annex 11 CHAPTER 5. ALERTING SERVICE 5.1 Application 5.1.1 Alerting service shall be provided: a) for all aircraft provided with air traffic control service; b) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic

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			(ii) a VFR-on-top procedure; or (c) operating in Class G airspace under the IFR; (d) operating in Class E or G airspace under the VFR and where the pilot of the aircraft: (i) has nominated a SARTIME; or (ii) is receiving an on-request surveillance information service.	services; and c) to any aircraft known or believed to be the subject of unlawful interference.
10.1.5.2	Subsection 10.1.5.1 does not apply if the pilot in command has expressly cancelled the IFR flight plan. *Note SARWATCH service is a function of the flight plan, not of the particular procedure being flown at the relevant time.*	3.0505.02	(2) subparagraph (b) does not apply if the pilot in command has expressly cancelled the IFR flight plan.	
10.2.1.1	**Section 10.2 ATS surveillance systems** **10.2.1 Use of ADS-B surveillance** ADS-B may only be used for the provision of air traffic control service if the quality of the ADS-B data is demonstrably suitable for the particular purpose.	4.0805	**4.805 Use of ADS-B for air traffic control service** ADS-B may only be used for the provision of air traffic control service if the quality of the ADS-B data is demonstrably suitable for the particular purpose.	Doc. 4444 8.1.10 ADS-B shall only be used for the provision of air traffic control service provided the quality of the information contained in the ADS-B message exceeds the values specified by the appropriate ATS authority.
10.2.2.1	**10.2.2 Operation of ADS-B transmitters** If the situation display shows that the aircraft identification transmitted by an ADS-B-equipped aircraft is different from that expected from the aircraft, ATC must ask the pilot to confirm aircraft identification.		No equivalent	Doc. 4444 8.5.4.2 Whenever it is observed on the situation display that the aircraft identification transmitted by an ADS-B-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.
10.2.2.2	If, after a pilot has been instructed to operate the aircraft's ADS-B transmitter on an assigned aircraft identification or to change call sign, the aircraft identification shown on the situation display is different from that assigned to the aircraft, ATC must ask the pilot to re-enter the assigned aircraft identification.		No equivalent	
10.2.2.3	If the identification of an aircraft as shown on the situation display is different from that assigned to the aircraft, and a request under subsection 10.2.2.2 has not resolved the discrepancy, ATC must ask the pilot to confirm that the correct aircraft identification has been selected.		No equivalent	
10.2.2.4	If the discrepancy continues following confirmation by the pilot that the correct aircraft identification has been set on the ADS-B identification feature, ATC must: (a) tell the pilot of the persistent discrepancy; and (b) if possible, correct the label showing the aircraft identification on the situation display; and (c) tell the next control position and any other interested unit using ADS-B for identification purposes of the erroneous aircraft identification transmitted by the aircraft.		No equivalent	Doc. 4444 8.5.4.3 If, following confirmation by the pilot that the correct aircraft identification has been set on the ADS-B identification feature, the discrepancy continues to exist, the following actions shall be taken by the controller: a) inform the pilot of the persistent discrepancy; b) where possible, correct the label showing the aircraft identification on the situation display; and c) notify the next control position and any other unit concerned of the erroneous aircraft identification transmitted by the aircraft.
10.2.3.1	**10.2.3 Verification of level information** The tolerance value for pressure altitude-derived level information displayed to the controller is ±200 ft. Geometric height information		Now proposing to adopt the ICAO standard in full, therefore no equivalent provision in the new MOS.	Doc. 4444 8.5.5.1.1 The tolerance value used to determine that pressure-altitude-derived level information displayed to the

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	must not be used for separation.			controller is accurate shall be ±60 m (±200 ft) in RVSM airspace. In other airspace, it shall be ±90 m (±300 ft), except that the appropriate ATS authority may specify a smaller criterion, but not less than ±60 m (±200 ft), if this is found to be more practical. Geometric height information shall not be used for separation.
10.2.3.2	ATC must verify displayed pressure altitude-derived level information: (a) on initial contact with an aircraft or, if this is not feasible, as soon as possible after initial contact; and (b) by simultaneous comparison with: (i) altimeter-derived level information received from the same aircraft by radiotelephony; or (ii) at an aerodrome — the aerodrome elevation during the take-off roll, if the level information subsequently indicates a positive climb after take-off.		No equivalent	Doc. 4444 8.5.5.1.2 Verification of pressure-altitude-derived level information displayed to the controller shall be effected 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. Geometric height information shall not be used to determine if altitude differences exist.
10.2.3.3	If aircraft pressure altitude-derived level information is within the approved tolerance value, the pilot need not be advised of the verification. Geometric height information must not be used to determine if altitude differences exist.		No equivalent	
10.2.3.4	If the displayed level information is not within the approved tolerance value or if a discrepancy greater than the approved tolerance value is detected after verification, ATC must tell the pilot of this and ask the pilot to check the pressure setting and confirm the aircraft's level.		No equivalent	Doc. 4444 8.5.5.1.3 If the displayed level information is not within the approved tolerance value or when a discrepancy in excess of the approved tolerance value is detected subsequent to verification, the pilot shall be advised accordingly and requested to check the pressure setting and confirm the aircraft's level.
10.2.3.5	If the discrepancy continues to exist after confirmation of the correct pressure setting, ATC must: (a) ask the pilot to stop Mode C or ADS-B altitude data transmission, if this does not cause the loss of position and identity information, and tell the next control position or ATC unit for the aircraft of the action taken; or (b) tell the pilot of the discrepancy and ask that the operation continue in order to prevent loss of position and identity information of the aircraft, if possible, override the label displayed level information with the reported level and tell the next control position or ATC unit for the aircraft of the action taken.		No equivalent	Doc. 4444 8.5.5.1.4 If, following confirmation of the correct pressure setting the discrepancy continues to exist, the following action should be taken according to circumstances: a) request the pilot to stop Mode C or ADS-B altitude data transmission, provided this does not cause the loss of position and identity information, and notify the next control positions or ATC unit concerned with the aircraft of the action taken; or b) inform the pilot of the discrepancy and request that the relevant operation continue in order to prevent loss of position and identity information of the aircraft and, when authorized by the appropriate ATS authority, override the label-displayed level information with the reported level. Notify the next control position or ATC unit concerned with the aircraft of the action taken.
10.2.4.1	**10.2.4 Determination of level occupancy using ATS surveillance system-derived level information** Aircraft maintaining a level. An aircraft is taken to be maintaining its assigned level as long as the pressure altitude-derived level information indicates that it is within ±200 ft of the assigned level.		Now proposing to adopt the ICAO standard in full, therefore no equivalent provision in the new MOS.	Doc. 4444 8.5.5.2.1 8.5.5.2 DETERMINATION OF LEVEL OCCUPANCY The criterion which shall be used to determine that a specific level is occupied by an aircraft shall be ±60 m (±200 ft) in RVSM airspace. In other airspace, it shall

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				be ±90 m (±300 ft), except that the appropriate ATS authority may specify a smaller criterion, but not less than ±60 m (±200 ft), if this is found to be more practical.
10.2.4.2	Aircraft vacating a level. An aircraft cleared to leave a level is taken to have commenced its manoeuvre and vacated the previously occupied level when the pressure altitude-derived level information indicates a change of 400 ft or more in the anticipated direction from its previously assigned level.		Now proposing to adopt the ICAO standard in full, therefore no equivalent provision in the new MOS.	Doc. 4444 8.5.5.2.3 *Aircraft vacating a level.* An aircraft cleared to leave a level is considered to have commenced its manoeuvre and vacated the previously occupied level when the pressure-altitude-derived level information indicates a change of more than 90 m (300 ft) in the anticipated direction from its previously assigned level.
10.2.4.3	Aircraft passing a level in climb or descent. An aircraft in climb or descent is taken to have passed a level when the pressure altitude-derived level information indicates that it has passed this level in the required direction by 400 ft or more.		Now proposing to adopt the ICAO standard in full, therefore no equivalent provision in the new MOS.	Doc. 4444 8.5.5.2.4 *Aircraft passing a level in climb or descent.* An aircraft in climb or descent is considered to have crossed a level when the pressure-altitude-derived level information indicates that it has passed this level in the required direction by more than 90 m (300 ft).
10.2.4.4	Aircraft reaching a level. An aircraft is taken to have reached the level to which it has been cleared when the greater of 3 consecutive renewals of display updates or at least 15 seconds have passed since the pressure altitude-derived level information indicated that it was within ±200 ft of the assigned level.		Now proposing to adopt the ICAO standard in full, therefore no equivalent provision in the new MOS.	Doc. 4444 8.5.5.2.5 *Aircraft reaching a level.* An aircraft is considered to have reached the level to which it has been cleared when the elapsed time of three display updates, three sensor updates or 15 seconds, whichever is the greater, has passed since the pressure-altitude-derived level information has indicated that it is within the appropriate tolerances of the assigned level, as specified in 8.5.5.2.1.
10.2.5.1	**10.2.5 Establishment of identification** Aircraft must be identified by at least 1 of the following procedures: (a) application of 1 or more of the identification procedures specified in PANS Doc. 4444; (b) correlating a particular position symbol to the position of an aircraft observed visually.	4.0810	**4.810 Establishment of identification** Aircraft must be identified by at least 1 of the following procedures: (a) application of 1 or more of the identification procedures specified in ICAO Doc. 4444; (b) correlating a particular position symbol to the position of an aircraft observed visually.	8.6.2 Nil
10.2.6.1	**10.2.6 Position information** ATC must tell the pilot of an aircraft provided with ATS surveillance service of its position in the following circumstances: (a) on identification, unless the identification is established: (i) based on the pilot's report of the aircraft position, or within 1 NM of the runway on departure, if the observed position on the situation display is consistent with the aircraft's time of departure; or (ii) by use of ADS-B aircraft identification, SSR Mode S aircraft identification or assigned discrete SSR codes if the location of the observed position indication is consistent with the current flight plan of the aircraft; or (iii) by transfer of identification (see subsection 12.1.7); (b) when the pilot requests this information;		No equivalent	Doc. 4444 8.6.4.1 An aircraft provided with ATS surveillance service should be informed of its position in the following circumstances: a) upon identification, except when the identification is established: i) based on the pilot's report of the aircraft position or within one nautical mile of the runway upon departure and the observed position on the situation display is consistent with the aircraft's time of departure; or ii) by use of ADS-B aircraft identification, Mode S aircraft identification or assigned discrete SSR codes and the location of the observed position indication is consistent with the current flight plan of the aircraft; or

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	(c) when the pilot's estimate differs significantly from the controller's estimate based on the observed position; (d) when the pilot is instructed to resume own navigation after vectoring if the current instructions had diverted the aircraft from a previously assigned route; (e) immediately before termination of ATS surveillance service, if the aircraft is observed to deviate from its intended route.			iii) by transfer of identification; b) when the pilot requests this information; c) when a pilot's estimate differs significantly from the controller's estimate based on the observed position; d) when the pilot is instructed to resume own navigation after vectoring if the current instructions had diverted the aircraft from a previously assigned route (see 8.6.5.5); e) immediately before termination of ATS surveillance service, if the aircraft is observed to deviate from its intended route.
10.2.7.1	**10.2.7 Use of Speed Control** Speed Control must not be applied to formation flights or fuel critical flights.		No equivalent	Doc. 4444 4.6.1.5 The flight crew shall inform the ATC unit concerned if at any time they are unable to comply with a speed instruction. In such cases, the controller shall apply an alternative method to achieve the desired spacing between the aircraft concerned.
10.2.8.1	**10.2.8 Termination of ATS surveillance services** When an aircraft exits controlled airspace into an area in which ATS surveillance services will continue, ATC must inform the pilot accordingly.	4.0825	**4.825 Termination of ATC service within surveillance coverage** (1) Subject to (2), if: (a) an aircraft is receiving ATC service using an ATS surveillance system; and (b) the aircraft exits controlled airspace into non-controlled airspace where ATS surveillance services will continue; ATC must inform the pilot when ATC service is terminated. (2) (1) does not apply if ATC has given the pilot advance notice of the lateral or vertical point at which the aircraft will leave controlled airspace.	The provision will complement ICAO Doc. 4444 8.6.7.1: 8.6.7 Interruption or termination of ATS surveillance service 8.6.7.1 An aircraft which has been informed that it is provided with ATS surveillance service should be informed immediately when, for any reason, the service is interrupted or terminated.
10.2.9.1	**10.2.9 Obstacle clearance** When vectoring, ATC must provide at least 1 000 ft vertical clearance over any obstacle within: (a) 3 NM of the aircraft when the range scale in not greater than 50 NM; or (b) 5 NM of the aircraft when the range scale is greater than 50 NM.		Obstacle clearance is covered by a separate consolidated requirement covering all situations including under procedural and surveillance control.	Doc. 4444 8.6.5.2 When vectoring an IFR flight and when giving an IFR flight a direct routing which takes the aircraft off an ATS route, the controller shall issue clearances such that the prescribed obstacle clearance will exist at all times until the aircraft reaches the point where the pilot will resume own navigation. When necessary, the relevant minimum vectoring altitude shall include a correction for low temperature effect.
10.2.9.2	These obstacle clearance requirements do not apply: (a) when vectoring as part of an issued SID; or (b) when ATC authorises a visual departure; or (c) in VMC by day only, when ATC assigns responsibility for arranging obstacle clearance specifically to the pilot.		Obstacle clearance is covered by a separate consolidated requirement covering all situations including under procedural and surveillance control.	
10.2.10.1	**10.2.10 Vectoring special VFR** Special VFR aircraft may be vectored only if warranted by emergency conditions.		No equivalent	Doc. 4444 8.10.1.2 8.10.1.2 Special VFR flights shall not be vectored unless special circumstances, such as emergencies,

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				dictate otherwise.
10.2.11.1	**10.2.11 Issuing ATS surveillance system derived distance** ATS surveillance system derived distance and appropriate altitude assignments may be issued to an arriving aircraft using a track for which a DME or GPS Arrival procedure is specified, if: (a) DME is not available; or (b) a pilot conducting a GPS arrival reports the loss of RAIM.		No equivalent	Nil
10.2.11.2	When ATS surveillance system derived distances are used as a substitute for DME or GPS derived distance information, the reference datum being used for the distance information (e.g. DME site) must be displayed on the situation display map.		No equivalent	Doc. 4444 8.6.4.3 8.6.4.3 Whenever practicable, position information shall relate to positions or routes pertinent to the navigation of the aircraft concerned and shown on the situation display map.
10.3.1.1	**10.3 Circuits and Runways** **10.3.1 Selection of Runway in Use** **Use of other than nominated runways.** Controllers must not nominate a particular runway for use if an alternative runway is available, when: (a) for runway conditions that are completely dry, either: (i) the cross-wind component for the particular runway, including gusts, exceeds 20 knots; or (ii) the downwind component for the particular runway, including gusts, exceeds 5 knots; (b) for runway conditions that are not completely dry, either: (i) the cross-wind component for the particular runway, including gusts, exceeds 20 knots; or (ii) there is a downwind component for the particular runway.	4.0705	**4.705 Selection of runway in use** ATC must not nominate a particular runway as the runway-in-use, if: (a) for a runway that is dry: (i) the crosswind component, including gusts, exceeds 20 kts; or (ii) the tailwind component, including gusts, exceeds 5 kts; and (b) for a runway that is not dry: (i) the crosswind component, including gusts, exceeds 20 kts; or (ii) there is any tailwind component; and (c) an alternate runway is available. **Note** ***dry***, for the purpose of the surface condition of a runway, is defined in the CASR dictionary.	Doc. 4444 7.2 7.2.1 The term “runway-in-use” shall be used to indicate the runway or runways that, at a particular time, are considered by the aerodrome control tower to be the most suitable for use by the types of aircraft expected to land or take off at the aerodrome. 7.2.2 Normally, an aircraft will land and take off into wind unless safety, the runway configuration, meteorological conditions and available instrument approach procedures or air traffic conditions determine that a different direction is preferable. In selecting the runway-in-use, however, the unit providing aerodrome control service shall take into consideration, besides surface wind speed and direction, other relevant factors such as the aerodrome traffic circuits, the length of runways, and the approach and landing aids available. 7.2.3 A runway for take-off or landing, appropriate to the operation, may be nominated for noise abatement purposes, the objective being to utilize whenever possible those runways that permit aeroplanes to avoid noise-sensitive areas during the initial departure and final approach phases of flight. 7.2.4 Runways should not be selected for noise abatement purposes for landing operations unless they are equipped with suitable glide path guidance, e.g. ILS, or a visual approach slope indicator system for operations in visual meteorological conditions. 7.2.5 A pilot-in-command, prompted by safety concerns, can refuse a runway offered for noise-preferential reasons. 7.2.6 Noise abatement shall not be a determining factor in runway nomination under the following circumstances:

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				a) if the runway surface conditions are adversely affected (e.g. by snow, slush, ice, water, mud, rubber, oil or other substances); b) for landing in conditions: 1) when the ceiling is lower than 150 m (500 ft) above aerodrome elevation, or the visibility is less than 1 900 m; or 2) when the approach requires use to be made of vertical minima greater than 100 m (300 ft) above aerodrome elevation and: i) the ceiling is lower than 240 m (800 ft) above aerodrome elevation; or ii) the visibility is less than 3 000 m; c) for take-off when the visibility is less than 1 900 m; d) when wind shear has been reported or forecast or when thunderstorms are expected to affect the approach or departure; and e) when the crosswind component, including gusts, exceeds 28 km/h (15 kt), or the tailwind component, including gusts, exceeds 9 km/h (5 kt).
10.3.1.2	**Authorising intersection departures.** A controller may authorise a departure from a runway intersection when requested by the pilot or may offer an intersection departure to assist traffic flow. The pilot must be advised of the remaining runway length if such information is not readily available to the pilot.	4.0735	**4.735 Intermediate departures – remaining take-off distance** When clearing an aircraft for an intermediate departure, ATC must inform the pilot about the length of remaining runway, unless: (a) this information is readily available to the pilot; or (b) the pilot specifically requested the intermediate departure.	We agreed to omit this, but the Doc. 4444 reference does not actually mention the crux of the matter – notifying remaining TODA. Maybe we need to retain Doc. 4444 5.8.3.2 5.8.3.2 A separation minimum of 3 minutes shall be applied between a LIGHT or MEDIUM aircraft when taking off behind a HEAVY aircraft or a LIGHT aircraft when taking off behind a MEDIUM aircraft from: a) an intermediate part of the same runway; or b) an intermediate part of a parallel runway separated by less than 760 m (2 500 ft).
10.3.2.1	**10.3.2 Simultaneous Parallel Runway Operations** In addition to ICAO PANS-ATM applications, ATC may use parallel runways for Simultaneous Opposite Direction Operations (SODPROPS) (see subsection 10.4.8).		No equivalent	
10.3.2.2	Whenever parallel runway operations are in progress, pilots must be notified by inclusion of such advice and an expectation of the type of approach or departure on the ATIS.		No equivalent	Doc. 4444 6.7.3 6.7.3.2.3 As early as practicable after an aircraft has established communication with approach control, the aircraft shall be advised that independent parallel approaches are in force. This information may be provided through the ATIS broadcasts. 6.7.3.4.1 Dependent parallel approaches may be conducted to parallel runways provided: ... e) aircraft are advised that approaches are in use to both

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td></td><td></td><td></td><td>runways (this information may be provided through the ATIS);</td></tr>
<tr><td>10.3.2.3</td><td>The use of SODPROPS must be broadcast on the ATIS including the runway configuration being used for the procedure.</td><td></td><td>No equivalent</td><td>Doc. 4444 6.7.3.2.2
6.7.3.2.2 As early as practicable after an aircraft has established communication with approach control, the aircraft shall be advised that independent parallel approaches are in force. This information may be provided through the ATIS
broadcasts.</td></tr>
<tr><td>10.3.2.4</td><td>At Class D aerodromes, ATC may authorise simultaneous, same direction operations on:
(a) parallel runways; or
(b) parallel landing areas; or
(c) a runway and a parallel landing area;
only if
(d) Class D visual meteorological conditions exist, or visual separation between the relevant aircraft is applied; and
(e) 2-way radio communication is maintained with the aircraft involved; and
(f) pertinent traffic information is issued; and
(g) the minimum distance between the runways or landing areas is in accordance with the spacing specified for the categories of aircraft in the following table:
<table><tr><td>Aircraft</td><td>Distance between Runway centrelines</td><td>Distance between edges of adjacent landing areas or runway and landing area</td></tr><tr><td>Single engine propeller driven</td><td>90m</td><td>60m</td></tr><tr><td>Twin engine, propeller driven</td><td>150m</td><td>120m</td></tr><tr><td>All others</td><td>210m</td><td>180m</td></tr></table>(h) for the table in paragraph (g): (i) where aircraft of more than 1 category are operating at the same time, the greater or greatest of the minimum distances applies; and
(ii) a landing area includes a glider runway strip.</td><td>4.0745.01</td><td>4.745 Simultaneous same direction operations
(1) At Class D aerodromes, ATC may authorise simultaneous, same direction operations on:
(a) parallel runways; or
(b) parallel landing areas; or
(c) a runway and a parallel landing area;
only if
(d) Class D visual meteorological conditions exist, or visual separation between the relevant aircraft is applied; and
(e) 2-way radio communication is maintained with the aircraft involved; and
(f) pertinent traffic information is issued; and
(g) the minimum distance between the runways or landing areas is in accordance with the spacing specified for the categories of aircraft in the table 4.745-1.
Table 4.745-1
<table><tr><th>Aircraft type</th><th>Minimum distance between Runway centrelines</th><th>Minimum distance between edges of adjacent landing areas or runway and landing area</th></tr><tr><td>Fixed wing aircraft with MTOW ≤ 5,700kg and any helicopter</td><td>90 m</td><td>60 m</td></tr><tr><td>Any of the aircraft is fixed wing with MTOW > 5,700kg and < 136,000kg</td><td>150 m</td><td>120 m</td></tr><tr><td>Any of the aircraft has an MTOW ≥ 136,000kg</td><td>210 m</td><td>180 m</td></tr></table>(h) for the table in paragraph (g):</td><td>FAA 7110.65Y
3−8−3. SIMULTANEOUS SAME DIRECTION OPERATION
Authorize simultaneous, same direction operations on parallel runways, on parallel landing strips, or on a runway and a parallel landing strip only when the following conditions are met:
a. Operations are conducted in VFR conditions unless visual separation is applied.
b. Two-way radio communication is maintained with the aircraft involved and pertinent traffic information is issued.
c. The distance between the parallel runways or landing strips is in accordance with those specified in TBL 3−8−1.
TBL 3−8−1
<table><tr><td>Aircraft category</td><td colspan="2">Minimum distance (feet) between parallel</td></tr><tr><td>Category I or Category II</td><td>Runway centerlines</td><td>Edges of adjacent strips or runway and strip</td></tr><tr><td></td><td>300</td><td>200</td></tr><tr><td>If either aircraft is a Category III</td><td>500</td><td>400</td></tr><tr><td>If either aircraft is a Heavy</td><td>700</td><td>600</td></tr></table>Note:
CATEGORY I small single−engine propeller driven</td></tr>
</table>

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			(i) where aircraft of more than 1 category are operating at the same time, the greater or greatest of the minimum distances applies; and (ii) a landing area includes a glider runway strip; and (i) where relevant, wake turbulence separation is applied.	*aircraft weighing 12,500 lbs. or less, and all helicopters.* *CATEGORY II small twin−engine propeller driven aircraft weighing 12,500 lbs. or less.* *CATEGORY III all other aircraft.*
10.3.2.5	If the parallel runways at a Class D aerodrome do not meet the minimum spacing requirements under paragraph 10.3.2.4 (g), CASA may, in writing, approve simultaneous, same direction operations subject to conditions, if appropriate.		(2) If the parallel runways at a Class D aerodrome do not meet the minimum spacing requirements under paragraph (1) (g) for operations by a particular aircraft type, CASA may, in writing, approve simultaneous, same direction operations subject to conditions, if appropriate.	Nil
10.3.3.1	**10.3.3 Procedures for Low Visibility Operations** When meteorological conditions are such that all or part of the manoeuvring area of a controlled aerodrome cannot be visually monitored from the control tower, ATC must co-operate with the aerodrome operator to initiate measures in accordance with the aerodrome's low visibility procedures (LVP).	4.0760.01	**4.760 Procedures for Low Visibility Operations** (1) When meteorological conditions are such that all or part of the manoeuvring area of a controlled aerodrome cannot be visually monitored from the aerodrome control facility, ATC must co-operate with the aerodrome operator to initiate measures in accordance with the aerodrome's low visibility procedures (LVP).	Doc. 4444 7.13.1.1 When there is a requirement for traffic to operate on the manoeuvring area in conditions of visibility which prevent the aerodrome control tower from applying visual separation between aircraft, and between aircraft and vehicles, the following shall apply: 7.13.1.1.1 At the intersection of taxiways, an aircraft or vehicle on a taxiway shall not be permitted to hold closer to the other taxiway than the holding position limit defined by a clearance bar, stop bar or taxiway intersection marking according to the specifications in Annex 14, Volume I, Chapter 5. 7.13.1.1.2 The longitudinal separation on taxiways shall be as specified for each particular aerodrome by the appropriate ATS authority. This separation shall take into account the characteristics of the aids available for surveillance and control of ground traffic, the complexity of the aerodrome layout and the characteristics of the aircraft using the aerodrome. Consistent with changes to the standards for aerodrome control facilities, the only change proposed for this part of the MOS is to rename control tower as aerodrome control facility.
10.3.3.2	Subject to subsection 10.3.3.3, for a controlled aerodrome, ATC must co-operate with the aerodrome operator to ensure that LVP are fully implemented if either of the following is to take place at the aerodrome: (a) an instrument approach operation when either: (i) the reported cloud ceiling is less than the precision approach Category I decision height published in the AIP for the runway to be used; or (ii) the visibility is less than the precision approach Category I RVR minimum published in the AIP for the runway to be used; (b) a take-off operation when the reported visibility or RVR on the runway to be used is less than 550 m. ***Note*** *When LVP are implemented, the aerodrome operator is required to complete all operator preparations relevant to LVP to commence,*	4.0760.02	(2) Subject to subsection (3), for a controlled aerodrome, ATC must co-operate with the aerodrome operator to ensure that LVP are fully implemented if either of the following is to take place at the aerodrome: (a) an instrument approach operation when either: (i) the reported cloud ceiling is less than the precision approach Category I decision height published in the AIP for the runway to be used; or (ii) the visibility is less than the precision approach Category I RVR minimum published in the AIP for the runway to be used; (b) a take-off operation when the reported visibility or RVR on the runway to be used is less than 550 m. ***Note*** When LVP are implemented, the aerodrome operator is required to complete all operator preparations relevant to LVP to commence, and confirm to ATC that these preparations are complete. See also *Part 139 (Aerodromes) Manual of Standards*	Doc. 4444 7.13.5 Provisions regarding low visibility operations should specify: a) the RVR value(s) at which the low visibility operations procedures shall be implemented; b) the minimum ILS/MLS equipment requirements for category II/III operations; c) other facilities and aids required for category II/III operations, including aeronautical ground lights, which shall be monitored for normal operation; d) the criteria for and the circumstances under which downgrading of the ILS/MLS equipment from category II/III operations capability shall be made; e) the requirement to report any relevant equipment

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	and confirm to ATC that these preparations are complete. See also subsection 10.17.3 of Manual of Standards (MOS) – Part 139 Aerodromes.		*2019*.	failure and degradation, without delay, to the flight crews concerned, the approach control unit, and any other appropriate organization; f) special procedures for the control of traffic on the manoeuvring area, including: 1) the runway-holding positions to be used; 2) the minimum distance between an arriving and a departing aircraft to ensure protection of the sensitive and critical areas; 3) procedures to verify that aircraft and vehicles have vacated the runway; 4) procedures applicable to the separation of aircraft and vehicles; g) applicable spacing between successive approaching aircraft; h) action(s) to be taken in the event low visibility operations need to be discontinued, e.g. due to equipment failures; and i) any other relevant procedures or requirements.
10.3.3.3	ATC must inform pilots that LVP are in force, but only after: (a) ATC has verified that LVP at the aerodrome are fully implemented; and (b) for an aerodrome that supports instrument approach operations with minima less than precision approach Category I — procedures are in place to safeguard the ILS critical or sensitive areas as required for the classification on the ILS and in accordance with subsection 10.3.4.6; and (c) for an aerodrome that supports localiser-guided take offs — procedures are in place to safeguard the localiser critical and sensitive areas as required for the classification on the ILS and in accordance with subsection 10.3.4.7.	4.0760.03	(3) ATC must inform pilots that LVP are in force, but only after: (a) ATC has verified that LVP at the aerodrome are fully implemented; and (b) for an aerodrome that supports instrument approach operations with minima less than precision approach Category I — procedures are in place to safeguard the ILS critical or sensitive areas as required for the classification on the ILS and in accordance with 4.070p (6); and (c) for an aerodrome that supports localiser-guided take offs — procedures are in place to safeguard the localiser critical and sensitive areas as required for the classification on the ILS and in accordance with subsection 4.070p (7).	
10.3.4.1	**10.3.4 Protecting ILS critical and sensitive areas** ATC must not permit a vehicle or personnel within the relevant ILS critical areas during ILS operations.	4.0765.01	**4.765 Protecting ILS critical and sensitive areas** (1) ATC must not permit a vehicle or personnel within the relevant ILS critical areas during ILS operations.	Nil
10.3.4.2	Subject to 10.3.4.3, ATC must not permit an aircraft to be within the relevant ILS critical area if: (a) the cloud ceiling is at, or below, 600 ft; or (b) the visibility is 2 000 m or less. *Note 1. The relevant ILS critical area means either the critical area appropriate to the largest aircraft that uses the aerodrome, or the critical area appropriate to the particular size and shape of the aircraft or vehicle.* *2. An aircraft taking off and passing over the relevant localiser is not taken to be penetrating the relevant localiser critical area.*	4.0765.02	(2) Subject to (3), ATC must not permit an aircraft to be within the relevant ILS critical area if: (a) the cloud ceiling is at, or below, 600 ft; or (b) the visibility is 2,000 m or less. ***Note*** 1. The relevant ILS critical area means either the critical area appropriate to the largest aircraft that uses the aerodrome, or the critical area appropriate to the particular size and shape of the aircraft or vehicle. 2. An aircraft taking off and passing over the relevant localiser is not taken to be penetrating the relevant localiser critical area.	Nil
10.3.4.3	Subject to 10.3.4.4, an aircraft may enter an ILS critical area: (a) without ATC clearance, while landing or vacating a runway after landing; or (b) under ATC clearance, provided: (i) an approaching aircraft has not passed the ILS outer marker; or (ii) if an outer marker is not available — an approaching aircraft is not within 4 NM of the landing runway threshold.	4.0765.03	(3) Subject to (4), an aircraft may enter an ILS critical area: (a) without ATC clearance, while landing or vacating a runway after landing; or (b) under ATC clearance, provided: (i) an approaching aircraft has not passed the ILS outer marker; or (ii) if an outer marker is not available — an approaching aircraft is not within 4 NM of the landing runway threshold.	Nil
10.3.4.4	If an aircraft penetrates the critical area when the cloud ceiling is at, or below, 600 ft, or the visibility is 2 000 m or less, ATC must broadcast an appropriate warning to: (a) any approaching aircraft that have passed the ILS outer marker; or	4.0765.04	(4) If an aircraft penetrates the critical area when the cloud ceiling is at, or below, 600 ft, or the visibility is 2,000 m or less, ATC must broadcast an appropriate warning to: (a) any approaching aircraft that have passed the ILS outer marker;	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(b) if an outer marker is not available — any approaching aircraft that are within 4 NM of the landing runway threshold.		or (b) if an outer marker is not available — any approaching aircraft that are within 4 NM of the landing runway threshold.	
10.3.4.5	For subsection 10.3.4.4, appropriate warning means a warning that there may be ILS signal disturbance due to aircraft penetration of an ILS critical area.	4.0765.05	(5) For paragraph (4), appropriate warning means a warning that there may be ILS signal disturbance due to aircraft penetration of an ILS critical area.	Nil
10.3.4.6	If: (a) an instrument approach operation with minima less than precision approach Category I is conducted at an aerodrome; and (b) either: (i) the reported cloud ceiling is less than the instrument approach Category I decision height published in the AIP for the runway to be used; or (ii) the visibility is less than the precision approach Category I RVR minimum published in the AIP for the runway to be used; then: (c) for the ILS critical area — once an arriving aircraft has passed the ILS outer marker or, if an outer marker is not available, is within 4 NM of the landing runway threshold, ATC must not permit other aircraft or any vehicle within the relevant ILS localiser or glidepath critical areas; and (d) for the ILS sensitive area — once an arriving aircraft is within 2 NM of the landing runway threshold, ATC must not permit other aircraft or any vehicle within the relevant ILS sensitive area.	4.0765.06	(6) If: (a) an instrument approach operation with minima less than precision approach Category I is conducted at an aerodrome; and (b) either: (i) the reported cloud ceiling is less than the instrument approach Category I decision height published in the AIP for the runway to be used; or (ii) the visibility is less than the precision approach Category I RVR minimum published in the AIP for the runway to be used; then: (c) for the ILS critical area — once an arriving aircraft has passed the ILS outer marker or, if an outer marker is not available, is within 4 NM of the landing runway threshold, ATC must not permit other aircraft or any vehicle within the relevant ILS localiser or glidepath critical areas; and (d) for the ILS sensitive area — once an arriving aircraft is within 2 NM of the landing runway threshold, ATC must not permit other aircraft or any vehicle within the relevant ILS sensitive area.	Nil
10.3.4.7	If an aerodrome that supports a relevant aircraft's localiser-guided take-off has visibility of less than 550 m, ATC must not permit another aircraft or vehicle within the applicable ILS localiser critical and sensitive areas from the time the relevant aircraft has been cleared for take-off until it has completed its take off. ***Note*** *Pilots are required to notify ATC of an intention to conduct a guided take-off at start up.*	4.0765.07	(7) If an aerodrome that supports a relevant aircraft's localiser-guided take-off has visibility of less than 550 m, ATC must not permit another aircraft or vehicle within the applicable ILS localiser critical and sensitive areas from the time the relevant aircraft has been cleared for take-off until it has completed its take off. ***Note*** Pilots are required to notify ATC of an intention to conduct a guided take-off at start up.	Nil
10.3.5.1	**10.3.5 Informing pilots when critical and sensitive areas are not protected** If: (a) ATC is not protecting an ILS critical or sensitive area according to subsections 10.3.4.6 or 10.3.4.7; and (b) an aircraft advises that an operation mentioned in subsection 10.3.5.2 is to be conducted; ATC must inform the pilot in command of the aircraft that the relevant ILS critical or sensitive area is not being protected.	4.0770.01	**4.770 Informing pilots when critical and sensitive areas are not protected** (1) If: (a) ATC is not protecting an ILS critical or sensitive area according to subsections 4.0702 (6) and 4.0702 (7); and (b) an aircraft advises that an operation mentioned in subsection (2) is to be conducted; ATC must inform the pilot in command of the aircraft that the relevant ILS critical or sensitive area is not being protected.	Nil
10.3.5.2	The operations are the following: (a) any approach with minima less than precision approach Category I;	4.0770.02	(2) The operations are the following: (a) any approach with minima less than precision approach Category I; (b) autoland procedures;	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(b) autoland procedures; (c) localiser-guided take-off; (d) an operation similar to 1 mentioned in paragraphs (a) to (c).		(c) localiser-guided take-off; (d) an operation similar to one mentioned in paragraphs (a) to (c).	
10.4.1.1	**Section 10.4 Departures and Arrivals** **10.4.1 Arriving Aircraft** To provide for the possibility of radio failure, aircraft under procedural control, cleared to the same holding point or holding points not laterally separated, must not be assigned the same level while flying within 10 MIN of the holding point. However, this requirement does not preclude two arriving aircraft on laterally separated flight paths, which are at least 90 degrees apart, being: (a) cleared to make simultaneous visual approaches; or (b) instructed to descend visually to the coordinated common level or different levels when, due to traffic, a visual approach cannot be made provided: (i) there is no significant cloud at or below the levels assigned to the aircraft; (ii) visibility is 30 KM or more; and (iii) both aircraft have been instructed to report at a distance outside the point at which lateral separation would be infringed and at which distance it is known that visual separation can be applied.	4.0615	**4.615 Separation between arriving aircraft under procedural control** ATC may clear two arriving aircraft: (a) for simultaneous visual approach; or (b) to descend visually to the same level or different levels; if: (c) the requirements for a visual approach in 4.620 are met; and (d) the aircraft are approaching the aerodrome on flight paths that differ by at least 90 degrees; and (e) there is no significant cloud at or below the levels assigned to the aircraft; and (f) the visibility is 30 km or more; and (g) ATC instructs both aircraft report at a distance beyond which lateral separation is infringed and (h) at or within the distance mentioned in (g), ATC applies visual separation between the aircraft.	Doc. 4444 5.5.2 5.5.2 Except when lateral separation exists, vertical separation shall be applied between aircraft holding in flight and other aircraft, whether arriving, departing or en route, whenever the other aircraft concerned are within five minutes flying time of the holding area or within a distance prescribed by the appropriate authority (see Figure 5-36).
10.4.1.2	When a delay of more than 5 minutes is expected, ATC must issue pilots: (a) when a procedural control service is provided with an expected approach time (EAT); or (b) when an ATS surveillance service is provided with an expected landing time (ETL).		No equivalent	Doc. 4444 6.5.7 6.5.7 Expected approach time An expected approach time shall be determined for an arriving aircraft that will be subjected to a delay of 10 minutes or more or such other period as has been determined by the appropriate authority. The expected approach time shall be transmitted to the aircraft as soon as practicable and preferably not later than at the commencement of its initial descent from cruising level. A revised expected approach time shall be transmitted to the aircraft without delay whenever it differs from that previously transmitted by 5 minutes or more, or such lesser period of time as has been established by the appropriate ATS authority or agreed between the ATS units concerned. 6.5.7.2 An expected approach time shall be transmitted to the aircraft by the most expeditious means whenever it is anticipated that the aircraft will be required to hold for 30 minutes or more. 6.5.7.3 The holding fix to which an expected approach time relates shall be identified together with the expected approach time whenever circumstances are such that this would not otherwise be evident to the pilot. 6.5.8 Onward clearance time

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				In the event an aircraft is held en route or at a location or aid other than the initial approach fix, the aircraft concerned shall, as soon as practicable, be given an expected onward clearance time from the holding fix. The aircraft shall also be advised if further holding at a subsequent holding fix is expected.
10.4.5.1	**10.4.5 Independent Parallel Visual Approaches** Independent visual approaches may be conducted to parallel runways with centre-lines separated by at least 760 M provided that: (a) the aircraft are making straight-in approaches commencing at the outer marker or 4 NM from the runway threshold; and (b) a minimum 1,000 ft vertical or 3 NM radar separation is maintained between aircraft until: (i) one aircraft is established within the furthest Initial Approach Fix (IAF), when both aircraft are established on their respective localiser in visual conditions; or (ii) one aircraft is established on the localiser in visual conditions, and the other is established on a heading to intercept final inside the furthest IAF with the runway reported in sight; or (iii) both aircraft are established on a heading to intercept final inside the furthest IAF with the runway reported in sight; and (c) when vectoring an aircraft to intercept the final course, ensure that the final vector permits the aircraft to intercept at an angle not greater than 30 degrees.		To be dealt with separately	
10.4.5.2	When an independent visual approach is anticipated, ATC must advise pilots on first contact with approach.		To be dealt with separately	Nil
10.4.5.3	If a pilot does not report the runway in sight by a position 3 NM from the centre-line of the adjacent parallel runway, the controller may, if necessary, vector the aircraft away from the final approach for sequencing for a dependent approach. The “VISUAL” report is the only report required when established on the localiser.		To be dealt with separately	Nil
10.4.6.1	**10.4.6 Dependent Parallel Visual Approaches** Dependent visual approaches to parallel runways may be conducted in accordance with the procedures and requirements for visual approaches (see paragraph 12.2.4).		To be dealt with separately	Nil
10.4.8.1	**10.4.8 Simultaneous Opposite Direction Parallel Runway Operations** Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) may be conducted subject to the following conditions: (a) runway centrelines are separated by a minimum of 860 M; (b) operations are conducted in meteorological conditions equal to, or	4.0630	**4.630 Simultaneous opposite direction operations** ATC may authorise simultaneous opposite direction operations (SODPROPS) on parallel runways, but only if: (a) in the relevant arrival or departure direction, the ceiling is at or above 2,500 ft and visibility is at least 8 km; and (b) 2-way radio communication is maintained with the aircraft involved; and	FAA 7110.65 3−8−4. SIMULTANEOUS OPPOSITE DIRECTION OPERATION Authorize simultaneous opposite direction operations on parallel runways, on parallel landing strips, or on a runway and a parallel landing strip only when the following conditions are met: a. Operations are conducted in VFR

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	better than, the minimum radar vectoring level, or the lowest minimum commencement level for instrument approaches to the arrival runway, whichever is lower. (without prior approval, the minima shall not be less than cloud base 2,500 ft and visibility 8 KM, in the arrival and departure sector concerned); (c) traffic information is passed to conflicting aircraft; (d) the departure runway course diverges by 15 degrees from the approach course to the other runway.		(c) pertinent traffic information is issued; and (d) immediately after take-off, the departing aircraft turns onto a track that diverges by 15 degrees or more from the final approach course to the other runway; and (e) the distance between the runway centrelines is not less than 860 m.	conditions. b. Two-way radio communication is maintained with the aircraft involved and pertinent traffic information is issued. PHRASEOLOGY− TRAFFIC (description) ARRIVING/DEPARTING/LOW APPROACH, OPPOSITE DIRECTION ON PARALLEL RUNWAY/LANDING STRIP. c. The distance between the runways or landing strips is in accordance with the minima in TBL 3−8−2. TBL 3−8−2 Opposite Direction Distance Minima Type of Operation Minimum distance (feet) between parallel Runway centerlines Edges of adjacent strips or runway and strip Between sunrise and sunset 1,400 1,400 Between sunset and sunrise 2,800 Not authorized
10.5.1.1	**Section 10.5 Separation Standards — General** **10.5.1 Application of Separation Standards** The longitudinal, lateral, vertical, time and wake turbulence standards that follow, take precedence over those standards in ICAO PANS-Doc. 4444.		No equivalent	Nil
10.5.2.1	**10.5.2 Separation of VFR using navigation aids** Time separation standards requiring the use of radio aids to determine position must not be applied to VFR flights. However other separation standards may be applied to VFR flights.	4.0515	**4.515 Separation of VFR flights using navigation aids** (1) For VFR flights, ATC may only apply separation minima requiring the use of navigation aids if it has been established that the aircraft carries the relevant navigation aid and that the pilot is suitably qualified. (2) For (1), verbal advice from the pilot or indication of the relevant aid on the aircraft's flight notification signifies both.	Nil
10.5.3.1	**10.5.3 Formation or In-company Flights** Separation from a formation must be applied to the outer dimensions applicable to the type of formation.	4.0530.01	**4.530 Separation of formation flights** ATC must separate formation aircraft from other aircraft on the basis of the outer horizontal and vertical dimensions applicable to the type of formation.	Nil
10.5.3.2	Before applying Vertical Separation with a formation, controllers must check the levels of the other formation aircraft as necessary to establish the full vertical extent of the formation.		No equivalent	Nil – covered by the provision above

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.5.3.3	A group of civil aircraft conducting the same flight (e.g. an air safari), which require the aircraft to operate at separation distances greater than those specified for formation flights must be considered to be separate aircraft when applying separation.		No equivalent	Nil
10.5.4.1	**10.5.4 Airspace Boundaries** Where applicable, separation must be provided from the time an aircraft enters controlled airspace until the time an aircraft leaves controlled airspace. Separation is not required between aircraft within controlled airspace and any aircraft in close proximity but remaining outside controlled airspace.	4.0525.01	**4.525 Limits of application of ATC separation** (1) ATC is not required to apply separation between aircraft within controlled airspace and any aircraft in close proximity but remaining outside controlled airspace.	8.8.2.1 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: a) be informed of the unknown aircraft, and if so requested by the controlled flight or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists. UK CAP 493: 13A.4 Although IFR flights within class A-D airspace, and VFR flights within B/C airspace, are deemed to be separated from unknown aircraft flying in adjoining uncontrolled airspace, controllers should aim to keep the aircraft under their control at least two miles within the boundary.
10.5.4.2	Unless prior coordination has been effected, aircraft must be separated from adjacent sectors by the appropriate separation standard.	4.0525.02	(2) ATC must ensure appropriate ATC separation exists between a controlled flight in an airspace under the jurisdiction of one controller and a controlled flight operating in an adjacent airspace under the jurisdiction of another controller.	6.5.6.1.4 …. Coordination shall be effected with any adjacent ATC unit or control sector, when required, to avoid conflict with the traffic under the jurisdiction of that unit or sector. Doc. 4444 10.1.2.1.1 & 10.1.5.1 ATC units shall forward from unit to unit, as the flight progresses, necessary flight plan and control information. When so required by agreement between the appropriate ATS authorities to assist in the separation of aircraft, flight plan and flight progress information for flights along specified routes or portions of routes in close proximity to flight information region boundaries shall also be provided to the ATC units in charge of the flight information regions adjacent to such routes or portions of routes.
10.5.4.3	Except when the transfer of control is to occur, or when coordination has been performed with an adjoining sector, an appropriate tolerance must be applied to system map boundaries to ensure the separation of aircraft operating on either side of the boundary.		Covered by (2) above	
10.5.4.4	If an airspace boundary in ATS surveillance system coverage divides 2 sectors, aircraft must not be vectored closer than half the applicable ATS surveillance system horizontal separation minimum from the displayed system map boundary. However, the reduction to half the applicable ATS surveillance system horizontal separation may only be used if: (a) the adjacent sector, in controlled airspace, has the same ATS surveillance system processing and display system; or		Covered by (2) above	Doc. 4444 8.6.5.1 c) 8.6.5.1 c) except when transfer of control is to be effected, aircraft shall not be vectored closer than 4.6 km (2.5 NM) or, where the minimum permissible separation is greater than 9.3 km (5 NM), a distance equivalent to one-half of the prescribed separation minimum, from the limit of the airspace for which the controller is responsible,

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	(b) the restricted area flying activity is subject to the ADF: (i) applying half the applicable ATS surveillance system horizontal separation minimum between aircraft in the restricted area and the restricted area boundary; or (ii) ensuring that an appropriate navigation tolerance is applied to aircraft operating in the restricted area (i.e. that the aircraft are contained within the restricted area); or (c) the restricted area non-flying activity is subject to the appropriate tolerances being applied by the restricted area user to ensure containment of the activity within the restricted area.			unless local arrangements have been made to ensure that separation will exist with aircraft operating in adjoining areas;
10.5.4.5	If different ATS surveillance system separation minima apply on either side of a boundary, aircraft must not be vectored closer to the boundary than half the larger of the 2 minima.		Covered by (2) above	
10.5.4.6	Unless local agreements are in place, a tolerance of not less than the applicable ATS surveillance system separation minimum must be applied to a system map boundary that divides sectors where one of the sectors is authorised to operate up to the boundary.		Covered by (2) above	
10.5.4.7	ATC may treat IFR aircraft or aircraft operating on a special VFR clearance (relevant aircraft) operating in Class D airspace as if they are operating under the VFR when: (a) the relevant aircraft is: (i) operating in the aerodrome circuit; and (ii) established on the same radio frequency as the ATC tower; and (b) the ATC treatment is for the purpose of separating the relevant aircraft from aircraft in adjacent Class C airspace.	4.0525.03	(3) ATC may treat IFR aircraft or aircraft operating on a special VFR clearance (relevant aircraft) operating in Class D airspace as if they are operating under the VFR when: (a) the relevant aircraft is: (i) operating in the aerodrome circuit; and (ii) established on the same radio frequency as the ATC tower; and (b) the ATC treatment is for the purpose of separating the relevant aircraft from aircraft in adjacent Class C airspace.	
10.5.5.1	**10.5.5 Separation minima based on ATS surveillance systems** Subject to subsection 10.5.5.3, the horizontal separation minimum based on ATS surveillance information is: (a) 5 NM; or (b) if a higher minimum applies under subsection 10.12.2.2 — that higher minimum.		No equivalent	Doc. 4444 8.7.3.1 8.7.3 Separation minima based on ATS surveillance systems Unless otherwise prescribed in accordance with 8.7.3.2, 8.7.3.3 or 8.7.3.4, or Chapter 6 (with respect to independent and dependent parallel approaches), the horizontal separation minimum based on radar and/or ADS-B and/or MLAT systems shall be 9.3 km (5.0 NM).
10.5.5.2	Subject to subsection 10.5.5.3, the separation minimum in 10.5.5.1 may be reduced to not less than 3 NM if: (a) a higher minimum under 10.12.2.2 does not apply; and (b) the relevant aircraft are in communication with, and under the control of, a terminal control unit or associated control tower; and (c) an ATS surveillance system and associated display system is in use which is demonstrably suitable for using 3 NM separation.		No equivalent	Doc. 4444 8.7.3.2 a) The separation minimum in 8.7.3.1 may, if so prescribed by the appropriate ATS authority, be reduced, but not below: a) 5.6 km (3.0 NM) when radar and/or ADS-B and/or MLAT systems' capabilities at a given location so permit; and
10.5.5.2A	Subject to subsection 10.5.5.3, the separation minimum in 10.5.5.1 may be reduced to not less than 2.5 NM between succeeding aircraft which are established on the same final approach track within 10 NM		No equivalent	Doc. 4444 8.7.3.2 b) 8.7.3.2 The separation minimum in 8.7.3.1 may, if so prescribed by the appropriate ATS authority, be

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	of the runway end if: (a) a higher minimum under 10.12.2.2 does not apply; and (b) the relevant aircraft are in communication with, and under the control of, a terminal control unit or associated control tower; and (c) an ATS surveillance system and associated display system is in use which is demonstrably suitable for using 2.5 NM separation; and (d) the average runway occupancy time of landing aircraft does not exceed 50 seconds; and Note The average may be established by means such as data collection and statistical analysis, or methods based on a theoretical model or both. (e) braking action is reported as good and runway occupancy times are not adversely affected by runway contaminants such as slush, snow or ice; and (f) the aerodrome controller is able to observe the runway-in-use and associated exit and entry taxiways: (i) visually; or (ii) by means of surface movement radar (SMR); or (iii) by means of a surface movement guidance and control system (SMCGS); and (g) ATC monitors aircraft approach speeds and, where necessary, requires speed adjustments, to ensure that separation is not reduced below the minimum; and (h) aircraft operators and pilots have been told beforehand that the aircraft must exit the runway in an expeditious manner whenever 2.5 NM separation on final approach is applied; and (i) procedures concerning the application of 2.5 NM separation at an aerodrome are published in the AIP.			reduced, but not below: b) 4.6 km (2.5 NM) between succeeding aircraft which are established on the same final approach track within 18.5 km (10 NM) of the runway threshold. A reduced separation minimum of 4.6 km (2.5 NM) may be applied, provided: i) the average runway occupancy time of landing aircraft is proven, by means such as data collection and statistical analysis and methods based on a theoretical model, not to exceed 50 seconds; ii) braking action is reported as good and runway occupancy times are not adversely affected by runway contaminants such as slush, snow or ice; iii) an ATS surveillance system with appropriate azimuth and range resolution and an update rate of 5 seconds or less is used in combination with suitable displays; iv) the aerodrome controller is able to observe, visually or by means of surface movement radar (SMR), MLAT system or a surface movement guidance and control system (SMGCS), the runway-in-use and associated exit and entry taxiways; v) distance-based wake turbulence separation minima in 8.7.3.4, or as may be prescribed by the appropriate ATS authority (e.g. for specific aircraft types), do not apply; vi) aircraft approach speeds are closely monitored by the controller and when necessary adjusted so as to ensure that separation is not reduced below the minimum; vii) aircraft operators and pilots have been made fully aware of the need to exit the runway in an expeditious manner whenever the reduced separation minimum on final approach is applied; and viii) procedures concerning the application of the reduced minimum are published in AIPs.
10.5.5.3	Subsections 10.5.5.1 and 10.5.5.2 do not apply for independent or dependent parallel approaches to which a provision of section 6 of PANS Doc. 4444, as in force from time to time, applies on and after 27 February 2020.		No equivalent	Doc. 4444 8.7.3.1 8.7.3 Separation minima based on ATS surveillance systems Unless otherwise prescribed in accordance with 8.7.3.2, 8.7.3.3 or 8.7.3.4, or Chapter 6 (with respect to independent and dependent parallel approaches), the horizontal separation minimum based on radar and/or ADS-B and/or MLAT systems shall be 9.3 km (5.0 NM).
10.5.5.4	**Separation between aircraft leaving controlled airspace.** ATS surveillance system separation may be applied between aircraft about to leave controlled airspace if:		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(a) the horizontal separation is at least 5 NM; and (b) mutual traffic information is passed to each aircraft before it leaves controlled airspace.			
10.5.5.5	**Separation between aircraft within and outside of coverage.** Separation continues to exist between aircraft when 1 of the aircraft has passed out of ATS surveillance coverage if: (a) when proceeding on the same track — ATS surveillance system separation existed when the leading aircraft passed out of range and procedural separation is established before the following aircraft arrives within 5 NM of the last observed position of the leading aircraft; or (b) when proceeding on reciprocal tracks — the aircraft in ATS surveillance system coverage has passed the last observed position of the outbound aircraft by the applicable ATS surveillance system separation minimum.	4.0815.01	**4.815 Surveillance separation between aircraft within and outside of coverage.** (1) Separation continues to exist between aircraft when 1 of the aircraft has passed out of ATS surveillance coverage if: (a) when proceeding on the same track — ATS surveillance system separation existed when the leading aircraft passed out of range and procedural separation is established before the following aircraft arrives within 5 NM of the last observed position of the leading aircraft; or (b) when proceeding on reciprocal tracks — the aircraft in ATS surveillance system coverage has passed the last observed position of the outbound aircraft by the applicable ATS surveillance system separation minimum.	Doc. 4444 8.7.2.2 8.7.2.2 When control of an identified aircraft is to be transferred to a control sector that will provide the aircraft with procedural separation, such separation shall be established by the transferring controller before the aircraft reaches the limits of the transferring controller's area of responsibility, or before the aircraft leaves the relevant area of surveillance coverage.
10.5.5.6	ATS surveillance system separation may be provided between an aircraft under ATS surveillance system control and the procedural navigation tolerance appropriate to the clearance issued to an aircraft not under ATS surveillance system control: (a) until the latter has been identified; and (b) only if the procedural navigation tolerance is shown on the situation display.	4.0815.02	(2) ATS surveillance system separation may be provided between an aircraft under ATS surveillance system control and the procedural navigation tolerance appropriate to the clearance issued to an aircraft not under ATS surveillance system control: (a) until the latter has been identified; and (b) only if the procedural navigation tolerance is shown on the situation display.	Nil
10.5.6.1	**10.5.6 Separation between ADS-C tracks and radar tracks** ADS-C may be used to determine separation between FANS-1/A aircraft reporting by ADS-C, between FANS-1/A and non-FANS-1/A aircraft, and between FANS-1/A aircraft and an aircraft identified on radar.		No equivalent	Doc. 4444 13.5.3.3 Distance-based separation minima for use with ADS-C may be applied between ADS-C-derived aircraft positions, or between ADS-C-derived positions and radar or ADS-B-derived positions. The positions of the aircraft shall be extrapolated or interpolated, as necessary, to ensure that they represent the positions of the aircraft at a common time.
10.5.6.2	The separation standard to be applied in a mixed surveillance environment must be appropriate to: (a) the communications and navigational capability of the relevant aircraft; and (b) for separation being applied between FANS-1/A and non-FANS-1/A aircraft — the capabilities of the non-FANS-1/A aircraft.		No equivalent	
10.5.6.3	The minimum separation standard between an ADS-C track and a radar track is an appropriate ADS-C separation standard or an appropriate procedural separation standard.		No equivalent	Doc. 4444 13.5.3.4 Distance-based separation minima for use with ADS-C may be applied between ADS-C-derived aircraft positions, or between ADS-C-derived positions and radar or ADS-B-derived positions. The positions of the aircraft shall be extrapolated or interpolated, as necessary, to ensure that they represent the positions of the aircraft at a common time.
10.6.1.1	**Section 10.6 Separation Standards–Longitudinal**		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	10.6.1 Mach Number Technique Mach number technique may only be applied between jet aircraft with serviceable LRNS, and must not be applied when block level clearances have been approved.			
10.6.2.1	**10.6.2 Application of Longitudinal Time Minima** The time interval between aircraft must be calculated at the speed of the following aircraft.		No equivalent	Doc. 4444 5.4.2.1.2 In applying a time- or distance-based longitudinal separation minimum between aircraft following the same track, care shall be exercised to ensure that the separation minimum will not be infringed whenever the following aircraft is maintaining a higher airspeed than the preceding aircraft. When aircraft are expected to reach minimum separation, speed control shall be applied to ensure that the required separation minimum is maintained.
10.6.3.1	**10.6.3 Cross Check Calculations** Separation requirements must be cross-checked to ensure the integrity of calculations. The cross-check is to validate the initial calculation and to confirm that the calculation is consistent with the traffic disposition.		No equivalent	Nil
10.6.3.2	The method used to cross-check calculations need to be sufficiently accurate to confirm that the original calculation has merit. Where a significant discrepancy or inconsistency is found: (a) the initial calculation must be performed again and the integrity cross- check reapplied; or (b) further verification using an alternative means must be performed.		No equivalent	Nil
10.6.4	**10.6.4 Longitudinal Time Separation Minima** T1a 5 min Aircraft cruising, climbing or descending 1. B1, B2 or B3 has maintained and will continue to maintain an IAS at least 30 kt greater than A. 2. 5 min separation has been established by the passage of both aircraft over the same positive radio fix, or the same ATS surveillance system position observed by ATC. 3. 1 aircraft maintains level while vertical separation does not exist. 4. The vertical separation at the commencement of the level change does not exceed 4 000 ft.		No equivalent	Doc. 4444 5.4.2 2.1 c) 5.4.2 2.1 c) 5 minutes in the following cases, provided that in each case the preceding aircraft is maintaining a true airspeed of 37 km/h (20 kt) or more faster than the succeeding aircraft (see Figure 5-12): 1) between aircraft that have departed from the same aerodrome; 2) between en-route aircraft that have reported over the same exact significant point; 3) between departing and en-route aircraft after the en-route aircraft has reported over a fix that is so located in relation to the departure point as to ensure that five-minute separation can be established at the point the departing aircraft will join the air route; or
10.6.4	T1b 5 min Aircraft climbing or descending, where:		No equivalent	Doc. 4444 5.4.2.2.2.1 c) c) 5 minutes while vertical separation does not exist, provided that: 1) the level change is commenced within 10 minutes of

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	1. the preceding aircraft descends through the level of a following aircraft; or 2. the following aircraft climbs through the level of a preceding aircraft 1. No closing speed (IAS or Mach No) exists. 2. The 5 min separation has been established by the passage of both aircraft over the same positive radio fix, or the same ATS surveillance system position observed by ATC. 3. The level change is commenced within 10 min of the time the second aircraft passed over the positive radio fix, or the ATS surveillance system position observed by ATC. 4. 1 aircraft maintains level while vertical separation does not exist. 5. The vertical separation at the commencement of the change does not exceed 4 000 ft.			the time the second aircraft has reported over a common point which must be derived from ground-based navigation aids or by GNSS; and 2) when issuing the clearance through third party communication or CPDLC a restriction shall be added to the clearance to ensure that the 10-minute condition is satisfied (see Figures 5-18A and 5-18B).
10.6.4	T1c 5 min Aircraft cruising in a continuation of Departure Standard D4 The cruising IAS of the following aircraft is at least 10 kt less than and not more than 90% of the cruising IAS of the preceding aircraft.		No equivalent	Nil
10.6.4	T2 10 min Aircraft cruising, climbing or descending Frequent determination of position and speed is possible by: 1. use of navigation aids; or 2. use of LRNS (INS/IRS min. G/S 300 kt) or DME on the route sections within: (a) CTA; or (b) OCA as described below: (i) BN VOR – 350 BN (outbound); or (ii) all routes contained in the airspace bounded by: SY VOR – BN VOR – LHI NDB and Lord Howe –Sydney routes; or (iii) PH VOR – 350 PH (outbound); or (iv) POKIP – UPNOT (northbound); or 3. position reports from RNP10 & RNP4 approved aircraft; or 4. visual reference to the ground by day (or night for VFR aircraft).		No equivalent	Doc. 4444 5.4.2.2.1 b) & 5.4.2.2.2.1 b) Same level: 5.4.2.2.1 b) 10 minutes, if navigation aids permit frequent determination of position and speed (see Figure 5-11); or Aircraft climbing or descending: 5.4.2.2.2.1 b) 10 minutes while vertical separation does not exist, provided that such separation is authorized only where ground-based navigation aids or GNSS permit frequent determination of position and speed (see Figures 5-17A and 5-17B); or

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.6.4	T3 15 min Aircraft cruising, climbing or descending, within all CTAs and OCAs except when T2 is applicable.		No equivalent	Doc. 4444 5.4.2.2.1 & 5.4.2.2.3 Same level: 5.4.2.2.1.1 a) 15 minutes (see Figure 5-10); or Aircraft climbing or descending: 5.4.2.2.2.1 a) 15 minutes while vertical separation does not exist (see Figures 5-16A and 5-16B); or
10.6.4	T4 10 min Mach No. Technique Aircraft cruising, climbing or descending The Mach Number Technique is used between aircraft: (a) on the same track and the aircraft have reported over a common point and 10 min will be maintained until another form of separation is established; or (b) on converging tracks and it is confirmed that 10 min separation will exist at the point the aircraft enter lateral conflict and 10 min separation will be maintained until another form of separation is established.		No equivalent	Doc. 4444 5.4.2.4.3 b) 1)
10.6.4	T5 9–5 min Aircraft cruising, climbing or descending where opening speed exists using the Mach Number Technique 1. ATS surveillance system observation or passage over the same, on-track, positive radio fix confirms that the required time interval will exist at the common point. 2. The preceding aircraft is maintaining a greater Mach number than the following aircraft, in accordance with the adjacent table. Mach No. Technique Time Mach No 9 min Mach 0.02 faster 8 min Mach 0.03 faster 7 min Mach 0.04 faster 6 min Mach 0.05 faster 5 min Mach 0.06 faster For T4 and T5, a common point is:		No equivalent	Doc. 4444 5.4.2.4.3 b) 2) 2) between 9 and 5 minutes inclusive, provided that: the preceding aircraft is maintaining a true Mach number greater than the following aircraft in accordance with the following: — 9 minutes, if the preceding aircraft is Mach 0.02 faster than the following aircraft; — 8 minutes, if the preceding aircraft is Mach 0.03 faster than the following aircraft; — 7 minutes, if the preceding aircraft is Mach 0.04 faster than the following aircraft; — 6 minutes, if the preceding aircraft is Mach 0.05 faster than the following aircraft; — 5 minutes, if the preceding aircraft is Mach 0.06 faster than the following aircraft. 5.4.2.4.4 When the 10-minute longitudinal separation minimum with Mach number technique is applied, the preceding aircraft shall maintain a true Mach number equal to or greater than that maintained by the

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(a) a geographical point on the track over which both aircraft will fly; or (b) a point along the individual track of each aircraft that is equidistant from the geographical point described in paragraph (a).			following aircraft.
10.6.4	T6 10 or 15 min Aircraft on Reciprocal Tracks 1. If lateral separation is not provided, vertical separation must be provided for at least 10 or 15 min, as applicable to the route (see T2 and T3 conditions), before and after the time the aircraft are estimated to pass, or are estimated to have passed. 2. In addition to the T2 conditions for application, the 10 minute time minimum may also be applied between aircraft equipped with approved LRNS.		No equivalent	Doc. 4444 5.4.2.2.3 Aircraft on reciprocal tracks. Where lateral separation is not provided, vertical separation shall be provided for at least ten minutes prior to and after the time the aircraft are estimated to pass, or are estimated to have passed (see Figure 5-21). Provided it has been determined that the aircraft have passed each other, this minimum need not apply.
10.6.4	T7a Definite Passing (radio fix) Both aircraft report passing the same positive radio fix.		No equivalent	
10.6.4	T7b Definite Passing (visual fix) 1. Both aircraft report passing the same visual fix, by day, or by night if both aircraft are NIGHT VFR. 2. The visual fix must be a prominent topographical feature within 10 000 ft of the levels of each aircraft.		No equivalent	
10.6.4	T7c Definite Passing (sight and pass) 1. Both aircraft report sighting and passing the other by day (and in OCA by night). 2. Both aircraft are above 10 000 ft. 3. ATC ensures there is no possibility of incorrect identification by either aircraft.		No equivalent	
10.6.4	T7D Definite Passing (ATS surveillance system observed) Aircraft are observed by ATS surveillance system to have definitely passed.		No equivalent	
10.6.4	T8a 15 min Crossing Tracks 15 min exists at the crossing point 1. Each aircraft must have at least 1 of the following LRNS approvals:		No equivalent	Doc. 4444 5.4.2.2.1.2 5.4.2.2.1.2 Aircraft flying on crossing tracks: a) 15 minutes at the point of intersection of the tracks (see Figure 5-14); or

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(a) NAV/AUSEP; (b) NAV/GPSOCEANIC; (c) NAV/GPSRNAV (within Australian Domestic Airspace); (d) MNPS; (e) RNP10; (f) RNP4. 2. Relevant aircraft must have a groundspeed of at least 300 kt. 3. For T8b only: Vertical separation must exist from 15 min before the estimate for B at the intersection, until 15 min after A has passed the intersection.			
10.6.4	T8b 15 min Crossing Tracks 15 min does not exist at the crossing point. 1. Each aircraft must have at least 1 of the following LRNS approvals: (a) NAV/AUSEP; (b) NAV/GPSOCEANIC; (c) NAV/GPSRNAV (within Australian Domestic Airspace); (d) MNPS; (e) RNP10; (f) RNP4. 2. Relevant aircraft must have a groundspeed of at least 300 kt. 3. For T8b only: Vertical separation must exist from 15 min before the estimate for B at the intersection, until 15 min after A has passed the intersection.		No equivalent	
10.6.5.1	**10.6.5 Application of Time Departure Minima** Time departure minima are only applicable during initial climb until reaching the cruising level.		No equivalent	Nil
10.6.5.2	Where the planned speed differential between aircraft subject to these departure minima is at or near the minimum prescribed, climbing/cruising speeds must be specified where appropriate to ensure the integrity of the standard.		No equivalent	Nil
10.6.5.3	The planned CLIAS notified by GA VFR shall not be amended. The CLIAS of other VFR flights may be altered if agreed to by the pilot.		No equivalent	Nil
10.6.5.4	Departure (DEP) Minima 1 to 6 may be applied when: (a) both aircraft proceed on the same route where a turn of 40 degrees or less is specified; or (b) the following aircraft's route involves a turn of more than 40		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	degrees, the preceding aircraft must continue straight ahead or turn by 30 degrees or less; (c) when the turn in track is 31 degrees to 40 degrees, Departure standard 5 may only be used if the turning point is defined by a radio navigation aid, or radar is used to observe the turn and ensure the departure standard does not decrease until the aircraft is established on the new track.			
10.6.5.5	Departure (DEP) minima 2A, 3A, 4A, 5A and 6A may be applied when both aircraft proceed on the same route on which a turn of 41 degrees to 65 degrees is specified.		No equivalent	Nil
10.6.6	**10.6.6 Time Departure Separation Minima** Dep 1 1 MIN Following aircraft climbing to a higher or lower level. 1. CLIAS of the first aircraft is at least 50 KT faster than the CLIAS of the second and at least 30 KT faster than the cruising IAS of the second; and 2. Either: a. the bearing from a point 1 NM along the runway extension to a point 5 NM along the departure track is within 30 degrees of the runway bearing; or b. the aerodrome controller can visually separate the aircraft until they have intercepted the departure track with the required separation.		No equivalent	5.6.1 One-minute separation is required if aircraft are to fly on tracks diverging by at least 45 degrees immediately after take-off so that lateral separation is provided (see Figure 5-37). This minimum may be reduced when aircraft are using parallel runways or when the procedure in Chapter 6, 6.3.3.1, is adopted for operations on diverging runways which do not cross, provided instructions covering the procedure have been approved by the appropriate ATS authority and lateral separation is effected immediately after take-off.
10.6.6	Dep 2 2/5 MIN Following aircraft climbing to the higher level CLIAS of the second aircraft is at least 10 KT slower and not more than 90% of the CLIAS or Mach No. of the first aircraft.		No equivalent	Doc. 4444 5.6.2 Two minutes are required between take-offs when the preceding aircraft is 74 km/h (40 kt) or more faster than the following aircraft and both aircraft will follow the same track (see Figure 5-38). 5.6.3 Five-minute separation is required while vertical separation does not exist if a departing aircraft will be flown through the level of a preceding departing aircraft and both aircraft propose to follow the same track (see Figure 5-39). Action must be taken to ensure that the five-minute separation will be maintained or increased while vertical separation does not exist.
10.6.6	Dep 3/3A 2/5 MIN Following aircraft climbing to the lower level. 1. Both aircraft report reaching the lower cruising level; 2. If the following aircraft reaches the cruising level first, another form of separation must be applied immediately; 3. CLIAS of the second aircraft is at least 10 KT slower, and not more than 90% of the CLIAS or Mach No. of the first aircraft; and 4. Cruising IAS of the second aircraft is less than or equal to the CLIAS or Mach No. of the first aircraft.		No equivalent	
10.6.6	5/10 MIN Following aircraft climbing to the same level.		No equivalent	Doc. 4444 5.4.2.2.2.1 b) 10 minutes while vertical separation does not exist, provided that such separation is

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	1. Both aircraft report reaching the cruising level; 2. If the second reaches that level first, another form of separation must be applied; and 3. CLIAS and cruising IAS of the second aircraft is at least 10 KT slower, and not more than 90% of the CLIAS and cruising IAS or Mach No. of the first aircraft.			authorized only where ground-based navigation aids or GNSS permit frequent determination of position and speed (see Figures 5-17A and 5-17B); or 5.6.3 Five-minute separation is required while vertical separation does not exist if a departing aircraft will be flown through the level of a preceding departing aircraft and both aircraft propose to follow the same track (see Figure 5-39). Action must be taken to ensure that the five-minute separation will be maintained or increased while vertical separation does not exist.
10.6.6	Dep 5/5A 5/10 MIN Following aircraft climbing to a higher level. 1. CLIAS of the second aircraft is less than or equal to the CLIAS of the first aircraft; and 2. If the turn in track is between 31 and 40 degrees, the turning point must be defined as a radio navigation aid, or radar must be used to observe the turn and ensure the departure standard does not decrease until the aircraft is established on the new track.		No equivalent	
10.6.6	Dep 6/6A 5/10 MIN Following aircraft climbing to a lower level. 1. Both aircraft report reaching the lower cruising level; 2. If the second aircraft reaches cruising level first, another form of separation must be applied immediately; 3. CLIAS of the second aircraft is less than or equal to the CLIAS of the first aircraft; and 4. If the turn in track is between 31 and 40 degrees, the turning point must be defined as a radio navigation aid, or radar must be used to observe the turn and ensure the departure standard does not decrease until the aircraft is established on the new track.		No equivalent	
10.6.6	Dep 7/7A 10/15 MIN Following aircraft climbing to the same level. 1. Both aircraft report reaching the cruising level; 2. If the second reaches that level first, another form of separation must be applied; and 3. CLIAS of the second aircraft is less than or equal to the CLIAS of the first aircraft.		No equivalent	Doc. 4444 5.4.2.2.1 Aircraft flying on the same track: a) 15 minutes (see Figure 5-10); or b) 10 minutes, if navigation aids permit frequent determination of position and speed (see Figure 5-11); or
10.6.6	Dep 8 Distance Determined by Speed Faster following aircraft climbing to higher level. 1. Only useable when the first aircraft has reached 5,000 FT or above; 2. The vertical difference between the aircraft must be used to		No equivalent	Doc. 4444 5.4.2.3.4.1 Aircraft on the same track: 19 km (10 NM) while vertical separation does not exist, provided: a) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	determine the appropriate distance required between the aircraft. This distance must be subtracted from the DME distance of the leading aircraft (see table); 3. The following aircraft must be instructed to reach 1,000 FT above the leading aircraft's cruising or maintain level, by the DME distance determined at 2; 4. Where both aircraft are airborne, the DME distance and levels of both aircraft must be required. Otherwise, only that of the leading aircraft is required; and 5. When the procedure is applied to a following aircraft that has not departed, the requirement must be updated once that aircraft has departed.			ii) an "on-track" DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and b) one aircraft maintains a level while vertical separation does not exist; and c) separation is established by obtaining simultaneous DME and/or GNSS readings from the aircraft (see Figures 5-25A and 5-25B).
10.6.6	Note: Separation of not less than 15 NM is provided when the following aircraft reaches 1,000 FT above the level the leading aircraft has maintained. Examples omitted.		No equivalent	
10.6.7.1	**Standard Application of Longitudinal Distance Separation** Distance based longitudinal separation minima must only be applied when: (a) Direct Controller Pilot Communications (DCPC) exist; or (b) ATC monitors all distance reports made by the aircraft. *Note The requirement for DCPC is met by the use of Controller Pilot Datalink Communications (CPDLC).*		**4.500 Communications for application of distance-based separation minima** Despite/In addition to the communication requirements of ICAO Doc. 4444, distance-based longitudinal separation minima may be applied if ATC monitors all distance reports made by the aircraft.	Doc. 4444 5.4.2.3.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used. 5.4.2.6.2.2 Direct controller-pilot communications shall be maintained while applying a distance-based separation minima. Direct controller-pilot communications shall be voice or CPDLC. The communication criteria necessary for CPDLC to satisfy the requirement for direct controller-pilot communications shall be established by an appropriate safety assessment.
10.6.7.2	All distance reports must be made with reference to the same DME beacon or waypoint.		No equivalent	Doc. 4444 5.4.2.3.3.1 Aircraft on the same track: a) 37 km (20 NM), provided: 1) each aircraft utilizes: i) the same "on-track" DME station when both aircraft are utilizing DME; or ii) an "on-track" DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing
10.6.7.3	When applying same direction distance separation, an off-track waypoint or beacon may be used provided the positions of the aircraft relative to the beacon/waypoint are such that the distance readings are together increasing or decreasing.		No equivalent	
10.6.7.4	A DME beacon may be taken to be co-sited with a waypoint or the azimuth navigation aid providing tracking guidance only when the DME site is located within 600 m of the waypoint or azimuth aid.		No equivalent	

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				GNSS; and 2) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-22); b) 19 km (10 NM), provided: 1) the leading aircraft maintains a true airspeed of 37 km/h (20 kt) or more faster than the succeeding aircraft; 2) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 3) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at such intervals as are necessary to ensure that the minimum is established and will not be infringed (see Figure 5-23).
10.6.7.5	Where aircraft have been issued with different route clearances, and the difference in routes would apply during the period when distance separation is required, the leading aircraft must be tracking directly to or from the beacon/waypoint or co-sited navaid.		No equivalent	Doc. 4444 5.4.2.3.4.2 Aircraft on crossing tracks. The longitudinal separation prescribed in 5.4.2.3.3.1 shall also apply provided each aircraft reports distance from the DME station and/or collocated waypoint or same waypoint located at the crossing point of the tracks and that the relative angle between the tracks is less than 90 degrees (see Figures 5-24A and 5-24B).
10.6.7.6	If a mix of DME and LRNS distances is being used: (a) LRNS distance information must be based on the coordinates of the en route tracking aid, and not on the location of the DME site; and (b) LRNS derived distance may be used for longitudinal separation only when the en route tracking aid and DME are co-sited.		No equivalent	Doc. 4444 5.4.2.3.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used.
10.6.7.7	Where distance information is required from a specific navigation source, the source must be included in the request (e.g. “REPORT DISTANCE FROM NWN DME”, “REPORT GPS DISTANCE FROM BEZZA” or “REPORT RNAV DISTANCE FROM PONAN”).		No equivalent	Doc. 4444 5.4.2.3.2 When applying these separation minima between any aircraft with area navigation capability, controllers shall specifically request GNSS-derived distance.
10.6.7.8	During the application of same direction distance minima, the distance between aircraft must be checked at sufficient intervals to ensure that the required separation is maintained. The frequency of these regular	4.0520	**4.520 Frequency of checking of position and speed** Where a particular separation minimum specifies frequent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	distance checks will depend on the performance and disposition of the aircraft, but must be made at intervals not exceeding 30 MIN.		determination of position and speed or checking at frequent intervals, the frequency of these determinations or checks will depend on the performance and disposition of the aircraft, but must be made at intervals not exceeding 30 minutes.	
10.6.7.9	When the ATS surveillance system derived distance between the aircraft is less than the sum of the distance required by the procedural separation minimum and the applicable ATS surveillance system separation minimum, a distance check must be made before the first aircraft leaves ATS surveillance system coverage.		No equivalent	Nil
10.6.7.10	Separation minima D4, D7 and R3 (change of level) may also be applied between 2 aircraft if: (a) the aircraft are confirmed to be on opposite sides of an en-route navigation aid, and 1 aircraft's distance is established by RNAV/DME to be not closer to that aid than the distance required by the separation minimum; or (b) the distance determined by an ATS surveillance system, or by the position of 1 identified aircraft and an RNAV/DME report from the other, establishes that the distance between the aircraft is at least the distance required by the procedural separation minimum plus the applicable ATS surveillance system separation minimum; or (c) 1 aircraft's distance is established by RNAV/DME and the second aircraft's position is established, by day, with reference to a visual fix, if: (i) the fix is a prominent topographical feature within 10 000 ft of the aircraft; and (ii) the feature is displayed on maps available to ATC.		No equivalent	Nil
10.6.7.11	Except for standard R6, closing speed between aircraft may exist provided that: (a) separation is in excess of the minimum distance required; (b) distance checks are made at intervals not exceeding 15 MIN; and (c) when aircraft are cruising at levels not vertically separated, the closing speed is not greater than 35 KT IAS or M 0.06. (a) separation is in excess of the minimum distance required; (b) distance checks are made at intervals not exceeding 15 MIN; and (c) when aircraft are cruising at levels not vertically separated, the closing speed is not greater than 35 KT IAS or M 0.06.		No equivalent	Nil
10.6.8.1	**10.6.8 Use of DME/GPS Separation** In the description and application of these separation minima, 'DME' includes TACAN for distance measurement. TACAN distances may be used for the same purpose as DME provided that all tolerances and conditions shown for DME are applied.	4.0505	**4.505 Use of TACAN information** In the description and application of separation minima, 'DME' includes TACAN for distance measurement. TACAN distances may be used for the same purpose as DME provided that all tolerances and conditions shown for DME are applied.	Nil
10.6.8.2	In CTA only, GPS distance information may be provided by GPSRNAV or GPSOCEANIC aircraft for the application of minima D1-4, subject to the following conditions: (a) where a mix of GPS and DME distances is used, distance reports		No equivalent	Doc. 4444 5.4 5.4.2.3.3 AIRCRAFT AT THE SAME CRUISING LEVEL

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	must not be used if one aircraft is within 20 NM of the reference point; (b) when GPS is used by both aircraft, the standard may also be applied with reference to published waypoints.			Aircraft on the same track: a) 37 km (20 NM), provided: iii) the same waypoint when both aircraft are utilizing GNSS; and 5.4.2.3.4 AIRCRAFT CLIMBING AND DESCENDING Aircraft on the same track: 19 km (10 NM) while vertical separation does not exist, provided: iii) the same waypoint when both aircraft are utilizing GNSS; and 5.4.2.6 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING RNAV WHERE RNP IS SPECIFIED 5.4.2.6.2 Separation shall be established by maintaining not less than the specified distance between aircraft positions as reported by reference to the same “on-track” common point, whenever possible ahead of both aircraft, or by means of an automated position reporting system.
10.6.9.1	**10.6.9 RNAV Separation** RNAV distance minima may be applied between aircraft with approved LRNS, or between an aircraft with approved LRNS equipment and an aircraft with DME.		No equivalent	Doc. 4444 5.4.2.3 5.4.2.3 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING DISTANCE MEASURING EQUIPMENT (DME) AND/OR GNSS *Note. — Where the term “on track” is used in the provisions relating to the application of longitudinal separation minima using DME and/or GNSS, it means that the aircraft is flying either directly inbound to or directly outbound from the station/waypoint.* Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used.
10.6.9.2	RNAV minima must not be applied after pilot advice of: (a) operation of LRNS equipment outside prescribed criteria, including deterioration or failure; or (b) operation of an INS/IRS outside the time limits mentioned in the operational approval: (i) CTA — 5 hours multiple sensor or 3 hours single sensor; or (ii) OCA — 12 hours multiple sensor, 5 hours single sensor or 4.5 hours MNPS; or (c) RAIM loss or loss of integrity, for more than 5 minutes; or (d) operation of the GPS receiver in dead reckoning mode, for more		No equivalent	Doc. 4444 5.4 5.4.1.1.3 Essential When information is received indicating navigation equipment failure or deterioration below the navigation performance requirements, ATC shall then, as required, apply alternative separation methods or minima. 5.4.1.2.1.2.4 GNSS-based track separation shall not be applied in cases of pilot-reported receiver autonomous integrity monitoring (RAIM) outages. 5.4.2.5.2 [RNAV] RNAV distance-based separation minima shall not be applied after ATC has received

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	than 1 minute; or (e) loss of the GPS receiver navigation function, for more than 1 minute.			pilot advice indicating navigation equipment deterioration or failure. 5.4.2.6.2.1 [RNP] When information is received indicating navigation equipment failure or deterioration below the navigation performance requirements, ATC shall then, as required, apply alternative separation minima. 5.4.2.9.8 [PBN] When information is received indicating ground or aircraft equipment failure or deterioration below the communication, navigation and surveillance performance requirements, ATC shall then, as required, apply alternative separation minima.
10.6.9.3	If there is concern that the update criteria mentioned in paragraphs 10.6.9.2 (a) and (b) may not be met throughout the application of an RNAV standard, the time of the last update must be obtained from the pilot.		No equivalent	Nil
10.6.9.4	Separation based on RNP approval may only apply in RNP airspace.		No equivalent	Doc. 4444 5.4 5.4.1.2.1.5 RNAV operations where RNP is specified on parallel tracks or ATS routes. Within designated airspace or on designated routes, where RNP is specified, lateral separation between RNAV-equipped aircraft may be obtained by requiring aircraft to be established on the centre lines of parallel tracks or ATS routes spaced at a distance which ensures that the protected airspace of the tracks or ATS routes does not overlap. 5.4.2.6 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING RNAV WHERE RNP IS SPECIFIED 5.4.2.6.1 Within designated airspace, or on designated routes, separation minima in accordance with the provisions of this section (5.4.2.6) may be used, subject to regional air navigation agreements.
10.6.10.1	**10.6.10 Longitudinal Distance Separation Using ADS-C** When using ADS-C reports from FANS-1/A aircraft as the sole means of establishing and monitoring longitudinal distance separation standards, only those standards specifically identified as being approved for ADS-C may be used.		No equivalent	Doc. 4444 13.5.3.1 13.5.3 Application of horizontal separation using ADS-C position information ADS-C-based longitudinal distance separation minima are detailed at 5.4.2.9 of Chapter 5.
10.6.10.2	Longitudinal distance separation using ADS-C may be established by measuring the distance between: (a) the displayed positions of 2 or more FANS-1/A aircraft reporting by ADS-C; or (b) an ADS-C report symbol of a FANS-1/A aircraft and the position of another aircraft determined by an alternative form of position fixing, such as radar, ADS-B, voice or CPDLC reports.		No equivalent	Doc. 4444 13.5.3.3 Distance-based separation minima for use with ADS-C may be applied between ADS-C-derived aircraft positions, or between ADS-C-derived positions and radar or ADS-B-derived positions. The positions of the aircraft shall be extrapolated or interpolated, as necessary, to ensure that they represent the positions of the aircraft at a common time.
10.6.10.3	All system tool tolerances must be taken into account in any		No equivalent	Doc. 4444 13.5.3.3

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	measurement.			Distance-based separation minima for use with ADS-C may be applied between ADS-C-derived aircraft positions, or between ADS-C-derived positions and radar or ADS-B-derived positions. The positions of the aircraft shall be extrapolated or interpolated, as necessary, to ensure that they represent the positions of the aircraft at a common time.
10.6.10.4	When 2 FANS-1/A aircraft reporting by ADS-C are flying on the same identical tracks (same or opposite direction), the measurements may be taken directly between the 2 ADS-C symbols.		No equivalent	Doc. 4444 5.4.2.9.5 Separation shall be applied so that the distance or time between the calculated positions of the aircraft is never less than the prescribed minimum. This distance or time shall be obtained by one of the following methods: a) when the aircraft are on the same identical track, the distance or time may be measured between the calculated positions of the aircraft or may be calculated by measuring the distances or times to a common point on the track (see Figures 5-30 and 5-31); b) when the aircraft are on the same or reciprocal non-parallel tracks other than in a) above, or on crossing tracks, the distance or time shall be calculated by measuring the distances or times to the common point of intersection of the tracks or projected track (see Figures 5-32 to 5-34); and c) when the aircraft are on parallel tracks whose protection areas overlap, the distance or time shall be measured along the track of one of the aircraft, as in a) above, using its calculated position and the point abeam the calculated position of the other aircraft (see Figure 5-35).
10.6.10.5	For a bend in track, the measurements may only be taken between each symbol and the turning point, not between the 2 symbols:		No equivalent	
10.6.10.6	If 2 FANS-1/A aircraft are flying on diverging or converging route clearances, then measurements may be either to or from a common point on the route clearances: or taken from where the abeam position of 1 aircraft intersects the route of the other.		No equivalent	Doc. 4444 5.4.2.9.5 Separation shall be applied so that the distance or time between the calculated positions of the aircraft is never less than the prescribed minimum. This distance or time shall be obtained by one of the following methods: a) when the aircraft are on the same identical track, the distance or time may be measured between the calculated positions of the aircraft or may be calculated by measuring the distances or times to a common point on the track (see Figures 5-30 and 5-31); b) when the aircraft are on the same or reciprocal non-parallel tracks other than in a) above, or on crossing tracks, the distance or time shall be calculated by measuring the distances or times to the common point of intersection of the tracks or projected track (see Figures 5-32 to 5-34); and c) when the aircraft are on parallel tracks whose protection areas overlap, the distance or time shall be measured along the track of one of the aircraft, as in a) above, using its calculated position and the point abeam the calculated position of the other aircraft (see

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				Figure 5-35).
10.6.10.7	When longitudinal distance separation is to be determined between FANS-1/A and non-FANS-1/A aircraft: (a) the measurement may only be commenced after receiving an ADS-C report from the FANS-1/A aircraft; and (b) the request for the voice report must be made as soon as possible after the ADS-C report symbol is displayed; and (c) this procedure may only be used when a distance greater than the minimum of the applicable standard is available.		No equivalent	Doc. 4444 13.5.3.3 13.5.3.3 Distance-based separation minima for use with ADS-C may be applied between ADS-C-derived aircraft positions, or between ADS-C-derived positions and radar or ADS-B-derived positions. The positions of the aircraft shall be extrapolated or interpolated, as necessary, to ensure that they represent the positions of the aircraft at a common time.
10.6.10.8	When comparing an ADS-C report symbol from a FANS-1/A aircraft with a voice report from another aircraft, the measurement from or to the ADS-C symbol must be taken with reference to the beacon or waypoint reported by the other aircraft.		No equivalent	
10.6.11	**10.6.11 Distance Separation Minima** D1 20 NM Climbing (for aircraft on climb to cruise) 1. Separation must be checked at sufficient intervals to ensure minimum separation is maintained. 2. Where B is climbing to a lower cruising level or both aircraft are climbing to levels which are not vertically separated, both A and B must report reaching their cruising levels. 3. If aircraft B reports at cruising level first, immediate action must be taken to apply an alternative standard. 4. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.	4.0550	**4.550 Application of longitudinal separation minima to aircraft on climb or descent** To avoid doubt, unless a separation minimum specifically requires one or both aircraft to maintain level flight during the application of a separation minimum, the separation minima specified in ICAO Doc. 4444 for aircraft at the same cruising level also apply when one or both aircraft are on climb or on descent.	Doc. 4444 5.4.2.3.3.1 5.4.2.3.3 AIRCRAFT AT THE SAME CRUISING LEVEL Aircraft on the same track: a) 37 km (20 NM), provided: 1) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 2) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-22); b) 19 km (10 NM), provided: 1) the leading aircraft maintains a true airspeed of 37 km/h (20 kt) or more faster than the succeeding aircraft; 2) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 3) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at such
10.6.11	D1 20 NM Cruising (at levels not vertically separated) 1. Separation must be checked at sufficient intervals to ensure that minimum separation is maintained. 2. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.		No equivalent	
10.6.11	D3		No equivalent	

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	20 NM Arriving aircraft 1. Separation must be checked at sufficient intervals to ensure minimum separation is maintained. 2. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.			intervals as are necessary to ensure that the minimum is established and will not be infringed (see Figure 5-23).
10.6.11	D4A 15 NM Change of level 1. One aircraft must maintain level flight while vertical separation does not exist. 2. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC. 3. When using DME-derived information for level changes above FL 290, both aircraft must be on the same side of the DME beacon.		No equivalent	5.4.2.3.4 AIRCRAFT CLIMBING AND DESCENDING Aircraft on the same track: 19 km (10 NM) while vertical separation does not exist, provided: a) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and b) one aircraft maintains a level while vertical separation does not exist; and c) separation is established by obtaining simultaneous DME and/or GNSS readings from the aircraft (see Figures 5-25A and 5-25B).
10.6.11	D4b 15 NM Change of level (1 aircraft equipped with DME and non-DME aircraft climbing/ descending) Also applicable if B is on the safe side of the aid at the commencement of level change 1. Non-DME B1 or B2 descending/climbing while A or C maintain level. 2. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.		No equivalent	
10.6.11	D4c 15 NM Change of level		No equivalent	

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(non-DME aircraft maintains level while DME equipped aircraft climbing/ descending) Also applicable if B is on the safe side of the aid at the commencement of level change 1. A1, A2 or C1, C2 climbing or descending while non-DME B maintains level. 2. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.			
10.6.11	Note 1: In 4a, 4b and 4c, if the distance obtained is close to the minimum, then consideration must be given to a descending aircraft being faster than the cruising aircraft, or a climbing aircraft being slower than the cruising aircraft. ATC may impose speed restrictions or requirements to ensure the required separation is maintained.		No equivalent	
10.6.11	Note 2: In 4b and 4c, if the position of 1 aircraft is determined by radar or ADS-B, the applicable ATS surveillance system minimum must be added.		No equivalent	
10.6.11	D4d 15 NM Leading aircraft descending through level of following climbing aircraft 1. The leading aircraft A is descending through the level of C (climbing). 2. DME distances must be checked in sufficient time to ensure vertical separation is maintained if insufficient distance exists to apply this standard. 3. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC. 4. When using DME-derived information for level changes above FL 290, both aircraft must be on the same side of the DME beacon.	4.0555	**4.555 Longitudinal separation – leading aircraft descending through level of following climbing aircraft** A separation minimum of 15 NM may be applied between two aircraft on the same track if: (a) each aircraft utilises: (i) the same 'on-track' DME station when both aircraft are utilizing DME; or (ii) an 'on-track' DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or (iii) the same waypoint when both aircraft are utilizing GNSS; and (b) the leading aircraft is descending through level of following climbing aircraft; and (c) separation is established by obtaining simultaneous DME and/or GNSS readings from the aircraft; and (d) when using DME-derived information for level changes above FL 290, both aircraft must be on the same side of the DME beacon.	No equivalent 15 NM standard
10.6.11	D4e 15 NM Arriving Aircraft Inbound aircraft to a controlled aerodrome 1. Both A and B are inbound aircraft and the leading aircraft A is within 30 NM of a controlled aerodrome with DME. 2. The aircraft are assigned levels which are vertically separated.	4.0560.01	**4.560 Longitudinal separation – Aircraft inbound to controlled aerodrome** The following separation minima based on distance may be applied between two aircraft inbound to a controlled aerodrome: (a) 15 NM, but only if: (i) both aircraft utilise: (A) the same 'on-track' DME station when both aircraft are	No equivalent 15NM standard

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	3. Distance information must be derived from: (a) DME; or (b) in CTA only: (i) GPSRNAV; or (ii) GPSOCEANIC.		utilizing DME; or (B) subject to both aircraft being at least 20 NM from the reference point — an 'on-track' DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or (C) the same waypoint when both aircraft are utilizing GNSS; and (ii) the leading aircraft is within 30 NM of the controlled aerodrome; and (iii) ATC confirms that the required separation by obtaining simultaneous DME and/or GNSS readings from the aircraft; and (iv) ATC assigns levels to the aircraft that are vertically separated.	
10.6.11	D5 10 NM Arriving Aircraft Change of level 1. Both A and B are inbound aircraft and the leading aircraft A is within 20 NM of a controlled aerodrome with DME. 2. The aircraft are assigned levels which are vertically separated. 3. Both aircraft are DME equipped.	4.0560.02	(b) 10 NM, but only if: (i) each aircraft utilise: (A) the same 'on-track' DME station; or (B) the same waypoint when both aircraft are utilizing GNSS; and ***Note:*** DME and GNSS distance information may not be mixed. (ii) the leading aircraft is within 20 NM of the controlled aerodrome; and (iii) ATC confirms that the required separation by obtaining simultaneous DME or GNSS readings from the aircraft; and (iv) ATC assigns levels to the aircraft that are vertically separated.	No equivalent - Doc. 4444 5.4.2.3.4 doesn't allow both aircraft to be simultaneously on descent.
10.6.11	D6 5 NM Arriving Aircraft Change of level 1. Both A and B are inbound aircraft and the leading aircraft A is within 15 NM of a controlled aerodrome with DME. 2. The aircraft are assigned levels which are vertically separated. 3. Both aircraft are DME equipped. 4. Wake turbulence standards are applied.	4.0560.03	(c) 5 NM, but only if: (i) both aircraft utilise: (A) the same 'on-track' DME station; or (B) the same waypoint when both aircraft are utilizing GNSS; and ***Note*** DME and GNSS distance information may not be mixed. (ii) the leading aircraft is within 15 NM of the controlled aerodrome; and (iii) ATC confirms that the required separation by obtaining simultaneous DME or GNSS readings from the aircraft; and (iv) ATC assigns levels to the aircraft that are vertically separated.	No ICAO Doc. 4444 equivalent
10.6.11	D7 A DME distance proportional to the rate of closure (IAS) as determined from the following DME separation tables for aircraft rate and amount of level change Change of level Also applicable if a non-DME equipped aircraft is on the safe side of the aid at the commencement of level change 1. One aircraft maintains level while vertical separation does not exist.		No equivalent.	Doc. 4444 5.4.2.3.4 Aircraft on the same track: 19 km (10 NM) while vertical separation does not exist, provided: a) each aircraft utilizes: i) the same "on-track" DME station when both aircraft are utilizing DME; or ii) an "on-track" DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	2. DME distances are checked when the aircraft are vertically separated by the minimum amount appropriate to the DME table to be used. 3. The level change is commenced within 1 min of obtaining DME distances. When the separation is on the minimum, instructions must be issued to ensure that the level change is commenced within this time. 4. Where the position of 1 aircraft is determined by an ATS surveillance system, the applicable ATS surveillance system minimum must be added. 5. When using DME-derived information for level changes above FL 290, both aircraft must be on the same side of the DME beacon. 6. When applying this separation minimum to an aircraft transiting the transition level and the Area QNH is higher than 1013 hPa, 1 000 ft must be added to the amount of level change and the applicable value in the table must then be utilised (e.g. for a 3 000 ft level change, use 4 000 ft table).			iii) the same waypoint when both aircraft are utilizing GNSS; and b) one aircraft maintains a level while vertical separation does not exist; and c) separation is established by obtaining simultaneous DME and/or GNSS readings from the aircraft (see Figures 5-25A and 5-25B).
10.6.11	D8a Definite Passing 10 NM (12 NM at distances greater than 180 NM) Reciprocal tracks and tracks differing by more than 90 degrees Reports indicate that the aircraft have passed and DME distance is opening.		No equivalent	Doc. 4444 5.4.2.3.4.2 Aircraft on reciprocal tracks. Aircraft utilizing on-track DME and/or collocated waypoint or same waypoint may be cleared to climb or descend through the levels occupied by other aircraft utilizing on-track DME and/or collocated waypoint or same waypoint, provided that it has been positively established that the aircraft have passed each other and are at least 10 NM apart, or such other value as prescribed by the appropriate ATS authority.
10.6.11	D8b Definite Passing 5 NM Reciprocal tracks 1. Reports indicate that the aircraft have passed and DME distance is opening. 2. One aircraft is within 20 NM of the DME beacon.	4.0565.01	**4.565 Longitudinal separation – Aircraft on reciprocal tracks** (1) ATC may clear an aircraft to climb or descend through the levels occupied by another aircraft if: (a) it has been positively established that the aircraft have passed each other; and are at least 5 NM apart; and (b) both aircraft are utilising: (i) the same 'on-track' DME station when both aircraft are utilizing DME; or (ii) the same waypoint when both aircraft are utilizing GNSS; and ***Note*** DME and GNSS distance information may not be mixed. (c) when using DME, one aircraft is within 20 NM of the DME station; and (d) when using GNSS, both aircraft are navigating to RNP 2 or RNP4	Nil
10.6.11	D8c Definite Passing 10 NM Reciprocal tracks 1. Reports by reference to a prominent topographical feature by 1 aircraft and a DME beacon by the other aircraft indicate that the	4.0565.02	(2) ATC may clear an aircraft to climb or descend through the levels occupied by another aircraft if: (a) Reports by reference to a prominent geographical feature by 1 aircraft and a distance reports from the other aircraft indicate that the aircraft have passed each other and are at least 10 NM apart; and	Doc. 4444 5.4.2.3.4.2 Aircraft on reciprocal tracks. Aircraft utilizing on-track DME and/or collocated waypoint or same waypoint may be cleared to climb or descend through the levels occupied by other aircraft utilizing on-track DME and/or collocated waypoint or same waypoint, provided that it

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	aircraft have passed by at least 10 NM. 2. The non-DME equipped aircraft passes over and within 10 000 ft of the topographical feature. 3. The topographical feature together with its distance from the DME beacon is specified in local Instructions.		(b) the aircraft providing distance reports utilises: (i) an 'on-track' DME station; or (ii) if navigating to RNP 2 or RNP4, a published waypoint; and (c) the aircraft reporting with reference to the prominent geographical feature has passed over and no more than 10,000 ft above the feature; and (d) the geographical feature together with its distance from the DME beacon or waypoint is specified in local instructions.	has been positively established that the aircraft have passed each other and are at least 10 NM apart, or such other value as prescribed by the appropriate ATS authority. 'Topographical' is replaced by 'geographical' to align with ICAO conventions.
10.6.12	**10.6.12 Standard RNAV Distance Separation Minima** R1 20 RNAV Departing aircraft on climb to vertically separated cruising levels 1. Where B is climbing to the lower level, both A and B must report reaching their cruising levels. 2. If B reports at the cruising level first, immediate action must be taken to apply an alternative standard. 3. May only be used in CTA. 4. Aircraft must be approved: (a) AUSEP; or (b) GPSRNAV; or (c) GPSOCEANIC; or (d) RNP10; or (e) RNP4.		No equivalent	Doc. 4444 5.4.2.3 5.4.2.3 LONGITUDINAL SEPARATION MINIMA BASED ON DISTANCE USING DISTANCE MEASURING EQUIPMENT (DME) AND/OR GNSS 5.4.2.3.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used. 5.4.2.3.3 AIRCRAFT AT THE SAME CRUISING LEVEL Aircraft on the same track: a) 37 km (20 NM), provided: 1) each aircraft utilizes: i) the same "on-track" DME station when both aircraft are utilizing DME; or ii) an "on-track" DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 2) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-22); b) 19 km (10 NM), provided: 1) the leading aircraft maintains a true airspeed of 37 km/h (20 kt) or more faster than the succeeding aircraft; 2) each aircraft utilizes: i) the same "on-track" DME station when both aircraft are utilizing DME; or ii) an "on-track" DME station and a collocated waypoint

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 3) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at such intervals as are necessary to ensure that the minimum is established and will not be infringed (see Figure 5-23).
10.6.12	R2 20 RNAV Definite Passing 1. Using the same waypoint, reports indicate that the aircraft have passed and the distance between them must be opening. 2. Whenever a DME derived distance is 30 NM or less, a correction for DME Slant Range Error must be applied. 3. May only be used in CTA. 4. Aircraft must be approved: (a) AUSEP; or (b) GPSRNAV; or (c) GPSOCEANIC; or (d) RNP10; or (e) RNP4.		No equivalent	Doc. 4444 5.4.2.3.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used. 5.4.2.3.4.2 Aircraft on reciprocal tracks. Aircraft utilizing on-track DME and/or collocated waypoint or same waypoint may be cleared to climb or descend through the levels occupied by other aircraft utilizing on-track DME and/or collocated waypoint or same waypoint, provided that it has been positively established that the aircraft have passed each other and are at least 10 NM apart, or such other value as prescribed by the appropriate ATS authority.
10.6.12	R3 30 RNAV Climbing, cruising or descending 1. When both aircraft are climbing to non-vertically separated levels: (a) both A and B must report reaching their cruising levels; and (b) if B reports at the cruising level first, immediate action must be taken to ensure separation is maintained. 2. May only be used in CTA. 3. Aircraft must be approved: (a) AUSEP; or (b) GPSRNAV; or (c) GPSOCEANIC; or (d) RNP10; or (e) RNP4. 4. When using DME-derived information for level changes above FL 290, both aircraft must be on the same side of the DME beacon.		No equivalent	Doc. 4444 5.4.2.3.3.1 5.4.2.3.1 Separation shall be established by maintaining not less than specified distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, or two aircraft using GNSS, or one aircraft using DME and one aircraft using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used. 5.4.2.3.3 AIRCRAFT AT THE SAME CRUISING LEVEL Aircraft on the same track: a) 37 km (20 NM), provided: 1) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 2) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-22); b) 19 km (10 NM), provided: 1) the leading aircraft maintains a true airspeed of 37 km/h (20 kt) or more faster than the succeeding aircraft; 2) each aircraft utilizes: i) the same “on-track” DME station when both aircraft are utilizing DME; or ii) an “on-track” DME station and a collocated waypoint when one aircraft is utilizing DME and the other is utilizing GNSS; or iii) the same waypoint when both aircraft are utilizing GNSS; and 3) separation is checked by obtaining simultaneous DME and/or GNSS readings from the aircraft at such intervals as are necessary to ensure that the minimum is established and will not be infringed (see Figure 5-23).
10.6.12	R4 50 RNAV Aircraft cruising, climbing or descending on same track 1. Separation must be established by reference to the same ‘on-track’ waypoint, whenever possible ahead of both aircraft or by use of ADS-C. 2. Distance reports obtained by CPDLC must be sent by both aircraft at the same time or from the leading aircraft first. 3. When aircraft are at, or expected to reduce to, the minimum, speed control techniques, including assigning Mach number, must be applied to ensure that the minimum distance exists throughout the period of application of the standard. 4. If an aircraft fails to report its position within 3 min, immediate action must be taken to establish communication. If communication is not established within 8 min from the time the report should have been received, an alternative form of separation must be applied. 5. Both aircraft must be approved either RNP10 or RNP4. 6. Subject to subsection 10.6.7.11, distance reports must be obtained at least every 24 min.		No equivalent	Doc. 4444 5.4.2.6.3.1For aircraft cruising, climbing or descending on the same track, the following separation minimum may be used: Separation minimum: 93 km (50 NM) — RNP type: 10 — Communication requirement: Direct controller-pilot communications — Surveillance requirement: Procedural position reports — Distance verification requirements: At least every 24 minutes 5.4.2.6.3.2 During the application of the 93 km (50 NM) separation, when an aircraft fails to report its position, the controller shall take action within 3 minutes to establish communication. If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation. 5.4.2.6.3.3 Where automated position reporting applies, a common time reference shall be used.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.6.12	R5 50 RNAV Definite Passing 1. Reports (including ADS-C reports) must indicate that the aircraft have passed and the distance between them is opening. 2. Both aircraft must be approved either RNP10 or RNP4.		No equivalent	Doc. 4444 5.4.2.6.3.1 For aircraft cruising, climbing or descending on the same track, the following separation minimum may be used: Separation minimum: 93 km (50 NM) — RNP type: 10 — Communication requirement: Direct controller-pilot communications — Surveillance requirement: Procedural position reports — Distance verification requirements: At least every 24 minutes 5.4.2.6.3.2 During the application of the 93 km (50 NM) separation, when an aircraft fails to report its position, the controller shall take action within 3 minutes to establish communication. If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation. 5.4.2.6.3.3 Where automated position reporting applies, a common time reference shall be used. 5.4.2.6.3.4 Aircraft on reciprocal tracks. Aircraft may be cleared to climb or descend to or through the levels occupied by the other provided that it has been positively established that the aircraft have passed each other and the distance between them is equal to at least the applicable separation minimum.
10.6.12	R6 80 RNAV Mach No. Technique Aircraft cruising, arriving and changing levels when not vertically separated 1. No closing Mach number may exist. 2. The Mach Number Technique (MNT) must be applied during the application of the standard. 3. Aircraft must be approved: (a) AUSEP; or (b) GPSOCEANIC; or (c) MNPS. Note: The requirement for ‘no closing’ may not be waived.		No equivalent	Doc. 4444 5.4.2.5.5 A 150 km (80 NM) RNAV distance-based separation minimum with Mach number technique may be used on same-direction tracks in lieu of a 10-minute longitudinal separation minimum with Mach number technique, provided: a) each aircraft reports its distance to or from the same “on-track” common point; b) separation between aircraft at the same level is checked by obtaining simultaneous RNAV distance readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-26); c) separation between aircraft climbing or descending is established by obtaining simultaneous RNAV distance readings from the aircraft (see Figures 5-27A and 5-27B); and d) in the case of aircraft climbing or descending, one aircraft maintains a level while vertical separation does not exist.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				5.4.2.5.6 When the 150 km (80 NM) longitudinal separation minimum with Mach number technique is applied, the preceding aircraft shall maintain a true Mach number equal to or greater than that maintained by the following aircraft.
10.6.12	R7 80 RNAV Definite Passing 1. Using the same waypoint, reports must indicate that the aircraft have passed and the distance between them is opening. 2. Aircraft must be approved: (a) AUSEP; or (b) GPSOCEANIC; or (c) MNPS.		No equivalent	Doc. 4444 5.4.2.5.7 5.4.2.5.5 A 150 km (80 NM) RNAV distance-based separation minimum with Mach number technique may be used on same-direction tracks in lieu of a 10-minute longitudinal separation minimum with Mach number technique, provided: a) each aircraft reports its distance to or from the same “on-track” common point; b) separation between aircraft at the same level is checked by obtaining simultaneous RNAV distance readings from the aircraft at frequent intervals to ensure that the minimum will not be infringed (see Figure 5-26); c) separation between aircraft climbing or descending is established by obtaining simultaneous RNAV distance readings from the aircraft (see Figures 5-27A and 5-27B); and d) in the case of aircraft climbing or descending, one aircraft maintains a level while vertical separation does not exist. 5.4.2.5.6 When the 150 km (80 NM) longitudinal separation minimum with Mach number technique is applied, the preceding aircraft shall maintain a true Mach number equal to or greater than that maintained by the following aircraft. 5.4.2.5.7 Aircraft on reciprocal tracks. Aircraft utilizing RNAV may be cleared to climb or descend to or through the levels occupied by other aircraft utilizing RNAV provided it has been positively established by simultaneous RNAV distance readings to or from the same “on-track” common point that the aircraft have passed each other and are at least 150 km (80 NM) apart (see Figure 5-28).
10.6.13	**10.6.13 Distance Separation minima using RNAV with Automatic Dependent Surveillance – Contact** A1 50 RNAV using ADS-C Aircraft cruising, climbing or descending on same track 1. Separation must be established in accordance with subsection 10.6.10. 2. When aircraft are at, or expected to reduce to, the minimum, speed control techniques, including assigning Mach number, must be applied to ensure that the minimum distance exists throughout the		No equivalent	Doc. 4444 5.4.2.9.2 The following separation minima may be used for aircraft cruising, climbing or descending on: a) the same track; or b) crossing tracks provided that the relative angle between the tracks is less than 90 degrees. Separation minima: 93 km (50 NM) — RNP: 10 — RCP: 240

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	period of application of the standard. 3. If an ADS-C periodic report is not received within 3 min of the time it should have been sent, action must be taken to establish communication. If communication is not established, or a periodic report is not received within 8 min from the time the periodic report should have been received, an alternative form of separation must be applied. 4. Both aircraft must be approved either RNP 10 or RNP 4. 5. Subject to subsection 10.6.7.11, distance or periodic ADS-C reports must be obtained at least every 24 min.			— RSP: 180 — Maximum ADS-C periodic reporting interval: 27 minutes Separation minima: 93 km (50 NM) — RNP: 4 — RCP: 240 — RSP: 180 — Maximum ADS-C periodic reporting interval: 32 minutes Separation minima: 55.5 km (30 NM) — RNP: 2 or 4 — RCP: 240 — RSP: 180 — Maximum ADS-C periodic reporting interval: 12 minutes Separation minima: 5 minutes — RNP: 2 or 4 or 10 — RCP: 240 — RSP: 180 — Maximum ADS-C periodic reporting interval: 14 minutes
10.6.13	A2 50 RNAV using ADS-C Definite passing 1. ADS-C reports must indicate that the aircraft have passed and the distance between them is opening. 2. Both aircraft must be approved either RNP 10 or RNP 4. 3. Before the application of this standard, a Demand Contract Request (One shot) must be transmitted to each aircraft concerned.		No equivalent	Doc. 4444 5.4.2.9.3 Opposite-direction aircraft on reciprocal tracks may be cleared to climb or descend to or through the levels occupied by another aircraft provided that ADS-C reports show that the aircraft have passed each other by the applicable separation minimum in 5.4.2.9.2. 5.4.2.9.4 The five-minute separation shall be calculated to a resolution of one second without rounding. 5.4.2.9.5 Separation shall be applied so that the distance or time between the calculated positions of the aircraft is never less than the prescribed minimum. This distance or time shall be obtained by one of the following methods: a) when the aircraft are on the same identical track, the distance or time may be measured between the calculated positions of the aircraft or may be calculated by measuring the distances or times to a common point on the track (see Figures 5-30 and 5-31); b) when the aircraft are on the same or reciprocal non-parallel tracks other than in a) above, or on crossing tracks, the distance or time shall be calculated by measuring the distances or times to the common point

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				of intersection of the tracks or projected track (see Figures 5-32 to 5-34); and c) when the aircraft are on parallel tracks whose protection areas overlap, the distance or time shall be measured along the track of one of the aircraft, as in a) above, using its calculated position and the point abeam the calculated position of the other aircraft (see Figure 5-35). 5.4.2.9.6 The communication system provided to enable the application of the separation minima in 5.4.2.9.2 shall allow a controller, within 4 minutes, to intervene and resolve a potential conflict by contacting an aircraft using the normal means of communication. An alternative means shall be available to allow the controller to intervene and resolve the conflict within a total time of 10.5 minutes, should the normal means of communication fail. 5.4.2.9.7 When an ADS-C periodic or waypoint change event report is not received within 3 minutes of the time it should have been sent, the report is considered overdue and the controller shall take action to obtain the report as quickly as possible, normally by ADS-C or CPDLC. If a report is not received within 6 minutes of the time the original report should have been sent, and there is a possibility of loss of separation with other aircraft, the controller shall take action to resolve any potential conflict(s) as soon as possible. The communication means provided shall be such that the conflict is resolved within a further 7.5 minutes. 5.4.2.9.8 When information is received indicating ground or aircraft equipment failure or deterioration below the communication, navigation and surveillance performance requirements, ATC shall then, as required, apply alternative separation minima.
10.7.1.1	**Section 10.7 Separation Standards—Vertical** **10.7.1 Vertical Buffers between Aircraft Inside and Outside Controlled Airspace** Levels assigned to VFR aircraft must provide a buffer of at least 500 FT with the base of CTA.	4.0540.01	**4.540 Assignment of levels for controlled flights** (1) Subject to (3), ATC must assign levels to controlled VFR aircraft that are at least 500 ft above the established lower limit of the control area.	
10.7.1.2	If the base of CTA is a VFR level, levels assigned to IFR aircraft must provide a buffer of at least 500 ft with the base of CTA. If it is known that an IFR aircraft is operating less than 500 ft below the CTA base, levels assigned must provide a buffer of at least 1 000 ft with the base of CTA.	4.0540.02	(2) Subject to (3), ATC must assign levels to controlled IFR aircraft that are at least: (a) if it is known that an IFR aircraft is operating less than 500 ft below the control area base — 1,000 ft above the established lower limit of the control area; otherwise (b) 500 ft above the established lower limit of the control area. (3) Paragraphs (1) and (2) do not apply when ATC has cleared an aircraft to leave controlled airspace on descent.	Doc. 4444 4.1 4.10.3 Minimum cruising level for IFR flights 4.10.3.1 Except when specifically authorized by the appropriate authority, cruising levels below the minimum flight altitudes established by the State shall not be assigned. 4.10.3.2 ATC units shall, when circumstances warrant it, determine the lowest usable flight level or levels for the whole or parts of the control area for which they are responsible, use it when assigning flight levels and
10.7.1.3	Where the base of CTA is an IFR level, levels assigned to IFR aircraft must provide a buffer of at least 1,000 FT with the base of CTA, unless it is known that no IFR traffic is operating at the base of CTA.		See above	

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	In this instance a buffer of at least 500 FT must be applied.			pass it to pilots on request.
10.7.2.1	**10.7.2 Vertical Separation Below High Altitude Balloons** Unless visual separation is applied, aircraft in CTR/CTA must not be permitted to transit vertically below the 15 NM radius of the balloons position while the balloon is ascending until the balloon has passed FL600.		See the proposal for section 4.1610	ANNEX 11 4.2 & Doc. 4444 16.2.4 4.2 Scope of flight information service Flight information service shall include the provision of pertinent: … f) information on unmanned free balloons; and of any other information likely to affect safety. 16.2.4 Air traffic services units shall maintain radar and/or ADS-B surveillance of medium and heavy unmanned free balloons to the extent possible and, if necessary and on the request of the pilot of an aircraft, provide separation using an ATS surveillance system between the aircraft and such balloons which are identified or their exact position is known.
10.7.3.1	**10.7.3 Step Climbs and Descents** The Step Climb Procedure may be used to simultaneously climb aircraft to vertically separated levels provided that the lower aircraft is progressively assigned levels that provide vertical separation with the higher aircraft.		No equivalent	Doc. 4444 5.3.4.2 5.3.4.2 Pilots in direct communication with each other may, with their concurrence, be cleared to maintain a specified vertical separation between their aircraft during ascent or descent.
10.7.3.2	When applying the step climb or step descent procedures, pilots must be advised that they are subject to a step climb or descent.		No equivalent	Doc. 4444 5.3.4.3 5.3.4.2 Pilots in direct communication with each other may, with their concurrence, be cleared to maintain a specified vertical separation between their aircraft during ascent or descent.
10.7.4.1	**10.7.4 Specifying Rates of Climb** Except for international aircraft, a rate of climb or descent must be described in each level clearance when a specified rate is required to ensure the vertical separation is maintained.		No equivalent	Doc. 4444 4.7 4.7 VERTICAL SPEED CONTROL INSTRUCTIONS 4.7.1 General 4.7.1.1 In order to facilitate a safe and orderly flow of traffic, aircraft may be instructed to adjust rate of climb or rate of descent. Vertical speed control may be applied between two climbing aircraft or two descending aircraft in order to establish or maintain a specific vertical separation minimum. 4.7.1.2 Vertical speed adjustments should be limited to those necessary to establish and/or maintain a desired separation minimum. Instructions involving frequent changes of climb/descent rates should be avoided. 4.7.1.3 The flight crew shall inform the ATC unit concerned if unable, at any time, to comply with a specified rate of climb or descent. In such cases, the controller shall apply an alternative method to achieve an appropriate separation minimum between aircraft, without delay. 4.7.1.4 Aircraft shall be advised when a rate of climb/descent restriction is no longer required. 4.7.2 Methods of application 4.7.2.1 An aircraft may be instructed to expedite climb

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				or descent as appropriate to or through a specified level, or may be instructed to reduce its rate of climb or rate of descent. 4.7.2.2 Climbing aircraft may be instructed to maintain a specified rate of climb, a rate of climb equal to or greater than a specified value or a rate of climb equal to or less than a specified value. 4.7.2.3 Descending aircraft may be instructed to maintain a specified rate of descent, a rate of descent equal to or greater than a specified value or a rate of descent equal to or less than a specified value. 4.7.2.4 In applying vertical speed control, the controller should ascertain to which level(s) climbing aircraft can sustain a specified rate of climb or, in the case of descending aircraft, the specified rate of descent which can be sustained, and shall ensure that alternative methods of maintaining separation can be applied in a timely manner, if required.
10.7.4.2	When it is necessary to specify a rate of climb or descent to an international aircraft, the rate must always be specified in feet per minute, not 'standard rate'.		No equivalent	No direct equivalent procedure
10.7.4.3	ATC must endeavour to avoid prescribing rate of climb or descent if it is believed that an aircraft is: (a) operating in close vertical proximity to the control area lower limit; or (b) descending VISUAL or VFR to an assigned level and maintaining clearance from terrain or cloud.		No equivalent	Doc. 4444 4.7.2.4 4.7.2.4 In applying vertical speed control, the controller should ascertain to which level(s) climbing aircraft can sustain a specified rate of climb or, in the case of descending aircraft, the specified rate of descent which can be sustained, and shall ensure that alternative methods of maintaining separation can be applied in a timely manner, if required.
10.7.4.4	A rate of descent must not be specified to any aircraft instructed to make a 'VISUAL APPROACH" or "DME ARRIVAL", or to an aircraft on that part of an instrument approach below the lowest holding altitude.		No equivalent	
10.7.5.1	**10.7.5 Rate in Step Climb/Descent** During a Step Climb or Step Descent where a rate of climb or descent has been specified, the rate must apply to all level clearances issued in the course of the climb or descent. The rate must be specified in the initial clearance using the phrase: "... STEP CLIMB (or STEP DESCENT) - STANDARD RATE (or at FEET PER MINUTE)".		No equivalent	Doc. 4444 4.7.2 4.7.2 Methods of application 4.7.2.1 An aircraft may be instructed to expedite climb or descent as appropriate to or through a specified level, or may be instructed to reduce its rate of climb or rate of descent. 4.7.2.2 Climbing aircraft may be instructed to maintain a specified rate of climb, a rate of climb equal to or greater than a specified value or a rate of climb equal to or less than a specified value. 4.7.2.3 Descending aircraft may be instructed to maintain a specified rate of descent, a rate of descent equal to or greater than a specified value or a rate of descent equal to or less than a specified value. 4.7.2.4 In applying vertical speed control, the controller should ascertain to which level(s) climbing aircraft can

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				sustain a specified rate of climb or, in the case of descending aircraft, the specified rate of descent which can be sustained, and shall ensure that alternative methods of maintaining separation can be applied in a timely manner, if required.
10.7.6.1	**10.7.6 Assigning Vacated Levels** A level vacated by one aircraft may be assigned immediately to a second aircraft provided that: (a) the required vertical separation has not been increased because of the possibility of turbulence; (b) the first aircraft has been assigned a level requiring a level change of at least the minimum being applied; and (c) both aircraft have been instructed to change level at a specified rate which will ensure that the applicable vertical separation standard is not infringed.		No equivalent	Doc. 4444 5.3.4.1 5.3.4 Vertical separation during climb or descent 5.3.4.1 An aircraft may be cleared to a level previously occupied by another aircraft after the latter has reported vacating it, except when: a) severe turbulence is known to exist; b) the higher aircraft is effecting a cruise climb; or c) the difference in aircraft performance is such that less than the applicable separation minimum may result; in which case such clearance shall be withheld until the aircraft vacating the level has reported at or passing another level separated by the required minimum.
10.7.6.2	The lowest holding altitude may be assigned to a second aircraft when the first aircraft has reported, “ON FINAL - LEFT (final approach altitude)”, provided that the following aircraft is instructed to descend at “STANDARD RATE” (or at 500 FT per minute).		No equivalent	
10.7.7.1	**10.7.7 Vertical Separation Using ADS-C** A tolerance of ± 200 ft must be applied to ADS-C level information.		No equivalent	Doc. 4444 13.5.2.1 13.5.2 Determination of level occupancy 13.5.2.1The tolerance value which shall be used to determine that the ADS-C 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), except that appropriate ATS authorities may specify a smaller criterion, but not less than ± 60 m (± 200 ft), if this is found to be more practical.
10.7.7.2	ADS-C level information may be used for the application of vertical separation if: (a) the reported ADS-C level is FL 130 or above; and (b) displayed ADS-C level information is within the specified tolerance of the expected or cleared flight level.		No equivalent	Doc. 4444 13.5.2.6 13.5.2.6 Where it is intended to provide vertical separation below a transition level using ADS-C level information, the appropriate authority shall ensure that such information is corrected to the appropriate barometric altitude.
10.7.7.3	An aircraft cleared to leave a level is taken to have commenced its manoeuvre and vacated the previously occupied level when the ADS-C-derived level information indicates a change of 400 ft or more in the anticipated direction from its previously assigned level.		No equivalent	Doc. 4444 13.5.2.3 13.5.2.3 An aircraft cleared to leave a level is considered to have commenced its manoeuvre and vacated the previously occupied level when the ADS level information indicates a change of more than 90 m (300 ft) in the anticipated direction from its previously assigned level, or verification has been made by receipt of a CPDLC or voice report from the pilot.
10.7.7.4	If displayed ADS-C level information for an aircraft maintaining a level does not conform to the required tolerance, the controller must send a demand contract request to update the level displayed.		No equivalent	Doc. 4444 13.5.2.2 13.5.2.2 If the ADS-C level information is not within the approved tolerance value, the information must be validated by voice or CPDLC. Where it has been

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				established that the ADS-C level information is incorrect, the appropriate ATS authority shall determine the action to be taken regarding the display and use of this information.
10.7.7.5	If, following the update, the level is still beyond the required tolerances, the pilot must be advised accordingly and requested to confirm the aircraft's level. If, following confirmation of the level, the displayed ADS-C level information is still beyond the required tolerance, another method of separation or another method of determining level information must be applied.		No equivalent	Doc. 4444 13.5.2.3 13.5.2.2 If the ADS-C level information is not within the approved tolerance value, the information must be validated by voice or CPDLC. Where it has been established that the ADS-C level information is incorrect, the appropriate ATS authority shall determine the action to be taken regarding the display and use of this information.
10.7.8.1	**10.7.8 Transition Layer, Altitude and Level** The system of altimetry used in Australia makes use of a Transition Layer between the Transition Altitude of 10,000 FT and the Transition Level of FL110, to separate aircraft using QNH from those using 1013 HPa. Cruising in the transition layer must not be permitted.		No equivalent	Doc. 4444 4.10.1.1 4.1 ALTIMETER SETTING PROCEDURES 4.10.1 Expression of vertical position of aircraft 4.10.1.1 For flights in the vicinity of aerodromes and within terminal control areas the vertical position of aircraft shall, except as provided for in 4.10.1.2, 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, vertical position shall be expressed in terms of flight levels when climbing and in terms of altitudes when descending. 4.10.1.2 When an aircraft which has been given clearance to land is completing its approach using Doc. 4444ospheric pressure at aerodrome elevation (QFE), the vertical position of the 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: a) for instrument runways, if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and b) for precision approach runways. 4.10.1.3 For flights en route, the vertical position of aircraft shall be expressed in terms of: a) flight levels at or above the lowest usable flight level; and b) altitudes below the lowest usable flight level; except where, on the basis of regional air navigation agreements, a transition altitude has been established for a specified area, in which case the provisions of 4.10.1.1 shall apply.
10.7.9.1	**10.7.9 Common Altimeter Settings** In the application of vertical separation at or below the transition altitude, aircraft using terminal QNH and aircraft using Area QNH may be considered to be using common settings.	4.0420	**4.420 Common Altimeter Settings** ATC may consider aircraft to be on a common altimeter setting if the aircraft are using: (a) a combination of local QNH and Area QNH; or (b) local QNH for different aerodromes or sources that vary by no more than 5 hPa.	
10.7.10.1	**10.7.10 Levels Unavailable when QNH less than 1013** Whenever the QNH/Area QNH is less than 1013 HPa, certain flight levels at or above the transition level are precluded from use in	5.0425.01	**4.425 Transition altitude, transition layer and transition level** (1) This section sets the standards for the transition altitude, operations within the transition layer and determination of transition levels.	Doc. 4444 4.10.2 4.10.2 Determination of the transition level 4.10.2.1 The appropriate ATS unit shall establish the

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>accordance with Table 10.7-1:
Table 10.7.1
QNH less than Level not available
1013 HPa FL110
997 HPa FL115
980 HPa FL120</td><td></td><td>(2) The transition altitude for all locations in Australia is 10,000 ft.
(3) The transition level is as set out in Table 4.425 (3), so that for an area QNH mentioned in an item of column 1, the transition level is that mentioned in the same item of column 2.
Table 11.02 (3) — Transition level<table><tr><th></th><th>Column 1</th><th>Column 2</th></tr><tr><th>Item</th><th>Area or local QNH</th><th>Transition level</th></tr><tr><td>1</td><td>Equal to, or greater than, 1 013.2 hPa</td><td>FL 110</td></tr><tr><td>2</td><td>At least 997 hPa but less than 1 013.2 hPa</td><td>FL 115</td></tr><tr><td>3</td><td>At least 980 hPa but less than 997 hPa</td><td>FL 120</td></tr><tr><td>4</td><td>At least 963 hPa but less than 980 hPa</td><td>FL 125</td></tr></table>Note The intention is to retain a minimum buffer of 1,000 ft above the transition altitude.
(4) ATC must not assign cruising levels within the transition layer.</td><td>transition level to be used in the vicinity of the aerodrome(s) concerned and, when relevant, the terminal control area (TMA) concerned, for the appropriate period of time on the basis of QNH (altimeter subscale setting to obtain elevation when on the ground) reports and forecast mean sea level pressure, if required.
4.10.2.2 The transition level shall be the lowest flight level available for use above the transition altitude established for the aerodrome(s) concerned. Where a common transition altitude has been established for two or more aerodromes which are so closely located as to require coordinated procedures, the appropriate ATS units shall establish a common transition level to be used at any given time in the vicinity of the aerodrome and, when relevant, in the TMA concerned.</td></tr>
<tr><td>10.7.11</td><td>10.7.11 Vertical Separation Minima
V1
500 ft
1. Between IFR and VFR flights; or
2. between SVFR flights, where SVFR clearance is due to visibility
1. Both aircraft are 7 000 kg MTOW or less.
2. Both aircraft are at or below 10 000 ft.
3. Traffic information is provided to the IFR flight, unless it is impracticable.</td><td>4.0535.01</td><td>4.535 Vertical separation minimum
(1) Subject to (2) and (3), the vertical separation minimum is:
(a) 500 ft, when applied between:
(i) an IFR and a VFR flight; or
(ii) VFR flights, including flights operating on a SVFR clearance;
provided:
(iii) both aircraft have an MTOW of 7,000 kg or less; and
(iv) both aircraft are operating at or below 10,000 ft AMSL; and
(v) subject to workload, the IFR flight is given traffic information about the VFR flight; or</td><td>Doc. 4444 5.3.2
5.3.2 Vertical separation minimum
The vertical separation minimum (VSM) shall be:
a) a nominal 300 m (1 000 ft) below FL 290 and a nominal 600 m (2 000 ft) at or above this level, except as provided for in b) below; and
b) within designated airspace, subject to a regional air navigation agreement: a nominal 300 m (1 000 ft) below FL 410 or a higher level where so prescribed for use under specified conditions, and a nominal 600 m (2 000 ft) at or above this level.</td></tr>
<tr><td>10.7.11</td><td>V2
1 000 ft
All aircraft: Up to and including FL 290.
Aircraft with RVSM approval, excluding military formation flights: From FL 290 to FL 410 inclusive.</td><td>4.0535.02</td><td>(b) 1,000 ft, when applied:
(i) between aircraft operating below FL290; and
(ii) at or above FL290, but at or below FL410:
(A) between individual aircraft if both aircraft are RVSM approved; and
(B) between an aircraft formation and other aircraft if all aircraft involved are RVSM approved.</td><td>Doc. 4444 5.3.2
5.3.2 Vertical separation minimum
The vertical separation minimum (VSM) shall be:
a) a nominal 300 m (1 000 ft) below FL 290 and a nominal 600 m (2 000 ft) at or above this level, except as provided for in b) below; and
b) within designated airspace, subject to a regional air navigation agreement: a nominal 300 m (1 000 ft) below FL 410 or a higher level where so prescribed for use under specified conditions, and a nominal 600 m (2 000 ft) at or above this level.
Implementation of RVSM in Doc 7030:
4.2 REDUCED VERTICAL SEPARATION MINIMUM (RVSM)
Area of applicability
4.2.1 RVSM shall be applicable in that volume of</td></tr>
</table>

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				airspace between FL 290 and FL 410 inclusive in the following FIRs/UIRs: Auckland Oceanic, Baghdad, Bahrain, Bangkok, Beijing, Brisbane, Chennai, Colombo, Delhi, Dhaka, Emirates, Fukuoka, Guangzhou, Hanoi, Ho Chi Minh, Hong Kong, Honiara, Incheon, Jakarta, Jeddah, Kabul, Karachi, Kathmandu, Kolkata, Kota Kinabalu, Kuala Lumpur, Kunming, Kuwait, Lahore, Lanzhou, Male, Manila, Melbourne, Mumbai, Muscat, Nauru, New Zealand, Phnom Penh, Port Moresby, Pyongyang, Sanya, Shanghai, Shenyang, Singapore, Taibei, Tehran, Ujung Pandang, Ulan Bator, Urumqi, Vientiane, Wuhan and Yangon. FAA JO 7110.65Z 2−1−13. FORMATION FLIGHTS e. Military and civil formation flights in RVSM airspace. 1. Utilize RVSM separation standards for a formation flight, which consists of all RVSM approved aircraft. 2. Utilize non−RVSM separation standards for a formation flight above FL 290, which does not consist of all RVSM approved aircraft.
10.7.11	V3 2 000 ft 1. Between aircraft, when at least 1 is not RVSM approved, or 2. following pilot report of an inability to comply with RVSM, or 3. military formation flights regardless of the individual RVSM approval state of each aircraft within the formation From FL 290 to FL 410 inclusive. All aircraft: Above FL 410. In known standing wave conditions or severe turbulence: All levels.	4.0535.03	(2) Subject to (3), the vertical separation minimum is 2,000 ft, when applied: (a) between aircraft operating at or above FL290, if (i) one or more of the aircraft involved is not RVSM approved; or (ii) the pilot of an aircraft involved reports an inability to comply with RVSM; and (b) between aircraft operating above FL410; and (c) at all levels, in reported mountain wave conditions or severe turbulence; and (d) at or below FL410, when one or more of the aircraft involved is operating at supersonic speeds.	Doc. 4444 5.3.2 5.3.2 Vertical separation minimum The vertical separation minimum (VSM) shall be: a) a nominal 300 m (1 000 ft) below FL 290 and a nominal 600 m (2 000 ft) at or above this level, except as provided for in b) below; and b) within designated airspace, subject to a regional air navigation agreement: a nominal 300 m (1 000 ft) below FL 410 or a higher level where so prescribed for use under specified conditions, and a nominal 600 m (2 000 ft) at or above this level.
10.7.11	V4 3 000 ft When 1 or more aircraft is operating at supersonic speeds All levels.	4.0535.04	(3) The vertical separation minimum is 4,000 ft when: (a) the aircraft involved are operating above FL410, and (b) one or more of the aircraft involved is operating at supersonic speeds.	
10.8.1.1	**Section 10.8 Separation Standards—Lateral** **10.8.1 Lateral Separation Buffer** The Lateral Separation buffer is 1 NM between the possible positions of two aircraft. (ICAO PANS-ATM, Chapter 5.)	4.0545.01	**4.545 Lateral separation buffer** (1) Where ICAO Doc. 4444 requires the addition of a buffer when applying lateral separation, a buffer value of 1NM must be used.	Doc. 4444 5.4.1.1.1 5.4.1 Lateral separation 5.4.1.1 LATERAL SEPARATION APPLICATION 5.4.1.1.1 Lateral separation shall be applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the appropriate authority

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				and included in the lateral separation minima as an integral part thereof.
10.8.2.1	**10.8.2 Application of Lateral Separation** Lateral separation may be achieved by: (a) establishing an aircraft's position outside the BLSP; or (b) applying an appropriate ATS surveillance system minimum; or (c) applying a 1 NM buffer to the track or position of an aircraft which is determined relative to a prominent topographical feature, if: (i) the aircraft is tracking visually; and (ii) the aircraft is not more than 10 000 ft above the topographical feature; and (iii) it is daytime.	4.0546.01	**4.546 Standards for lateral separation** (1) The standard for lateral separation is: (a) subject to (2), a separation minimum or method specified in ICAO Doc. 4444, or (b) an action to establish or confirm that a lateral spacing of not less than 1 NM exists between: (i) the possible positions of the aircraft concerned; or (ii) the possible position of an aircraft and the extent of the activity from which that aircraft is being separated; or (c) an application of the lateral separation standard specified in subsection 4.549. (2) Geographical locations useable for lateral separation must be specified in an ATS provider's local instructions. (3) For (1) (b), the possible position of an aircraft comprises the geographic position of the aircraft plus the extent of any tolerance value specified in section 4.547 relevant to the method of navigation being utilised by the aircraft.	N/A – this section specifies an Australia-specific standard. 'Topographical' is replaced by 'geographical' to align with ICAO conventions.
10.8.2.2	Entry and Exit Points must be established by: (a) application to a BLSP of slant range and DME equipment error corrections; (b) application of RNAV tolerances; (c) passage over a visual fix located on the opposite side of a BLSP from the area of conflict; (d) passage over a positive radio fix located on the opposite side of a BLSP from the area of conflict; (e) expiration of a time calculated using an estimate for a BLSP plus or minus: (i) 5 minutes, if the estimate for the BLSP is within 30 min of an ATD, passage over a visual fix, positive radio fix, way point or ATS surveillance system position; or (ii) half of the longitudinal time separation minimum applicable to the aircraft.		No equivalent, as this detail is a practical application of the essential requirement to ensure there is no less than 1NM between the possible positions of aircraft.	N/A – this section specifies an Australia-specific standard.
10.8.2.3	Aircraft transiting into an airspace in which larger tolerances are applied than that being exited are taken to be separated if: (a) the smaller separation standard exists; and (b) the aircraft are established on flight paths that will diverge by at least 15° until the larger separation standard is established; and (c) the aircraft are RNAV approved to AUSEP, MNPS, GPSOCEANIC, RNP10 or RNP4.		Propose no equivalent as the PANS adequate covers the situation	Doc. 4444 5.4.1.2.1.9 5.4.1.2.1.9 Transitioning into airspace where a greater lateral separation minimum applies. Lateral separation will exist when aircraft are established on specified tracks which: a) are separated by an appropriate minimum; and b) diverge by at least 15 degrees until the applicable lateral separation minimum is established; providing that it is possible to ensure, by means approved by the appropriate ATS authority, that aircraft have the navigation capability necessary to ensure

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td></td><td></td><td></td><td>accurate track guidance.</td></tr>
<tr><td>10.8.2.4</td><td>A DME-based lateral separation entry/exit point must be calculated by:
(a) determining the ground distance from the DME site to the BLSP; then
(b) if the area of conflict (or part of it) is between the BLSP and the DME site, adding the slant range correction from Table 10.8-1 to the ground distance; then
(c) applying the correction for DME equipment error from Table 10.8-2 ensuring it is applied to a position outside the area of conflict.</td><td>4.0546.02</td><td>(4) When lateral separation in accordance with subparagraph (1) (b):
(a) is determined as a minimum or maximum horizontal distance from a ground-based distance measuring equipment (DME) site; and
(b) relies on distance reports from that DME site for purpose of applying the separation,
the equivalent DME distance must be adjusted with relevant slant range or equipment error corrections from section 4.548, but only in a direction that preserves the actual minimum or maximum horizontal distance determined in (4) (a).</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.2.5</td><td>Where the navigation tolerance is determined with reference to ground-based navigation aids, GPS distance may be used in lieu of a co-sited DME in the steps above.</td><td>4.0546.03</td><td>(5) For subsection (4), GNSS distance may be used without correction for slant range or DME equipment error.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.2.6</td><td>Where the lateral separation point is less than 60 NM from, and between the area of conflict and the reference DME site, an extra 1NM must be subtracted from the DME-derived distance.</td><td></td><td>No equivalent proposed, as this detail is a practical application of the essential requirement to ensure there is no less than 1NM between the possible positions of aircraft.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.1</td><td>10.8.3 Navigation Tolerances
To determine the possible position of an aircraft, the following tolerance areas and range limitations must be applied.</td><td>4.0547.01</td><td>4.547 Lateral separation – Navigation Tolerances
(1) For paragraph 4.546 (1) (b), this section contains the tolerances that determine the possible position of an aircraft when using a particular method of navigation.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.2</td><td>When manual means are used for the calculation of lateral separation, the radio navaid tolerances specified below must be rounded up to the next higher half-degree.</td><td>4.0547.02</td><td>(2) When manual means are used for calculating a lateral separation, the relevant tolerance in this section must be rounded up to the next higher half-degree.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.3</td><td>The minimum tracking tolerance is ±1 NM.</td><td>4.0547.03</td><td>(3) Other than in accordance with paragraphs (7) and (8), the minimum tracking tolerance is ±1 NM.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.4</td><td>The maximum tracking tolerance is ±30 NM in CTA and ± 50 NM in OCA.</td><td>4.0547.04</td><td>(4) The maximum tracking tolerance is:
(a) for airspace that is designated oceanic control area (OCA) — ± 50 NM; otherwise
(b) ± 30 NM.</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.5</td><td>Slant range corrections are as follows.
Table 10.8-1<table><tr><th>und ance</th><th>Slant Range Correction (in NM)</th><th></th><th></th><th></th></tr><tr><th></th><th>< = FL150</th><th>< = FL290</th><th>< = FL460</th><th>< = FL600</th></tr><tr><td>M</td><td>2</td><td>3</td><td>6</td><td>8</td></tr><tr><td>NM</td><td>1</td><td>3</td><td>5</td><td>7</td></tr><tr><td>NM</td><td>1</td><td>2</td><td>4</td><td>6</td></tr><tr><td>M</td><td>1</td><td>2</td><td>4</td><td>5</td></tr><tr><td>) NM</td><td>1</td><td>2</td><td>3</td><td>5</td></tr><tr><td>12 NM</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>14 NM</td><td>1</td><td>1</td><td>3</td><td>4</td></tr><tr><td>M</td><td>1</td><td>1</td><td>2</td><td>4</td></tr><tr><td>24 NM</td><td>1</td><td>1</td><td>2</td><td>3</td></tr></table></td><td>4.0548.01</td><td>4.548 Lateral separation – corrections for slant range and equipment error
(1) For subsection 4.546 (3), the slant range correction is the value in columns 2 – 7 of table 4.548-1 relevant to:
(a) the horizontal distance from the DME site in column 1 as described in paragraph 4.546 (3) (a); and
(b) the aircraft’s vertical position in accordance with columns 2 – 7.
Table 4.548-1 – Slant range correction<table><tr><th rowspan="2">Horizontal distance from DME site (Column 1)</th><th colspan="6">Aircraft’s level</th></tr><tr><th>≤ 2,000 ft AGL (Column 2)</th><th>> 2,000 ft, but ≤ 4,000 ft AGL (Column 3)</th><th>> 4,000 ft AGL, but ≤ FL150 (Column 4)</th><th>> FL150, but ≤ FL290 (Column 5)</th><th>> FL290, but ≤ FL460 (Column 6)</th><th>> FL460, but ≤ FL600 (Column 7)</th></tr><tr><td></td><td colspan="6">Slant Range Correction (in NM)</td></tr></table></td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
</table>

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>
<table>
<tr><td>25–30 NM</td><td>1</td><td>1</td><td>2</td><td>2</td><td></td></tr>
<tr><td>31–50 NM</td><td>1</td><td>1</td><td>1</td><td>2</td><td></td></tr>
<tr><td>>50 NM</td><td>1</td><td>1</td><td>1</td><td>1</td><td></td></tr>
</table>
</td><td></td><td>
<table>
<tr><td>3 NM</td><td>2</td><td>2</td><td>2</td><td>3</td><td>6</td><td>8</td></tr>
<tr><td>4–5 NM</td><td>1</td><td>1</td><td>1</td><td>3</td><td>5</td><td>7</td></tr>
<tr><td>6–7 NM</td><td>1</td><td>1</td><td>1</td><td>2</td><td>4</td><td>6</td></tr>
<tr><td>8 NM</td><td>1</td><td>1</td><td>1</td><td>2</td><td>4</td><td>5</td></tr>
<tr><td>9 NM</td><td>1</td><td>1</td><td>1</td><td>2</td><td>3</td><td>5</td></tr>
<tr><td>10 NM</td><td>0</td><td>1</td><td>1</td><td>2</td><td>3</td><td>5</td></tr>
<tr><td>11–12 NM</td><td>0</td><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>13–14 NM</td><td>0</td><td>1</td><td>1</td><td>1</td><td>3</td><td>4</td></tr>
<tr><td>15 NM</td><td>0</td><td>1</td><td>1</td><td>1</td><td>2</td><td>4</td></tr>
<tr><td>16–24 NM</td><td>0</td><td>1</td><td>1</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>25–29 NM</td><td>0</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td></tr>
<tr><td>30 NM</td><td>0</td><td>0</td><td>1</td><td>1</td><td>2</td><td>2</td></tr>
<tr><td>31–50 NM</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>2</td></tr>
<tr><td>>50 NM</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table>
</td><td></td></tr>
<tr><td>10.8.3.6</td><td>Slant Range Error is negligible and corrections need not be applied at or below:
(a) 2,000 FT AGL at distances of 10 NM or greater from the DME site; or
(b) 4,000 FT AGL at distances of 30 NM or greater from the DME site.
Note Where required for a particular lateral separation problem, Local Instructions may specify a lateral separation point based on a precise slant range correction for the levels concerned.</td><td></td><td>Covered by two extra columns in the table of slant range corrections</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
<tr><td>10.8.3.7</td><td>10.8.3.7 Standard DME equipment error corrections are as follows:
Table 10.8-2
<table>
<tr><th colspan="3">DME Equipment Error</th></tr>
<tr><th>Tolerance</th><th colspan="2">Conditions</th></tr>
<tr><td rowspan="6">± 0.25 NM plus 1.25% of the slant range.</td><td colspan="2">Controllers may use figures from the table below.
DME Equipment Error Correction</td></tr>
<tr><td>Slant Range</td><td>Correction</td></tr>
<tr><td>300 NM or less</td><td>4 NM</td></tr>
<tr><td>220 NM or less</td><td>3 NM</td></tr>
<tr><td>140 NM or less</td><td>2 NM</td></tr>
<tr><td>60 NM or less</td><td>1 NM</td></tr>
</table>
</td><td>4.0548.02</td><td>(2) For subsection 4.546 (3), the equipment error correction must be plus or minus – as the case may – of one of the following:
(a) 0.25NM plus 1.25 percent of the slant range value; or
(b) when the slant range value is 60NM or less — 1 NM; or
(c) when the slant range value is more than 60NM but equal to or less than 140NM — 2 NM; or
(d) when the slant range value is more than 140NM but equal to or less than 220NM — 3NM; or
(e) when the slant range value is more than 220NM but equal to or less than 300 NM — 4 NM.</td><td>POPS vII 2.4.4
2.4.4 DME
The accuracy is ± (0.46 km (0.25 NM) + 1.25 per cent of the distance to the antenna). This value is the RSS total of minimum accuracy, monitor tolerance and flight technical tolerance, the latter two being so small as to be completely dominated by the larger airborne value.</td></tr>
<tr><td>10.8.3.8</td><td>The following tolerances are applicable to short range navigation aids:
Table 10.8-3</td><td>4.0547.05</td><td>(5) Subject to (3) and (4), for a short-range navigation aid mentioned in column 1 of Table 4.547-1, the tolerance values are those in:
(a) where the ATS provider uses precise or automated plotting for</td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
</table>

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard

Original MOS provision

Navigation Aid	Tolerance for Precise Plotting	Tolerance for Manual Plotting	Conditions
ILS Localiser Front Beam	± 2.4 °	± 2.5°	Within 25 NM except: 1. Above 2,000 FT AGL, within ±5° of course line 25 NM; 2. Below A050 30 NM; 3. A050 and above 50 NM.
VOR radials (or TACAN)	± 5.2°	± 5.5°	Range (based on height above the navaid): Below 5,000 FT 5,000 to 9,999 FT 10,000 to 14,999 FT 15,000 to 19,999 FT At or above 20,000 FT **Note:** For published lateral separation diagrams that are displayed for controller reference, a maximum range of 150 NM must be used. The tolerance can be applied outside the listed range when an inbound aircraft has reported established on the VOR/TACAN.
NDB/Locator	± 6.9°	± 7°	Range as per ERSA.
DME arc	± 2.5 NM	± 2.5 NM	Includes DME equipment error.
Localiser Equivalence	± 1 NM	± 1 NM	The aircraft must be: (a) established on 1 of the following approaches to a runway: (i) Area Navigation — Global Navigation Satellite System

Proposed MOS

determining lateral separation – column 2 of the table; or

(b) where manual plotting is used to determine the lateral separation solution – column 3 of the table;

which, subject to the conditions mentioned in column 4 of the Table, apply for an aircraft navigating with the use of the particular navigation aid.

Table 4.547-1

Navigation Aid (Column 1)	Tolerance for Precise Plotting (Column 2)	Tolerance for Manual Plotting (Column 3)	Conditions (Column 4)
ILS Localiser Front Beam	± 2.4 °	± 2.5°	Only useable for lateral separation within the rated coverage of the particular localiser, or if none is specified – to a maximum distance of 25 NM from the facility
VOR radials (or TACAN)	± 5.2°	± 5.5°	(a) Subject to (b), the maximum useable rang for separation based o VOR or TACAN radial tolerances with respect the height of the aircrat above the navigation a is as follows: (i) Below 5,000 ft — 60 NM (ii) 5,000 to 9,999 ft – 90 NM (iii) 10,000 to 14,999 f — 120 NM (iv) 15,000 to 19,999 f —150 NM (v) At or above 20,000 ft— 180 NM (b) The range limitations i (a) do not apply if an inbound aircraft has reported established o the VOR or TACAN radial.
NDB	± 6.9°	± 7°	Range as per ERSA.
DME arc	± 2.5 NM	± 2.5 NM	
GNSS – Localiser	± 1 NM	± 1 NM	The aircraft must be: (a) established on one of t

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>(RNAV (GNSS));
(ii) Required Navigation Performance Approach (RNP APCH);
(iii) Required Navigation Performance Authorisation Required Approach (RNP AR APCH); and
(b) within 25 NM of the runway threshold; and
(c) at or inside the Initial Approach Fix (IAF) for the runway; and
(d) aligned with the centreline of the runway.</td><td></td><td><table>
<tr><td>Equivalence</td><td></td><td></td><td>following approaches to a runway:
(i) Required Navigation Performance Approach (RNP APCH);
(ii) Required Navigation Performance Authorisation Required Approach (RNP AR APCH); and
(b) within 25 NM of the runway threshold; and
(c) at or inside the Initial Approach Fix (IAF) for the runway; and
(d) aligned with the centreline of the runway.</td></tr>
<tr><td>GLS – Localiser Equivalence</td><td>± 1 NM</td><td>± 1 NM</td><td>The aircraft must be:
(a) established on a GLS approach to a runway, and
(b) within the notified Dmax range for the GBAS installation; and
(c) aligned with the centreline of the runway.</td></tr>
</table></td><td></td></tr>
<tr><td>10.8.3.9</td><td>The following circular error of position (CEP) and cross track tolerances are applicable to long range navigation systems, subject to the conditions specified:
Table 10.8-4<table>
<tr><th>Tolerance</th><th>Conditions</th></tr>
<tr><td>25 NM CEP</td><td>1 Aircraft flight notification must indicate RNP10 or RNP4.
2 Only useable for separation with the 25 NM CEP tolerance of another RNP10 o RNP4 aircraft.
3 1 NM buffer between tolerances is not required.</td></tr>
<tr><td>14 NM CEP</td><td>1 Not useable in airspace designated OC
2 Aircraft flight notification must indicate AUSEP, RNP10 or RNP4.</td></tr>
<tr><td>7 NM CEP</td><td>1 Not useable in airspace designated OC</td></tr>
</table></td><td>4.0547.06</td><td>(6) Subject to (4), for a long range navigation capability mentioned in column 1 of Table 4.547-2, the tolerance values are those in column 2 of the Table which, subject to the conditions mentioned in column 3 of the Table, apply for an aircraft navigating with the use of the particular navigation capability.
Table 4.547-2<table>
<tr><th>Navigation capability
(Column 1)</th><th>Tolerance
(Column 2)</th><th>Conditions
(Column 3)</th></tr>
<tr><td>RNP 10 or RNP 4</td><td>14 NM radius</td><td>Not useable in airspace designated OCA.</td></tr>
<tr><td>RNP 2</td><td>7 NM radius</td><td>Not useable in airspace designated OCA.</td></tr>
<tr><td>INS – expanding formula</td><td>Tolerance is a circle of radius:
(a) 3 NM on departure, or 4 NM at each</td><td>(1) Not useable in airspace designated OCA.
(2) Any lateral separation solution derived with this</td></tr>
</table></td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
</table>

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>2 Aircraft flight notification must indicate GPSRNAV or GPSOCEANIC.</td></tr>
<tr><td>Expanding formula</td><td>1 Not useable in airspace designated OCA.
2 Aircraft flight notification must indicate:
(a) INS/IRS; and
(b) AUSEP, RNP10 or RNP4.
3 CEP tolerance is a circle of radius:
(a) 3 NM on departure, or 4 NM at each update; and
(b) expanding at a rate of 3 NM per hour since departure or update, to a maximum of 14 NM radius.
4 Any lateral separation diagram so produced must be approved by the ATS provider.
5 Unless informed otherwise, ATC may assume update when 1 of the following occurs:
(a) aircraft passage within 180 NM of 2 DME stations for a DME/DME fix where the position lines cross at an angle between 30° and 150°;
(b) aircraft passage within 25 NM of a collocated VOR/DME beacon;
(c) aircraft passage over a VOR beacon at or below FL200.</td></tr>
<tr><td>± 30 NM Cross track</td><td>Aircraft flight notification must indicate:
(a) INS/IRS; and
(b) AUSEP, RNP10 or RNP4.</td></tr>
<tr><td>±15 NM Cross track</td><td>1 Aircraft flight notification must indicate:
(a) INS/IRS; and
(b) AUSEP, RNP10 or RNP4.
2 The update interval (that is, the flight time since departure or a waypoint suitable for updating present position) does not exceed:
(a) for aircraft equipped with single INS/IRS — 3 hours; or
(b) for aircraft with 2 or more INS/IRS — 5 hours.</td></tr>
</table>
</td><td></td><td>
<table>
<tr><td></td><td>update; and
(b) expanding at a rate of 3 NM per hour since departure or update, to a maximum of 14 NM radius.</td><td>tolerance must be specified in local instructions.
(3) Unless informed otherwise, ATC may assume update if
(a) the aircraft is equipped with GNSS; or
(b) one of the following occurs:
(i) aircraft passage within 180 NM of two DME stations for a DME/DME fix where the position lines cross at an angle between 30° and 150°;
(ii) aircraft passage within 25 NM of a collocated VOR/DME beacon;
(iii) aircraft passage over a VOR beacon at or below FL200.</td></tr>
<tr><td>(a) INS, and
(b) RNP10 or RNP4.</td><td>± 30 NM Cross track</td><td></td></tr>
<tr><td>(a) INS, and
(b) RNP10 or RNP4.</td><td>±15 NM Cross track</td><td>When INS or IRS is used, the update interval (that is, the flight time since departure or a waypoint suitable for updating present position) must not exceed:
(a) for aircraft equipped with single INS or IRS — 3 hours; or
(b) for aircraft with 2 or more INS or IRS — 5 hours.</td></tr>
</table>
</td><td></td></tr>
<tr><td>10.8.3.10</td><td>The following tolerances are applicable to visual tracking and position fixing:</td><td>4.0547.07</td><td>(7) For an aircraft:
(a) tracking visually, and restricted to one side of a defined line feature or a prominent geographical feature; and</td><td>Doc. 4444:
5.4.1 Lateral separation</td></tr>
</table>

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>Table 10.8-4
<table><tr><th colspan="2">Conditions</th><th>Tolerance</th></tr><tr><td rowspan="3">By day—powered aircraft</td><td>0 to 2,000 FT AGL</td><td>±1 NM</td></tr><tr><td>2,001 to 5,000 FT AGL</td><td>±2 NM</td></tr><tr><td>5,001 to 10,000 FT AGL</td><td>±4 NM</td></tr><tr><td>By day—non-powered glider aircraft</td><td>0 to 10,000 FT AGL</td><td>±5 NM</td></tr><tr><td rowspan="3">By night</td><td>0 to 2,000 FT AGL</td><td>±2 NM</td></tr><tr><td>2,001 to 5,000 FT AGL</td><td>±3 NM</td></tr><tr><td>5,001 to 10,000 FT AGL</td><td>±5 NM</td></tr><tr><td>By day and night</td><td>10,001 FT AGL to FL200
FL201 to FL300
FL301 to FL400</td><td>±8 NM
±12 NM
±16 NM</td></tr></table></td><td></td><td>(b) operating at or below FL145;
the tolerance is the line feature or prominent geographical feature as applicable to the situation.
(8) For an aircraft:
(a) tracking visually, but not restricted to one side of a defined line feature or a prominent geographical feature, and
(b) in a situation mentioned in column 1 of Table 4.547-3; and
(c) operating within the range of levels mentioned in column 2
the tolerance is the value in column 3 of the Table relevant situation and the operating level of the aircraft.
Table 4.547-3
<table><tr><th>Situation</th><th>Range of levels</th><th>Tolerance (radius)</th></tr><tr><td>By day — powered aircraft</td><td>0 to 2,000 ft AGL
2,001 to 5,000 ft AGL
5,001 to 10,000 ft AGL</td><td>± 1 NM
± 2 NM
± 4 NM</td></tr><tr><td>By day — non-powered glider aircraft</td><td>0 to 10,000 ft AGL</td><td>± 5 NM</td></tr><tr><td>By night</td><td>0 to 2,000 ft AGL
2,001 to 5,000 ft AGL
5,001 to 10,000 ft AGL</td><td>± 2 NM
± 3 NM
± 5 NM</td></tr><tr><td>By day and night</td><td>10,001 ft AGL to FL200
FL201 to FL300
FL301 to FL400</td><td>± 8 NM
± 12 NM
± 16 NM</td></tr></table></td><td>5.4.1.1 LATERAL SEPARATION APPLICATION
5.4.1.1.1 Lateral separation shall be applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the appropriate authority and included in the lateral separation minima as an integral part thereof.
Note.— In the minima specified in 5.4.1.2 an appropriate buffer has already been included.
5.4.1.2 LATERAL SEPARATION CRITERIA AND MINIMA
5.4.1.2.1 Means by which lateral separation may be applied include the following:
5.4.1.2.1.1 By reference to the same or different geographic locations. By position reports which positively indicate the aircraft are over different geographic locations as determined visually or by reference to a navigation aid (see Figure 5-3).</td></tr>
<tr><td>10.8.3.11</td><td>The following miscellaneous tolerances are applicable:
Table 10.8-5
Table 10.8-5
<table><tr><th>Means of Position Fixing</th><th>Tolerance</th><th>Conditions</th></tr><tr><td>Navigation Training</td><td>20 NM CEP</td><td>Flight Notification specifies SAN/NAVEX or FTS/NAVEX.
Allows for along track and cross-track errors.</td></tr><tr><td>Dead reckoning</td><td>± 12°</td><td></td></tr><tr><td></td><td>± 9°</td><td>Initial track guidance has been provided by NDB, VOR, or TACAN and there</td></tr></table></td><td>4.0547.08</td><td>(9) For a navigation method mentioned in column 1 of Table 4.547-4, the tolerance values are those in column 2 of the Table which, subject to the conditions mentioned in column 3 of the Table, apply for an aircraft navigating with the use of the particular navigation method.
Table 4.547-4
<table><tr><th>Means of Position Fixing
(Column 1)</th><th>Tolerance
(Column 2)</th><th>Conditions
(Column 3)</th></tr><tr><td>Dead reckoning</td><td>± 12°</td><td></td></tr><tr><td></td><td>± 9°</td><td>Initial track guidance has been provided by NDB, VOR, or TACAN a there is no subsequent change in track.</td></tr><tr><td>Flight path monitoring</td><td>± 9°</td><td>1. Aircraft is observed on the ATS surveillance system to maintain track.
2. Tolerance applied from the edg of a circle of 5 NM centred on th</td></tr></table></td><td>N/A – this section specifies an Australia-specific standard.</td></tr>
</table>

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<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td></td><td>is no subsequent change in track.</td></tr>
<tr><td>Flight path monitoring</td><td>± 9°</td><td>1. Aircraft is observed on the ATS surveillance system to maintain track.
2. Tolerance applied from the edge of a circle of 5 NM centred on the last observed position.
3. When using radar, the distance from the radar site is less than 200 NM.</td></tr>
</table>
</td><td></td><td>
<table>
<tr><td></td><td></td><td>last observed position.
3. When using radar, the distance from the radar site is less than 200 NM.</td></tr>
</table>
</td><td></td></tr>
<tr><td></td><td>No equivalent. The proposal reflects an arrangement authorised under an exemption.</td><td>4.0549.01</td><td>
4.549 GNSS/DME entry/exit points for navaid - GNSS (independent)
Lateral separation exists between two aircraft if:
(a) from a common point, the angular difference between the track of one aircraft and the track of the other aircraft corresponds to one of the values mentioned in column 1 of Table 4.549 (1), and
(b) at least one aircraft is no closer to the common point than a distance mentioned in column 2 to 10 that:
(i) is relevant to a range of vertical levels mentioned in row 1 that correspond to the vertical levels of both aircraft; and
(ii) is relevant to the combination of navigation aids in row 2 being used by both aircraft; and
(iii) corresponds to the relevant angular difference between the aircraft tracks.

Table 4.549 (1) — Lateral separation for aircraft flying GNSS, VOR and NDB
<table>
<tr><th></th><th>Column 1</th><th>Column 2</th><th>Column 3</th><th>Column 4</th><th>Column 5</th><th>Column 6</th><th>Column 7</th><th>Column 8</th><th>Column 9</th><th>Column 10</th></tr>
<tr><td>Row</td><td>Angular Difference</td><td colspan="9">Distance from common point (NM)</td></tr>
<tr><td>1</td><td></td><td colspan="3">0 - FL150</td><td colspan="3">0 - FL290</td><td colspan="3">0 - FL460</td></tr>
<tr><td>2</td><td></td><td>Aircraft 1 and 2: GNSS</td><td>Aircraft 1: VOR; Aircraft 2: GNSS</td><td>Aircraft 1: NDB; Aircraft 2: GNSS</td><td>Aircraft 1 and 2: GNSS</td><td>Aircraft 1: VOR; Aircraft 2: GNSS</td><td>Aircraft 1: NDB; Aircraft 2: GNSS</td><td>Aircraft 1 and 2: GNSS</td><td>Aircraft 1: VOR; Aircraft 2: GNSS</td><td>Aircraft 1: NDB; Aircraft 2: GNSS</td></tr>
<tr><td>3</td><td>14°</td><td>60</td><td>61</td><td>-</td><td>60</td><td>61</td><td>-</td><td>60</td><td>61</td><td>-</td></tr>
<tr><td>4</td><td>15°</td><td>15</td><td>16</td><td>-</td><td>15</td><td>16</td><td>-</td><td>17</td><td>19</td><td>-</td></tr>
<tr><td>5</td><td>16°</td><td>11</td><td>12</td><td>-</td><td>11</td><td>13</td><td>-</td><td>15</td><td>17</td><td>-</td></tr>
<tr><td>6</td><td>17°</td><td>11</td><td>12</td><td>30</td><td>11</td><td>13</td><td>31</td><td>15</td><td>17</td><td>33</td></tr>
</table>
</td><td></td></tr>
</table>

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<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
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<tr><td></td><td></td><td></td><td>
<table>
<tr><td>7</td><td>18°</td><td>11</td><td>12</td><td>14</td><td>11</td><td>13</td><td>14</td><td>14</td><td>17</td><td>18</td></tr>
<tr><td>8</td><td>19°</td><td>11</td><td>12</td><td>12</td><td>11</td><td>13</td><td>13</td><td>13</td><td>16</td><td>17</td></tr>
<tr><td>9</td><td>20°</td><td>11</td><td>12</td><td>12</td><td>11</td><td>13</td><td>13</td><td>13</td><td>16</td><td>17</td></tr>
<tr><td>10</td><td>21-28°</td><td>11</td><td>12</td><td>12</td><td>11</td><td>13</td><td>13</td><td>12</td><td>15</td><td>17</td></tr>
<tr><td>11</td><td>29-35°</td><td>10</td><td>11</td><td>11</td><td>10</td><td>12</td><td>12</td><td>10</td><td>13</td><td>14</td></tr>
<tr><td>12</td><td>36-44°</td><td>10</td><td>11</td><td>10</td><td>10</td><td>12</td><td>11</td><td>10</td><td>13</td><td>13</td></tr>
<tr><td>13</td><td>45-59°</td><td>8</td><td>9</td><td>9</td><td>8</td><td>10</td><td>10</td><td>9</td><td>12</td><td>12</td></tr>
<tr><td>14</td><td>60-135°</td><td>6</td><td>7</td><td>7</td><td>6</td><td>8</td><td>8</td><td>9</td><td>12</td><td>12</td></tr>
</table>
</td><td></td></tr>
<tr><td>10.9.1.1</td><td>Section 10.9 Separation Standards—Applicable to En-route Area Navigation by Aircraft Using Inertial Navigation Systems
10.9.1 Introduction
This section is concerned with the horizontal (that is, lateral and longitudinal) separation standards to be employed by ATC in respect of aircraft equipped for en-route area navigation (RNAV) and approved for such operations.</td><td></td><td>No equivalent</td><td>Nil</td></tr>
<tr><td>10.9.1.2</td><td>The standards must not be applied when ATC is aware that the time since the last opportunity to update the RNAV system’s present position exceeds the limit, or after pilot advice of:
(a) navigation equipment failure; or
(b) operation of the equipment outside the approved tolerances.</td><td></td><td>No equivalent</td><td>Nil</td></tr>
<tr><td>10.9.2.2</td><td>10.9.2 Lateral Separation
For lateral separation the across-track tolerance to be applied is to equal the CEP of the INS/IRS-derived position plus the FTE.</td><td></td><td>No equivalent</td><td>Doc. 4444 5.4.1
5.4.1 generally ...
Specifically: 5.4.1.2.1.3 By use of different navigation aids or methods. Lateral separation between aircraft using different
navigation aids, or when one aircraft is using RNAV equipment, shall be established by ensuring that the derived protected airspaces for the navigation aid(s) or RNP do not overlap.</td></tr>
<tr><td>10.9.2.3</td><td>The CEP is determined from the following:
(a) at departure point the INS/IRS position can be assumed to be within a circle of radius 3 NM;
(b) the INS/IRS position can be assumed to be within a circle of radius 4 NM at a designated waypoint suitable for updating inertial present position;
(c) the CEP of the INS/IRS position expands at a rate corresponding to an increase in radius of 3 NM per hour (e.g. for a groundspeed of 300KT, divergence is 1 NM per 100 NM track flown).</td><td></td><td>No equivalent</td><td>Nil</td></tr>
<tr><td>10.9.2.4</td><td>The FTE when the autopilot is not coupled to the INS/IRS for steering</td><td></td><td>No equivalent</td><td>Nil</td></tr>
</table>

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	guidance is ±2 NM across track.			
10.9.2.5	Within the coverage of a short-range radio navigation aid (e.g. VOR, NDB, DME) defining the route, the tolerance applicable to that aid is to be used if it is less than that of the RNAV system.		No equivalent	Nil
10.9.3.1	**10.9.3 Longitudinal Separation** The longitudinal separation minima based on time are derived by taking the following factors into account: (a) the along-track navigational tolerances, assumed to be: (i) the same for each aircraft; (ii) equal to the magnitude of the radial error of position of the least accurate navigation system; and (iii) calculated at the end of a route section, the end being defined as either: (A) A waypoint satisfying the parameters for updating present position; or (B) A 'gate-in' waypoint marked by NDB, VOR, DME or a combination thereof, for entry into the radio-navigation air route structure; or (C) A waypoint beyond which a larger separation standard is specified; (b) the tolerance of each aircraft's estimated arrival time at the next reporting point (taken as ±3 MIN); (c) an estimation tolerance of ±2 MIN to allow for errors in the ATC's estimation of future positions of the aircraft in conflict; (d) a control tolerance of ±2 MIN for control factors such as communications delays, clock errors and human factors; (e) each of these tolerances is combined by the root sum square (RSS) method; and (f) a buffer of 3 MIN added arithmetically.		No equivalent	Doc. 4444 5.4.2 5.4.2 generally
10.9.3.2	The minimum time separation between two aircraft which are neither laterally nor vertically separated, therefore, equals: MIN, Where: d = magnitude of the CEP (NM) and G/S = minimum groundspeed (KT).		No equivalent	Nil
10.9.3.3	10 MIN separation between aircraft flying the same or reciprocal tracks may apply within controlled airspace provided that: (a) for aircraft equipped with single INS/IRS the average groundspeed on a route section is not less than: (i) 240 KT in CTA/TCTA/OCA and the update interval does not exceed 3 hours; or (ii) 330 KT in OCA and the update interval does not exceed		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	5 hours; and (b) for aircraft equipped with two or more INS/IRS, the average groundspeed on a route section is not less than 240 KT and the update interval does not exceed 5 hours.			
10.9.3.4	15 MIN separation between aircraft flying the same or reciprocal tracks may apply within controlled airspace provided that: (a) for aircraft equipped with single INS/IRS, the update interval does not exceed 5 hours; and (b) for aircraft equipped with two or more INS/IRS, the average groundspeed on a route section is not less than 240 KT and the update interval does not exceed 12 hours.		No equivalent	Nil
10.9.3.5	20 MIN separation between aircraft flying the same or reciprocal tracks may apply within controlled airspace provided that: (a) for aircraft equipped with single INS/IRS, the update interval does not exceed 5 hours; and (b) for aircraft equipped with two or more INS/IRS, the update interval does not exceed 12 hours.		No equivalent	Nil
10.9.4.1	**10.9.4 Distance Standards** The longitudinal separation minima based on distance are derived using the following assumptions and methods: (a) the along-track navigational tolerance of an aircraft is taken as the same as for the time standards; (b) when “NO CLOSING SPEED” is stipulated as a condition, minor variations of 4% of TAS of each aircraft, taken as 450 KT for the initial climb and 600 KT maximum thereafter, are allowed; (c) when separation is to be checked at “FREQUENT INTERVALS” to ensure that the minimum will not be infringed, the maximum interval between checks is taken as 15 MIN; (d) each of these tolerances is combined by the RSS method; (e) "except in the case of the R2 (definite passing) standard, a buffer of 10 NM is added arithmetically. The distance standard, therefore, equals: where: d = magnitude of the CEP (NM) dc = ‘closure’ distance of each aircraft owing to TAS variation = 3 NM for initial climb = 6 NM for cruise, arrival and change of level db = buffer =10 NM (except in case of R2) = 0 (R2 only)."		No equivalent	Nil
10.9.4.2	The method of application of distance separation minima, together with relevant minima are contained in paragraphs 10.6.7 to 10.6.13.		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.9.5.1	**10.9.5 Explanation of Derivation of Longitudinal Separation Standards** Tolerances used in the deviation of longitudinal separation standards are: (a) initial climb: (i) INS/IR: ± 5 NM along track (ii) DME: ± 5 NM. (b) cruise, arrival, change of level and definite passing: (i) "Single INS/IRS: ± 8.5 NM along track up to 1.5 hours ± 12.4 NM along track up to 3 hours ± 18.2 NM along track up to 5 hours" 10.9.5.1 (b)(ii) "Dual INS/IRS: ± 12.9 NM along track up to 5 hours ± 27.7 NM along track up to 12 hours" 10.9.5.1 (b)(iii) "DME: ± 6 NM. For flight times exceeding 1.5 hours, INS/IRS tolerances are the largest.		No equivalent	Nil
10.9.5.2	The minimum time separation (Tsep) between two aircraft is given by: MIN, Where: d = magnitude of the CEP (NM) G/S = minimum groundspeed (KT) Alternatively, the equation can be expressed as: (a) 10 MIN separation (Tsep = 10 MIN): (i) For single INS/IRS with 3 hourly updating (d = 12.4 NM) - G/S = 219 KT. (ii) for single INS/IRS with 5 hourly updating (d = 18.2 NM) - G/S = 322 KT. (iii) for dual INS/IRS with 5 hourly updating (d = 12.9 NM) - G/S = 228 KT. (iv) or dual INS/IRS with 12 hourly updating (d = 27.7 NM) - G/S = 490 KT. (b) 15 minute separation (Tsep = 15 min): (i) for single INS/IRS with 3 hourly updating (d = 12.4 NM) - G/S = 97 KT. (ii) for single INS/IRS with 5 hourly updating (d = 18.2 NM) - G/S = 142 KT. (iii) for dual INS/IRS with 5 hourly updating (d = 12.9 NM) -		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	G/S = 101 KT. (iv) for dual INS/IRS with 12 hourly updating (d = 27.7 NM) - G/S = 216 KT. (c) 20 minute separation (Tsep = 20 MIN): (i) for single INS/IRS with 3 hourly updating (d = 12.4 NM) - G/S = 65 KT. (ii) for single INS/IRS with 5 hourly updating (d = 18.2 NM) - G/S = 95 KT. (iii) for dual INS/IRS with 5 hourly updating (d =12.9 NM) - G/S = 67 KT. (iv) for dual INS/IRS with 12 hourly updating (d = 27.7 NM) - G/S = 145 KT. (d) for simplicity, these minimum groundspeeds are rationalised as follows: (i) a minimum groundspeed of 150 KT is assumed unless otherwise stated. (iii) the remaining minimum groundspeeds are rounded-up to the next multiple of 30 knot (that is, 240 and 330 KT).			
10.9.5.3	The minimum distance separation (Rsep) between two aircraft is given by: where d = magnitude of the CEP (NM) dc = closure distance of each aircraft owing to TAS variation = 3 NM for initial climb = 6 NM for cruise, arrival and change of level db = buffer = 10 NM (except in case of R2) = 0 NM (R2 only) (a) "aircraft on climb to cruising level (R1): =18 NM. Rounded up R1 = 20 NM." (b) definite passing (R2 and R2A): (i) "For dual INS/IRS with 5 hourly updating = 20 NM = R2." (ii) "For dual INS/IRS with 12 hourly updating, = 40 NM = R2A." (c) aircraft cruising, arriving or changing level (R3 and R3A): (i) R3 = R2 + 10 NM (buffer) = 30 NM		No equivalent	Nil
10.9.5.4	R3A = R2A + 10 NM = 50 NM.		No equivalent	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.10.1.1	**Section 10.10 Separation Standards—Visual** **10.10.1 Application** Visual separation may be achieved: (a) by the use of visual procedures; or (b) by assigning visual separation responsibility to a pilot.	4.0585-01	**4.585 Visual separation** (1) ATC may apply or utilise visual separation only if another form of separation is assured before and after the application of visual separation.	Nil
10.10.1.2	When applying visual separation, controllers consideration must be given to aircraft performance characteristics, particularly in relation to faster following aircraft. When necessary, corroborative evidence from the pilot of one aircraft on the relative position of another aircraft must be obtained.	4.0585-02	(2) When applying visual separation, ATC must consider aircraft performance characteristics, particularly in relation to faster following aircraft. When necessary, ATC must obtain corroborative evidence from the pilot of one aircraft on the relative position of another aircraft.	Nil
10.10.1.3	ATC may assign to the pilot of 1 aircraft responsibility to maintain separation with another aircraft only if: (a) the aircraft to be separated are operating at or below 10 000 ft; and (b) the pilot has: (i) reported the other aircraft in sight; and (ii) accepted responsibility to follow, or maintain his or her own separation with, that aircraft;	4.0585-03	ATC-applied visual separation (3) Visual separation exists between two aircraft if the controller: (a) maintains communication with at least one of the aircraft involved; and (b) visually observes both aircraft; and (c) either: (i) observes that the aircraft flight paths do not conflict; or (ii) issues instructions that ensure the aircraft avoid conflict; and (d) where appropriate, issues traffic information to the aircraft; and (e) where relevant, applies wake turbulence separation between the aircraft. Pilot-applied visual separation (4) Visual separation exists between two aircraft if the controller establishes pilot-applied visual separation in accordance with the following: (a) the aircraft involved are operating at or below 10,000 ft; and (b) the controller maintains communication with at least one of the aircraft involved and ensures there is an ability to communicate with the other aircraft; and (c) the pilot of one aircraft: (i) reports sighting the other aircraft; and ***Note*** This may involve the pilot initiating this report or responding to a request from ATC to sight the other aircraft. (ii) accepts responsibility to maintain own separation with or to follow the other aircraft; and (d) if aircraft are on converging courses, ATC informs the other aircraft of the traffic and that visual separation is being applied; and (e) if the responsible controller observes on an ATS surveillance system that the respective aircraft's position symbols are likely to merge — the controller informs both pilots of the merging situation; and (f) where relevant, the controller issues a wake turbulence caution to the aircraft behind a heavier aircraft.	6.1 In addition to the circumstances mentioned in Chapter 5, 5.11.1, the separation minima detailed in Chapter 5, 5.4.1 and 5.4.2, may be reduced in the vicinity of aerodromes if: a) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller; or b) each aircraft is continuously visible to flight crews of the other aircraft concerned and the pilots thereof report that they can maintain their own separation; or c) in the case of one aircraft following another, the flight crew of the succeeding aircraft reports that the other aircraft is in sight and separation can be maintained. 5.9 CLEARANCES TO FLY MAINTAINING OWN SEPARATION WHILE IN VISUAL METEOROLOGICAL CONDITIONS When so requested by an aircraft and provided it is agreed by the pilot of the other aircraft and so authorized by the appropriate ATS authority, an ATC unit may clear a controlled flight, including departing and arriving flights, operating in airspace Classes D and E in visual meteorological conditions during the hours of daylight to fly subject to maintaining own separation to one other aircraft and remaining in visual meteorological conditions. When a controlled flight is so cleared, the following shall apply: a) the clearance shall be for a specified portion of the flight at or below 3 050 m (10 000 ft), during climb or descent and subject to further restrictions as and when prescribed on the basis of regional air navigation agreements; b) if there is a possibility that flight under visual meteorological conditions may become impracticable, an IFR flight shall be provided with alternative instructions to be complied with in the event that flight in visual meteorological conditions (VMC) cannot be maintained for the term of the clearance;

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				c) the pilot of an IFR flight, on observing that conditions are deteriorating and considering that operation in VMC will become impossible, shall inform ATC before entering instrument meteorological conditions (IMC) and shall proceed in accordance with the alternative instructions given. 7−2−1. VISUAL SEPARATION Visual separation may be applied when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, and aircraft position. Weather conditions must allow the aircraft to remain within sight until other separation exists. Visual separation is not authorized when the lead aircraft is a super. a. TERMINAL. Visual separation may be applied between aircraft up to but not including FL180 under the following conditions: 1. Tower-applied visual separation. (a) Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately with applicable military aircraft as prescribed in paragraph 3−9−3, Departure Control Instructions, subparagraph a2. (b) The tower visually observes the aircraft, issues timely traffic advisories, and provides visual separation between the aircraft. (c) Issue control instructions as necessary to ensure continued separation between the applicable aircraft. (d) Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation. (e) The use of tower-applied visual separation is not authorized when wake turbulence separation is required. (f) ATCTs at adjacent airports may be authorized to apply visual separation between their traffic and the other facility's traffic. All provisions of FAA Order JO 7110.65, paragraph 7−2−1a1, still apply. NOTE− Additional requirements are listed in FAA Order JO 7210.3, paragraph 10−3−9, Visual Separation. FAA JO 7110.65Z 2. Pilot-applied visual separation. (a) Maintain communication with at least one of the aircraft involved and ensure there is an ability to

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				communicate with the other aircraft. (b) The pilot sees another aircraft and is instructed to maintain visual separation from the aircraft as follows: (1) Tell the pilot about the other aircraft. Include position, direction, type, and, unless it is obvious, the other aircraft's intention. (2) Obtain acknowledgment from the pilot that the other aircraft is in sight. (3) Instruct the pilot to maintain visual separation from that aircraft. NOTE− Towers must use the procedures contained in paragraph 3−1−6, Traffic Information, subparagraph b or c, as appropriate. (c) If the pilot reports the traffic in sight and will maintain visual separation from it (the pilot must state both), the controller may "approve" the operation instead of restating the instructions. *NOTE−* *Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.* (d) If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied. (e) Advise the pilots if the targets appear likely to merge. (f) Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive.
10.10.1.4	Before altering the clearance of an aircraft with which visual separation has been assigned to another aircraft, the controller must ensure that visual separation can continue to be maintained.		Covered by the above	Covered by (1) (a)
10.10.1.5	Alternative instructions must be issued to provide separation if there is any doubt of the pilot's ability to keep the other aircraft in sight or maintain separation.		Covered by the above	Covered by (1) (a)
		4.0585-04	Pilot-applied visual separation for certain helicopter operations (5) Within a control zone, visual separation exists between a helicopter and other aircraft if the following applies: (a) the helicopter is operated by a law enforcement agency; and (b) the helicopter operator has an authorisation from CASA for the operations described in this subsection; and (c) a procedure designed by the ATS provider is in place that causes the helicopter to operate:	The proposed arrangement formalises a procedure in place for several years as an exemption to visual separation standards.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			(i) outside a geographical exclusion area comprising: (A) the area estimated by data analysis to encompass the horizontal distance from the aerodrome where aircraft arriving or departing from an aerodrome within the control zone could be at 1200 ft above ground level or below; *plus* (B) a buffer of a half of the horizontal surveillance separation minimum application within the control zone; and (ii) to a maximum height of 700 ft above ground level; and (d) the operation is in accordance with a letter of agreement between the helicopter operator and the ATS provider that: (i) sets in place the operating limits specified in (4) (c); and (ii) assigns responsibility to the pilot of the helicopter for: (A) without the expectation of traffic information from ATC — visually acquiring aircraft operating in the vicinity of the helicopter; and (B) maintaining visual separation with all aircraft that may conflict with their operation; and (C) notifying ATC if unable to comply with the requirements of the letter of agreement; and (e) ATC provides essential traffic information to the pilot of the helicopter about aircraft that are outside of the exclusion area described in (c) and operating or observed as likely to operate below 1200 ft above ground level.	
		4.0585-05	(6) Provided the requirements of paragraph (1) or (2) – as appropriate to the circumstance – are met and in accordance with a letter of agreement or local instructions: (a) controllers at adjacent aerodromes or (b) controllers in the same tower but responsible for different runways or areas of the aerodrome — may apply visual separation between their traffic and the other tower or controller's traffic.	FAA JO 711.65Z 7-2-1 (f) ATCTs at adjacent airports may be authorized to apply visual separation between their traffic and the other facility's traffic. All provisions of FAA Order JO 7110.65, paragraph 7−2−1a1, still apply.
10.10.1.6	Positive identification must be established before visual separation is provided as follows: (a) by day: (i) identification by type; (ii) identification by distinguishing markings if aircraft are of the same type; (iii) identification by observing a change of heading or altitude of one of the relevant aircraft. (b) by night: (i) momentarily extinguish navigation lights; (ii) select flashing navigation lights to steady; (iii) extinguish hazard beacon; (iv) momentarily switch on landing lights;		No equivalent	Procedure

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(v) change heading.			
10.10.1.7	Visual Separation between an aircraft and a high altitude balloon may be applied provided that: (a) the confirmed drift of the balloon is away from the aircraft; (b) the balloon is ascending; and (c) the operations are being conducted during daylight.		Dealt with later in a section on balloon operations	
10.10.1.8	Relevant traffic information must be passed in sufficient time and detail to enable the pilot to identify and maintain separation from the other aircraft.		No equivalent	Doc. 4444 5.10.1.2 5.10.1.2 Essential traffic information shall be given to controlled flights concerned whenever they constitute essential traffic to each other.
10.10.1.9	In circumstances where an aircraft has been instructed to maintain separation from, but not follow, an IFR aircraft, traffic information must be issued to the IFR aircraft, including advice that responsibility for separation has been assigned to the other aircraft.		Covered by (1) (c) (iv)	Nil
10.10.1.10	The traffic information provided must contain as much as is necessary of the following to assist the pilot in identifying the other aircraft: (a) type, and description if unfamiliar; (b) level; (c) position information either by clock reference, bearing and distance, relation to a geographical point, reported position and estimate, or position in the circuit; (d) intentions, or direction of flight.		No equivalent	Doc. 4444 5.10.2 5.10.2 Information to be provided Essential traffic information shall include: a) direction of flight of aircraft concerned; b) type and wake turbulence category (if relevant) of aircraft concerned; c) cruising level of aircraft concerned; and 1) estimated time over the reporting point nearest to where the level will be crossed; or 2) relative bearing of the aircraft concerned in terms of the 12-hour clock as well as distance from the conflicting traffic; or 3) actual or estimated position of the aircraft concerned.
10.10.2.1	**10.10.2 Separation Using Visual Observation** When weather conditions permit, the aerodrome controller may provide separation based on visual observations as coordinated with Approach Control provided that: (a) the aerodrome controller is in agreement and accepts responsibility for the provision of such visual control; (b) where required, the aircraft concerned are on the aerodrome control frequency; (c) where required, specific airspace is released to the aerodrome controller for the purpose of providing such control.	4.0585-06	(7) When weather conditions permit, the aerodrome controller may provide separation based on visual observations as coordinated with Approach Control provided that: (a) the aerodrome controller is in agreement and accepts responsibility for the provision of such visual control; (b) where required, the aircraft concerned are on the aerodrome control frequency; (c) where required, specific airspace is released to the aerodrome controller for the purpose of providing such control.	Doc. 4444 6.1 6.1 In addition to the circumstances mentioned in Chapter 5, 5.11.1, the separation minima detailed in Chapter 5, 5.4.1 and 5.4.2, may be reduced in the vicinity of aerodromes if: a) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller; or b) each aircraft is continuously visible to flight crews of the other aircraft concerned and the pilots thereof report that they can maintain their own separation; or c) in the case of one aircraft following another, the flight crew of the succeeding aircraft reports that the other aircraft is in sight and separation can be maintained.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.10.2.2	Aerodrome controllers may also separate by the use of visual observation of aircraft position and projected flight paths.		No equivalent	Doc. 4444 6.1 6.1 In addition to the circumstances mentioned in Chapter 5, 5.11.1, the separation minima detailed in Chapter 5, 5.4.1 and 5.4.2, may be reduced in the vicinity of aerodromes if: a) adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to this controller; or b) each aircraft is continuously visible to flight crews of the other aircraft concerned and the pilots thereof report that they can maintain their own separation; or c) in the case of one aircraft following another, the flight crew of the succeeding aircraft reports that the other aircraft is in sight and separation can be maintained.
10.10.2.3	When aircraft are operating visually as aerodrome traffic ATC must issue 1 or more of the following: (a) clearances designed to maintain separation; (b) sequencing instructions; (c) relevant traffic information.		No equivalent	Doc. 4444 5.10.1.2 5.10.1.2 Essential traffic information shall be given to controlled flights concerned whenever they constitute essential traffic to each other.
10.10.2.4	Pilots must be advised of their number in the landing sequence to assist in identification of traffic.		No equivalent	Doc. 4444 5.10.1.2 5.10.2 Information to be provided Essential traffic information shall include: a) direction of flight of aircraft concerned; b) type and wake turbulence category (if relevant) of aircraft concerned; c) cruising level of aircraft concerned; and 1) estimated time over the reporting point nearest to where the level will be crossed; or 2) relative bearing of the aircraft concerned in terms of the 12-hour clock as well as distance from the conflicting traffic; or 3) actual or estimated position of the aircraft concerned.
10.10.2.5	ATC must maintain, as far as possible, a continuous visual watch to detect and determine the position, and ensure the safety of, aircraft.		No equivalent	Doc. 4444 7.1.1.2 7.1.1.2 Aerodrome controllers shall maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area. Watch shall be maintained by visual observation, augmented when available by an ATS surveillance system. Traffic shall be controlled in accordance with the procedures set forth herein and all applicable traffic rules specified by the appropriate ATS authority. If there are other aerodromes within a control zone, traffic at all

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				aerodromes within such a zone shall be coordinated so that traffic circuits do not conflict.
10.10.3.1	**10.10.3 Separating Approaching Aircraft Beyond Tower View** Two approaching aircraft are deemed to be separated while the second approaching aircraft is on final approach beyond the view of the tower controller if, before commencing such final approach, the first approaching aircraft: (a) has been sighted by the tower controller, there is reasonable assurance that a landing can be accomplished, and it is clear that no confliction will occur; or (b) has reported commencing a missed approach, and is proceeding from a point and on a clearance such that separation could readily be maintained should the second approaching aircraft miss its approach.		No equivalent	Doc. 4444 6.5.6.1.2 6.5.6.1.2 Succeeding aircraft shall be cleared for approach: a) when the preceding aircraft has reported that it is able to complete its approach without encountering instrument meteorological conditions; or b) when the preceding aircraft is in communication with and sighted by the aerodrome control tower, and reasonable assurance exists that a normal landing can be accomplished; or c) when timed approaches are used, the preceding aircraft has passed the defined point inbound, and reasonable assurance exists that a normal landing can be accomplished; d) when the use of an ATS surveillance system confirms that the required longitudinal spacing between succeeding aircraft has been established.
10.10.3.2	Unless cleared at or before passing 10 NM from the aerodrome, this form of separation is not acceptable and another must be provided.		No equivalent	Doc. 4444 6.5.6.1.2 6.5.6.1.2 Succeeding aircraft shall be cleared for approach: a) when the preceding aircraft has reported that it is able to complete its approach without encountering instrument meteorological conditions; or b) when the preceding aircraft is in communication with and sighted by the aerodrome control tower, and reasonable assurance exists that a normal landing can be accomplished; or c) when timed approaches are used, the preceding aircraft has passed the defined point inbound, and reasonable assurance exists that a normal landing can be accomplished; d) when the use of an ATS surveillance system confirms that the required longitudinal spacing between succeeding aircraft has been established.
10.11.1.1	**Section 10.11 Separation Standards—Miscellaneous** **10.11.1 Parachute Jumping Exercise (PJE)** Separation between aircraft involved in PJE at the same drop zone is the responsibility of the pilots of the PJE aircraft. Separation between PJE aircraft and the parachutist is the sole responsibility of the pilots of the PJE aircraft.	4.0510.01	**4.510 Parachuting activity** (1) In Class A, B, C and D airspace, ATC must separate aircraft, other than those participating in the parachute descent activity, from the parachute descent activity. ***Note*** Separation between aircraft involved in a parachute descent activity at the same or adjacent drop zone is the responsibility of the pilots of the participating aircraft. Separation between participating aircraft and participating parachutists is the responsibility of the pilots of the participating aircraft. (2) For (1), the parachute descent activity include the aircraft participating in the activity and the drop zone; the latter being:	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			(a) if specific dimensions of the drop zone are notified by the pilot to ATC and ATC agrees – the area within the outer dimensions of the drop zone; or (b) If (a) does not apply – the area within a radius of 1 NM of the landing target; or (c) where two or more drop zones are located in close proximity and parachute operators have mutually agreed to self-separate — the area encompassing the drop zones. (3) For (2), if participants of a jump operation agree that the parachutists will remain to one side of a defined line feature, and the landing target is set at least 200 m away from the closest point of the line feature, the outer dimension of the jump zone may be reduced to the line feature.	
10.11.1.2	ATC must provide traffic information to PJE aircraft, and, except in Class E or G airspace, apply separation between parachutists and non-PJE aircraft.	4.0510.02	(4) In controlled airspace other than Class E, ATC must provide separation between parachutists and aircraft not involved in the parachute descent activity.	ICAO Doc. 44445.10.1.1 Essential traffic is that controlled traffic to which the provision of separation by ATC is applicable, but which, in relation to a particular controlled flight is not, or will not be, separated from other controlled traffic by the appropriate separation minimum.
10.11.1.4	In Class E airspace, ATC must also provide traffic information to IFR non-PJE aircraft about PJE aircraft.	4.0510.03	(5) ATC must provide traffic information for parachute descents through Class E and Class G airspace: (a) for the aircraft involved in the parachute descent activity — about IFR aircraft, known VFR aircraft and observed ATS surveillance system position symbols; and (b) for the IFR aircraft not involved in the parachute descent activity — about the aircraft involved in the parachute descent activity.	Nil
10.11.1.5	Where two or more PJE Drop Zones are located in close proximity and parachute operators have mutually agreed to accept self-separation, ATC is required to pass only traffic information to the participating operators. A participating pilot may request a separation service, but must continue to self-separate until ATC is satisfied that a separation standard has been achieved, and can be maintained. Agreements established between parachute operators to self-separate must be documented in ATS Local Instructions.		No equivalent	Either covered by (1) and (4) or a procedure
10.11.2.1	**10.11.2 Limitations and Extensions – PJE** For separation purposes, ATC must base separation on the fact that the parachutist will be dropped within a 1 NM radius of the target. If an extension of this area is necessary, the pilot must advise ATS of the distance and direction this extension is required. The navigational tolerance area must be extended in the advised direction until receipt of advice that the drop is completed. These requirements should be reiterated in any briefing.		Covered by (2)	Nil
10.11.2.2	Where parachutists agree to remain to one side of a defined line feature, and the target is set at least 200 M away from the closest point of the line feature, the navigational tolerance area of the parachutists may be reduced to the line feature. The line feature may only be used when the drop will occur from 10,000 FT or below, by day in VMC, and the service provider agrees to the use of the line feature. A letter of agreement between the parachute jumping group		Covered by (4)	Nil

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	and ATS must be established.			
10.11.2.3	The instructions described above should be issued by directly briefing the parachutists prior to the exercise. They may also be relayed to the parachutists by the PJE aircraft pilot.		No equivalent	Nil
10.11.2.4	Parachutists may be assigned responsibility to remain within certain limits of, and on a particular side of a geographical fix (e.g. “PARACHUTISTS REMAIN WITHIN 1 NM OF THE TARGET AND TO THE WEST OF (line feature)”).		No equivalent	Nil
10.11.2.5	Responsibility for separation of parachutists from another aircraft must only be assigned to the PJE aircraft.			Nil
10.11.2.6	Lateral separation may be achieved between the parachutists and the non-PJE aircraft by a requirement stipulated to the parachutists in accordance with the use of a line feature for separation, and the application of visual tracking tolerances to the aircraft.		No equivalent	Nil
10.11.2.7	After the parachutists have exited, and the PJE aircraft has commenced descent, only the pilot of the PJE aircraft can be assigned the responsibility for separation from other aircraft.		No equivalent	Nil
10.11.2.8	Visual separation between the parachutists and a non-PJE aircraft, by TWR or the PJE pilot is limited to circumstances where that aircraft is 7,000 KG or less. This accounts for wake turbulence.		No equivalent	Nil
10.11.2.9	When TWR is applying visual separation in the circuit area, the 7,000 KG weight limitation does not apply, so long as ATC is satisfied that the parachutists will remain safely clear of the wake turbulence.	4.0510.04	(6) ATC may only apply visual separation between parachutists and a non-participating aircraft if: (a) The non-participating aircraft has an MTOW of 7 000kg or less; or (b) The tower controller visually observes that the parachutists will remain safely clear of the wake vortices of the non-participating aircraft.	Nil
10.11.3.1	**10.11.3 High Altitude Balloons** A letter of agreement must be signed between the relevant Operations Centre and the balloon operator prior to commencement of operations, and must detail: (a) notification procedures; (b) communication requirements; (c) launch and cutdown procedures; and (d) restrictions on particular time blocks for launches due to increased RPT traffic on adjacent upper air routes.		No equivalent	16.2 RESPONSIBILITY IN REGARD TO UNMANNED FREE BALLOONS 16.2.1 On receipt of notification of the intended flight of a medium or heavy unmanned free balloon, the air traffic services unit shall arrange for the information to be disseminated to all concerned. The information shall include: a) the balloon flight identification or project code name; b) balloon classification and description; c) SSR code or NDB frequency as applicable; d) the launch site; e) the estimated time of the commencement of the launch or the planned period of the launches; f) the expected direction of ascent; g) the cruising level(s) (pressure-altitude); and

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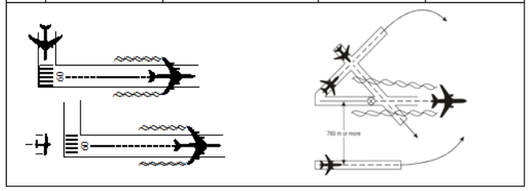
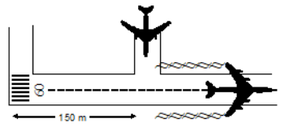
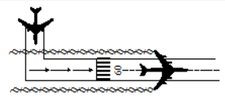
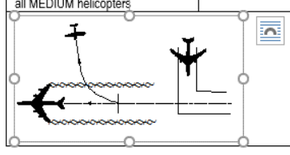
				h) the estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude, or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location. 16.2.2 On receipt of notification that a medium or heavy unmanned free balloon has been launched, the air traffic services unit shall arrange for the information to be disseminated to all concerned. The information shall include: a) the balloon flight identification or project code name; b) balloon classification and description; c) SSR code or NDB frequency as applicable; d) the launch site; e) the time of launch(es); f) the 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; g) the estimated date and time of termination of the flight; and h) the planned location of ground contact, when applicable.
10.11.3.2	A navigation tolerance of ±15 NM must be applied to high altitude balloons. ATC must apply a 1 NM buffer between the navigation tolerances of an aircraft and a high altitude balloon.	4.1610.01	**4.1610 Unmanned free balloons** ATC must apply the following procedures for a medium or heavy unmanned free balloon operating within controlled airspace: (a) Where possible track the balloon along the planned trajectory and revise routing as tracking/position reports require. (b) Use ATS surveillance to track the balloon to the extent that equipment capabilities permit. (c) Subject to (d), provide separation between aircraft and the balloon if satisfied that the position information from the balloon is sufficiently reliable to provide the service. (d) Use vertical separation between an aircraft and the balloon only if it is known that the balloon provides altitude information of equivalent accuracy as a transponder equipped aircraft. (e) If not providing separation, provide traffic information to all affected aircraft.	FAA JO 7110.65Z 9−6−1. APPLICATION Apply the following procedures, as appropriate, when unmanned free balloons are within airspace for which you have control jurisdiction: a. Post the balloon flight on flight progress strips along the planned trajectory and revise routing as tracking/position reports require. b. Radar flight follow balloons to the extent that equipment capabilities permit. If radar flight following is not possible, tracking should be attempted by communication with the “chase plane,” telephone contact with the operator, pilot, or ground observation reports. c. With pilot concurrence, provide separation between aircraft and balloons when you are satisfied that the balloon information is sufficiently reliable to provide the service. Do not attempt to separate aircraft from the balloon by using vertical separation unless you have accurate balloon altitude information. d. Provide traffic advisories to all affected aircraft during initial contact specifying the balloon’s known or estimated position, direction of movement, and altitude

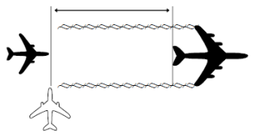
Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				as “unknown” or “reported,” as
10.11.3.3	When plotting the predicted track of the balloon, ATC must apply a tolerance of ±15 NM radius drawn at: (a) the departure point; (b) the FL200 predicted position; and (c) the FL600 predicted position.		No equivalent	Nil
10.11.3.4	The predicted track must be redrawn using the FL200 actual position, and must incorporate and updated track information.		No equivalent	Nil
10.11.4.1	**10.11.4 Manned Balloon Operations** Balloons must be separated from other airspace users, and issued relevant information at all altitudes according to the classification of airspace in which the balloon is flown.	4.1605.01	**4.1605 Manned balloons** (1) ATC must provide separation or essential traffic information between manned balloons and other aircraft according to the classification of airspace in which the balloon is flown.	Nil
10.11.4.2	Separation requirements that apply to aircraft weighing less than 5,700 KG must also apply to balloons.		No equivalent	Nil
10.11.4.3	Passing traffic information on other balloons within an authorised formation is not required.	4.1605.02	(2) ATC is not required to provide traffic information between balloons engaged in the same flying activity	Nil
10.11.5.1	**10.11.5 Unmanned Aerial Vehicles (UAV)** Unmanned Aerial Vehicles must be separated from other aircraft using the separation standards applicable to manned aircraft when: (a) capable of presenting real time navigational information using approved navigation systems; and (b) continuous two way communications is maintained between the operator and the ATC unit.		No equivalent	Nil
10.11.6.1	**10.11.6 ACAS/TCAS Resolution Advisory Action** Once the aircraft has begun a manoeuvre in response to an Resolution Advisory (RA), the controller is not responsible for providing separation between the aircraft that is responding to a RA and any other aircraft, airspace, terrain or obstruction.		No equivalent	Doc. 4444 15.7.3.3 15.7.3.3 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 for all the affected aircraft when: a) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or b) 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.
10.11.6.2	If an aircraft advises that it is responding to an ACAS/TCAS RA, ATC shall: (a) not issue instructions that contradict those issued by the RA; (b) issue safety alerts; and		No equivalent	Doc. 4444 15.7.3.2 15.7.3.2 When a pilot reports an ACAS resolution advisory (RA), the controller shall not attempt to modify the aircraft flight path until the pilot reports “Clear of

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(c) provide relevant traffic information as appropriate.			Conflict".
10.11.6.3	Responsibility for separation resumes when separation is re-established after: (a) the responding aircraft has returned to its assigned level; (b) the aircraft advises that the ACAS/TCAS manoeuvre is completed; or (c) the responding aircraft has executed an alternate clearance.		No equivalent	Doc. 4444 15.7.3.3 15.7.3.3 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 for all the affected aircraft when: a) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or b) 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.
10.11.7.1	**10.11.7 Unspecified Operations** Separation requirements from operations for which standards have not been specified must be: (a) distributed by NOTAM; or (b) determined through direct liaison with the affected ATS unit.	4.1615.01	**4.1615 Unspecified operations** (1) Subject to (2), an ATS provider must establish separation requirements for operations for which standards have not been specified.	Nil
10.11.7.2	The following buffers must be added to the parameters of the operations: (a) 1 NM buffer to the notified geographical coordinates of the activity; (b) 15 MIN before and after the notified time of the activity; (c) at least 500 FT to the maximum notified altitude of the activity.	4.1615.02	(2) For paragraph (1), the following buffers must be added to the parameters of the operations: (a) 1 NM buffer to the notified geographical coordinates of the activity; (b) 15 minutes before and after the notified time of the activity; (c) at least 500 ft to the maximum notified altitude of the activity.	Nil
10.12.1.1	**Section 10.12 Separation Standards—Wake Turbulence** **10.12.1 Interpretation** In this section, the following applies: (a) for lateral extent, when applying wake turbulence separation, directly behind means that an aircraft is operating within 760 m of the flight path of the aircraft in front of it. (b) intermediate part — ICAO PANS-ATM, of a runway, including of a parallel runway separated from the runway by less than 760 m, means a point more than 150 m after the take-off commencement point of the preceding aircraft using the runway or the parallel runway.	4.0575	**4.575 General matters applicable to wake turbulence separation** (1) In the application of wake turbulence separation as specified in ICAO Doc. 4444 and this section, the following applies: (a) for lateral extent, when applying wake turbulence separation, directly behind means that an aircraft is operating within 760 m of the flight path of the aircraft in front of it. (b) intermediate part, including of a parallel runway separated from the runway by less than 760 m, means a point more than 150 m after the take-off commencement point of the preceding aircraft using the runway or the parallel runway. (2) If the required wake turbulence separation can be determined by distance using an aircraft report or ATS surveillance system, ATC may apply the applicable distance-based wake turbulence separation minimum instead of a time-based wake turbulence separation minimum: (a) between arriving aircraft; or (b) except when the aircraft following will commence take-off from an intermediate point — between departing aircraft.	Nil 10.12.3.7 If the required wake turbulence separation can be determined by distance using an aircraft report or ATS surveillance system, ATC is not required to apply the relevant time minimum: (a) between arriving aircraft; or (b) unless the aircraft following will commence take-off from an intermediate point — between departing aircraft. Note Intermediate point is explained in subsection 10.12.1. 10.12.3.8 Due to the wake turbulence characteristics of the B757 and H47, for the purpose of wake turbulence separation, these aircraft must be classified as a HEAVY aircraft if leading and as a MEDIUM aircraft if following.

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td></td><td></td><td>(3) Due to the wake turbulence characteristics of the B757, H53 and H47, for the purpose of wake turbulence separation, ATC must treat these aircraft as HEAVY category aircraft if leading and as MEDIUM category aircraft if following.</td><td></td></tr>
<tr><td>10.12.1.2</td><td>In addition to the categories of aircraft specified in PANS-Doc. 4444, the Airbus A380 is taken to constitute the SUPER wake turbulence category of aircraft.</td><td></td><td>No equivalent</td><td>4.9.1 Wake turbulence categories and groups of aircraft
4.9.1.1 Except as provided for in 4.9.1.2, wake turbulence separation minima shall be based on a grouping of
aircraft types into four categories according to the maximum certificated take-off mass as follows:
a) SUPER (J) — aircraft types specified as such in Doc 8643, Aircraft Type Designators;
b) HEAVY (H) — aircraft types of 136 000 kg or more, with the exception of aircraft types listed in Doc 8643 in
the SUPER (J) category;
c) MEDIUM (M) — aircraft types less than 136 000 kg but more than 7 000 kg; and
d) LIGHT (L) — aircraft types of 7 000 kg or less.</td></tr>
<tr><td>10.12.2.1: Full length or crossing runway operations, or crossing flight paths</td><td>10.12.2 Wake Turbulence Separation Minima
10.12.2.1 Time-based wake turbulence separation minima
<table><tr><th colspan="2">Aircraft Categories</th><th colspan="2">Separation Minima</th></tr><tr><th>Leading aircraft</th><th>Following aircraft</th><th>Departure (Minutes)</th><th>Arrival (Minutes)</th></tr><tr><td rowspan="3">SUPER</td><td>HEAVY</td><td>2</td><td>3</td></tr><tr><td>MEDIUM</td><td>3</td><td>3</td></tr><tr><td>LIGHT</td><td>3</td><td>4</td></tr><tr><td rowspan="2">HEAVY</td><td>MEDIUM</td><td>2</td><td>2</td></tr><tr><td>LIGHT</td><td>2</td><td>3</td></tr><tr><td>MEDIUM fixed-wing aircraft with MTOW of 25 000 kg or more, and all MEDIUM helicopters</td><td>LIGHT</td><td>2</td><td>3</td></tr></table>  </td><td>4.0577</td><td>4.577 Wake turbulence separation: LIGHT behind MEDIUM
If a MEDIUM wake turbulence category aircraft precedes a LIGHT wake turbulence category aircraft, ATC must apply the aircraft category-based time or distance wake separation minima specified in ICAO Doc. 4444, only if the MEDIUM wake turbulence category aircraft is:
(a) a helicopter; or
(b) a fixed wing aircraft with a maximum certificated take-off mass of 25,000kg or more.
Note 1 (1) does not apply if an ATS provider uses aircraft group-based wake turbulence separation. In this case, the provisions of ICAO Doc. 4444 apply in full, including those applicable when the preceding aircraft has a maximum take-off mass of less than 25,000 kg.
Note 2 The wake turbulence separation minima specified in ICAO Doc. 4444 for a LIGHT wake turbulence category aircraft behind a HEAVY or SUPER wake turbulence category aircraft continue to apply without exception.</td><td>5.8.2 Arriving aircraft
5.8.2.1 Except as provided for in 5.8.1.1 a) and b), the following minima shall be applied to aircraft landing behind
a SUPER, a HEAVY or a MEDIUM aircraft:
a) HEAVY aircraft landing behind SUPER aircraft — 2 minutes;
b) MEDIUM aircraft landing behind SUPER aircraft — 3 minutes;
c) MEDIUM aircraft landing behind HEAVY aircraft — 2 minutes;
d) LIGHT aircraft landing behind SUPER aircraft — 4 minutes;
e) LIGHT aircraft landing behind a HEAVY or MEDIUM aircraft — 3 minutes.
5.8.3 Departing aircraft
5.8.3.1 When using wake turbulence categories contained in Chapter 4, 4.9.1.1 and when the aircraft are using:
a) the same runway (see Figure 5-42);
b) parallel runways separated by less than 760 m (2 500 ft) (see Figure 5-42);
c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first</td></tr>
</table>

<table>
<tr><th>Original MOS ref</th><th>Original MOS provision</th><th>Proposed MOS order ref</th><th>Proposed MOS</th><th>ICAO Reference
Annex 11 or ICAO Doc. 4444 standard</th></tr>
<tr><td></td><td></td><td></td><td></td><td>aircraft at the same altitude or less than 300 m (1 000 ft) below (see Figure 5-43);
d) parallel runways separated by 760 m (2 500 ft) or more, if the projected flight path of the second aircraft will
cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below (see
Figure 5-43).
the following minimum separations shall be applied:
1) HEAVY aircraft taking off behind a SUPER aircraft — 2 minutes;
2) LIGHT or MEDIUM aircraft taking off behind a SUPER aircraft — 3 minutes;
3) LIGHT or MEDIUM aircraft taking off behind a HEAVY aircraft — 2 minutes;
4) LIGHT aircraft taking off behind a MEDIUM aircraft — 2 minutes.</td></tr>
<tr><td>10.12.2.1: Intermediate Departures</td><td>
<table>
<tr><th colspan="2">Aircraft Categories</th><th colspan="2">Separation Minima</th></tr>
<tr><th>Leading aircraft</th><th>Following aircraft</th><th>(Minutes)</th><th>Application</th></tr>
<tr><td>SUPER</td><td>HEAVY
MEDIUM
LIGHT</td><td>4
4
4</td><td rowspan="4">Intermediate Departures minima must be applied when a following aircraft will commence take-off from an intermediate part more than 150 m after the take-off commencement point of the preceding aircraft, using the same runway or a parallel runway separated by less than 760 m.</td></tr>
<tr><td>HEAVY</td><td>MEDIUM
LIGHT</td><td>3
3</td></tr>
<tr><td>MEDIUM fixed-wing aircraft with MTOW of 25 000 kg or more, and all MEDIUM helicopters</td><td>LIGHT</td><td>3</td></tr>
<tr><td colspan="3"> 
</td></tr>
</table>
</td><td></td><td>Covered by ICAO Doc. 4444, modified by proposed 4.577</td><td>5.8.3.3 When using wake turbulence categories contained in Chapter 4, 4.9.1.1 for aircraft taking off from an
intermediate part of the same runway or an intermediate part of a parallel runway separated by less than 760 m (2 500 ft)
(see Figure 5-44), the following minimum separations shall be applied:
a) HEAVY aircraft taking off behind a SUPER aircraft — 3 minutes;
b) LIGHT or MEDIUM aircraft taking off behind a SUPER aircraft — 4 minutes;
c) LIGHT or MEDIUM aircraft taking off behind a HEAVY aircraft — 3 minutes;
d) LIGHT aircraft taking off behind a MEDIUM aircraft — 3 minutes.</td></tr>
</table>

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.12.2.1: Displaced Landing Threshold	**Displaced Landing Threshold** **Aircraft Categories** / **Separation Minima (Minutes)** **Arriving aircraft** / **Departing aircraft** SUPER: HEAVY 3; MEDIUM 3; LIGHT 3 HEAVY: MEDIUM 2; LIGHT 2 MEDIUM fixed-wing aircraft with MTOW of 25 000 kg or more, and all MEDIUM helicopters: LIGHT 2 			5.8.4.1 When using wake turbulence categories contained in Chapter 4, 4.9.1.1 and when operating a displaced landing threshold, the following minimum separations shall be applied if the projected flight paths are expected to cross: a) a departing HEAVY aircraft following a SUPER aircraft arrival — 2 minutes; b) a departing LIGHT or MEDIUM aircraft following a SUPER aircraft arrival — 3 minutes; c) a departing LIGHT or MEDIUM aircraft following a HEAVY aircraft arrival — 2 minutes; d) a departing LIGHT aircraft following a MEDIUM aircraft arrival — 2 minutes; e) a HEAVY aircraft arrival following a SUPER aircraft departure — 2 minutes; f) a LIGHT or MEDIUM aircraft arrival following a SUPER aircraft departure — 3 minutes; g) a LIGHT or MEDIUM aircraft arrival following a HEAVY aircraft departure — 2 minutes; h) a LIGHT aircraft arrival following a MEDIUM aircraft departure — 2 minutes.
10.12.2.1: Opposite Direction	**Aircraft Categories** / **Separation Minima (Minutes)** SUPER: HEAVY 3; MEDIUM 3; LIGHT 3 HEAVY: MEDIUM 2; LIGHT 2 MEDIUM fixed-wing aircraft with MTOW of 25 000 kg or more, and all MEDIUM helicopters: LIGHT 2 		Covered by ICAO Doc. 4444, modified by proposed 4.577	5.8.5.1 When using wake turbulence categories contained in Chapter 4, 4.9.1.1 for a heavier aircraft making a low or missed approach and when the lighter aircraft is: a) using an opposite-direction runway for take-off (see Figure 5-45); or b) landing on the same runway in the opposite direction, or on a parallel opposite-direction runway separated by less than 760 m (2 500 ft) (see Figure 5-46); the following minimum separations shall be used: 1) between a HEAVY aircraft and a SUPER aircraft — 3 minutes; 2) between a LIGHT or MEDIUM aircraft and a SUPER aircraft — 4 minutes; 3) between a LIGHT or MEDIUM aircraft and a HEAVY aircraft — 3 minutes; 4) between a LIGHT aircraft and a MEDIUM aircraft — 3 minutes.
10.12.2.2: Distance-based wake turbulence separation	**10.12.2.2 Distance-based wake turbulence separation**		Covered by ICAO Doc. 4444, modified by proposed 4.577	8.7.3.4 When using wake turbulence categories contained in Chapter 4, 4.9.1.1, the following distance-based wake turbulence separation minima shall be applied to aircraft being provided with an ATS surveillance service in the approach and departure phases of flight in the circumstances given in 8.7.3.6.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	Distance-based wake turbulence separation **Aircraft Categories** / **Separation Minima** **Leading aircraft** / **Following aircraft** / **(NM)** SUPER / HEAVY / 6 SUPER / MEDIUM / 7 SUPER / LIGHT / 8 HEAVY / HEAVY / 4 HEAVY / MEDIUM / 5 HEAVY / LIGHT / 6 MEDIUM fixed-wing aircraft with MTOW of 25 000 kg or more, and all MEDIUM helicopters / LIGHT / 5 			Aircraft category Preceding aircraft : Succeeding aircraft : Distance-based wake turbulence separation minima SUPER : HEAVY : 9.3 km (5.0 NM) SUPER : MEDIUM : 13.0 km (7.0 NM) SUPER : LIGHT : 14.9 km (8.0 NM HEAVY : HEAVY : 7.4 km (4.0 NM) HEAVY : MEDIUM : 9.3 km (5.0 NM) HEAVY : LIGHT : 11.1 km (6.0 NM) MEDIUM : LIGHT : 9.3 km (5.0 NM)
10.12.3.1	**10.12.3 Application** Subject to subsection 10.12.3.3, ATC must apply an appropriate wake turbulence separation minimum in all controlled airspace when an aircraft is: (a) operating directly behind another aircraft's flight path; and (b) at the same level as the other aircraft, or less than 1 000 ft below it.	4.0576	**4.576 Wake turbulence separation applicable in en route phase** Despite ICAO Doc. 4444, the category-based time-based or distance-based wake turbulence separation specified in ICAO Doc. 4444 for aircraft in the terminal phase of flight must also be applied between aircraft in the en-route phase of flight.	5.8.1.1 The ATC unit concerned shall not be required to apply wake turbulence separation: a) for arriving VFR flights landing on the same runway as a preceding landing SUPER, HEAVY or MEDIUM aircraft; and b) between arriving IFR flights executing visual approach when the aircraft has reported the preceding aircraft in sight and has been instructed to follow and maintain own separation from that aircraft. 5.8.2.1 Except as provided for in 5.8.1.1 a) and b), the following minima shall be applied to aircraft landing behind a SUPER, a HEAVY or a MEDIUM aircraft: 5.8.3.1 When using wake turbulence categories contained in Chapter 4, 4.9.1.1 and when the aircraft are using: a) the same runway (see Figure 5-42); b) parallel runways separated by less than 760 m (2 500 ft) (see Figure 5-42); c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below (see Figure 5-43); d) parallel runways separated by 760 m (2 500 ft) or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below (see Figure 5-43). 8.7.3.4 When using wake turbulence categories contained in Chapter 4, 4.9.1.1, the following distance-based wake turbulence separation minima shall be applied to aircraft being provided with an ATS surveillance service in the approach and departure

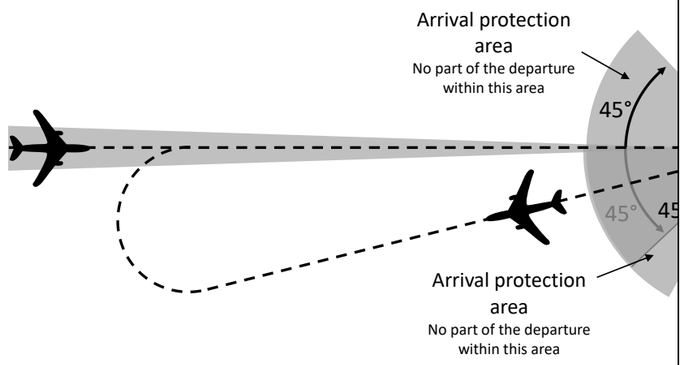
Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				phases of flight in the circumstances given in 8.7.3.6. 8.7.3.5 When applying the wake turbulence groups in Chapter 4, 4.9.1.2, the following distance-based wake turbulence separation minima shall be applied to aircraft being provided with an ATS surveillance service in the approach and departure phases of flight, in the circumstances given in 8.7.3.6: 8.7.3.6 The minima set out in 8.7.3.4 and 8.7.3.5 shall be applied when: a) an aircraft is operating directly behind another aircraft at the same altitude or less than 300 m (1 000 ft) below (see Figure 8-1); or b) both aircraft are using the same runway, or parallel runways separated by less than 760 m (2 500 ft); or c) an aircraft is crossing behind another aircraft, at the same altitude or less than 300 m (1 000 ft) below (see Figure 8-1).
10.12.3.2	Subject to subsection 10.12.3.3, ATC must apply appropriate wake turbulence separation minima to aerodrome traffic when: (a) both aircraft are using the same runway for take-off or for landing; or (b) an aircraft taking-off behind a landing heavier wake turbulence category aircraft is expected to become airborne before the touchdown point of the landing aircraft; or (c) an aircraft is taking-off and a preceding departing aircraft on a crossing runway has rotated at or before the runway intersection; or (d) an aircraft is landing and could still be airborne at the intersection of a crossing runway and a preceding departing aircraft on that crossing runway has rotated at or before the intersection; or (e) a LIGHT aircraft during its landing run will cross the intersection of a crossing runway behind a departing HEAVY aircraft on that crossing runway which has rotated at or before the intersection; or (f) using parallel runways for approach and departures when the runways are separated by less than 760 m; or (g) an aircraft is using the opposite direction runway for take-off or landing to a heavier category aircraft that has taken off or executed a missed approach.		No equivalent	Doc. 4444 5.8.3.1 & 8.7.3.4.1 5.8.3.1 A minimum separation of 2 minutes shall be applied ... when the aircraft are using: a) the same runway; b) parallel runways separated by less than 760 m (2 500 ft); c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below; d) parallel runways separated by 760 m (2 500 ft) or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below. 8.7.3.4.1 The minima set out in 8.7.3.4 shall be applied when: a) an aircraft is operating directly behind another aircraft at the same altitude or less than 300 m (1 000 ft) below; or b) both aircraft are using the same runway, or parallel runways separated by less than 760 m (2 500 ft); or c) an aircraft is crossing behind another aircraft, at the same altitude or less than 300 m (1 000 ft) below.
10.12.3.3	ATC is not required to apply wake turbulence separation in the following situations: (a) when a MEDIUM fixed-wing aircraft of less than 25 000 kg MTOW	4.0579.01	**4.579 Waiver of wake turbulence separation** (1) Subject to (2), ATC is not required to apply wake turbulence separation if a pilot has initiated a waiver of the relevant departure	No equivalent

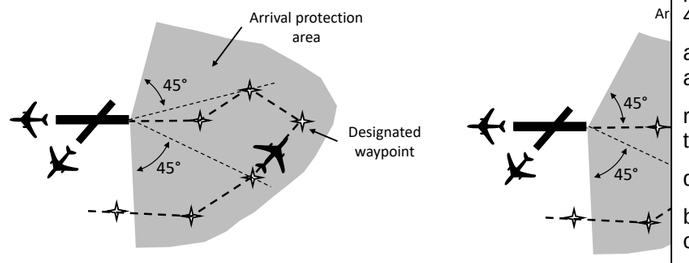
Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	precedes a LIGHT aircraft; (b) when an aircraft is landing behind another aircraft that is taking-off on the same runway; (c) subject to 10.12.3.4, if a pilot has initiated a waiver of the relevant departure wake turbulence separation minimum; (d) when a VFR aircraft is in flight and is: (i) operating directly behind a preceding HEAVY or MEDIUM aircraft; or (ii) landing on the same runway as a preceding HEAVY or MEDIUM aircraft; or (iii) landing on a parallel runway separated by less than 760 m from the runway of a preceding HEAVY or MEDIUM aircraft; (e) when an IFR aircraft is in flight and the pilot has: (i) reported the preceding aircraft in sight; and (ii) accepted responsibility to follow, or maintain his or her own separation with, that aircraft. *Note For paragraphs (d) and (e), the pilot in command of the aircraft is responsible for ensuring that the spacing from a preceding aircraft of a heavier wake turbulence category is acceptable. If it is determined that additional spacing is required, the flight crew may inform ATC accordingly, stating their requirements.*		wake turbulence separation minimum.	
10.12.3.4	For a LIGHT or MEDIUM aircraft, ATC must not waive the relevant wake turbulence separation minimum if the aircraft is taking-off after a HEAVY or SUPER aircraft has: (a) used the same runway in the same or reciprocal direction; and (b) taken-off or made a low or missed approach.	4.0579.02	(2) For a LIGHT or MEDIUM aircraft, ATC must not waive the relevant wake turbulence separation minimum if the aircraft is taking-off after a HEAVY or SUPER aircraft has: (a) used the same runway in the same or reciprocal direction; and (b) taken-off or made a low or missed approach. (3) ATC must issue a wake turbulence caution to the pilot of an aircraft if the pilot has waived the relevant departure wake turbulence separation requirement.	Nil
10.12.3.5	ATC must issue a wake turbulence caution to the pilot of an aircraft if: (a) less than the applicable wake turbulence separation minima may exist; or (b) the applied wake turbulence separation minima may be infringed; or (c) the pilot has waived the relevant departure wake turbulence separation requirement; or (d) wake turbulence separation is not provided because of paragraph 10.12.3.3 (d) or (e), and wake turbulence may have an adverse effect on the aircraft.		No equivalent	Doc. 4444 5.8.1.2, 6.5.3.5, 7.4.1.6.1 5.8.1.2 The ATC unit shall, in respect of the flights specified in 5.8.1.1 a) and b), as well as when otherwise deemed necessary, issue a caution of possible wake turbulence. The pilot-in-command of the aircraft concerned shall be responsible for ensuring that the spacing from a preceding aircraft of a heavier wake turbulence category is acceptable. If it is determined that additional spacing is required, the flight crew shall inform the ATC unit accordingly, stating their requirements. 6.5.3.5 For successive visual approaches, separation shall be maintained by the controller until the pilot of a succeeding aircraft reports having the preceding aircraft in sight. The aircraft shall then be instructed to follow and maintain own separation from the preceding aircraft. When both aircraft are of a heavy wake turbulence category, or the preceding aircraft is of a heavier wake turbulence category than the following,

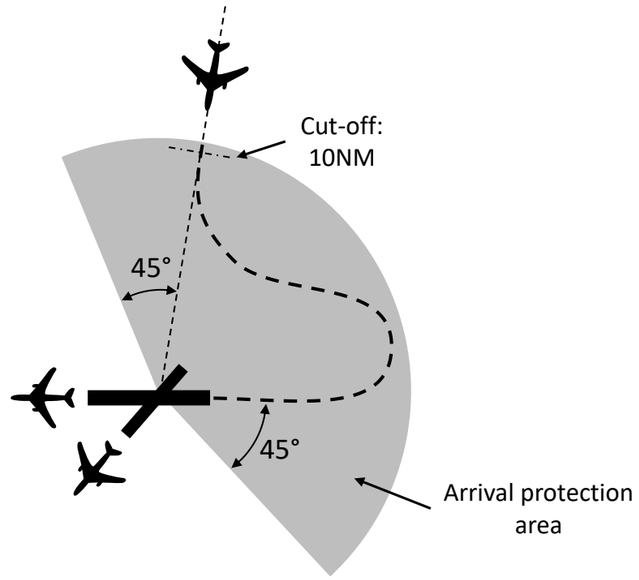
Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				and the distance between the aircraft is less than the appropriate wake turbulence minimum, the controller shall issue a caution of possible wake turbulence. The pilot-in-command of the aircraft concerned shall be responsible for ensuring that the spacing from a preceding aircraft of a heavier wake turbulence category is acceptable. If it is determined that additional spacing is required, the flight crew shall inform the ATC unit accordingly, stating their requirements. 7.4.1.6.1 Aerodrome controllers shall, when applicable, apply the wake turbulence separation minima specified in Chapter 5, Section 5.8. Whenever the responsibility for wake turbulence avoidance rests with the pilot-in-command, aerodrome controllers shall, to the extent practicable, advise aircraft of the expected occurrence of hazards caused by turbulent wake.
10.12.3.6	In applying wake turbulence separation minima, air traffic controllers must: (a) when using a time minimum between aircraft taking-off, ensure that a following aircraft does not become airborne until the specified time interval has elapsed since the leading aircraft became airborne; (b) when using a time minimum between an aircraft executing a missed approach and the following aircraft taking-off, not issue the take-off clearance until the specified time interval has elapsed since the preceding aircraft crossed the threshold or initiated the missed approach (whichever occurs later); (c) when using an ATS surveillance system minimum between aircraft taking off, ensure that the appropriate separation minimum exists between the aircraft at or before the time the following aircraft becomes airborne; (d) when aircraft are using the same runway, ensure that the landing minimum will exist at the time the leading aircraft is over the landing threshold; (e) when crossing runways are in use, apply the full length minima and ensure that the required separation exists at the intersection.		No equivalent	Doc. 4444 6.5.6 6.5.6.1.3 In establishing the approach sequence, the need for increased longitudinal spacing between arriving aircraft due to wake turbulence shall be taken into account. 6.5.6.2.2 INTERVAL BETWEEN SUCCESSIVE APPROACHES In determining the time interval or longitudinal distance to be applied between successive approaching aircraft, the relative speeds between succeeding aircraft, the distance from the specified point to the runway, the need to apply wake turbulence separation, runway occupancy times, the prevailing meteorological conditions as well as any condition which may affect runway occupancy times shall be considered. When an ATS surveillance system is used to establish an approach sequence, the minimum distance to be established between succeeding aircraft shall be specified in local instructions. Local instructions shall additionally specify the circumstances under which any increased longitudinal distance between approaches may be required as well as the minima to be used under such circumstances.
10.12.3.7	If the required wake turbulence separation can be determined by distance using an aircraft report or ATS surveillance system, ATC is not required to apply the relevant time minimum: (a) between arriving aircraft; or (b) unless the aircraft following will commence take-off from an intermediate point — between departing aircraft. *Note Intermediate point is explained in subsection 10.12.1.*		Covered by an equivalent provision at 4.575 (2)	Nil
10.12.3.8	Due to the wake turbulence characteristics of the B757 and H47, for the purpose of wake turbulence separation, these aircraft must be		Covered by an equivalent provision at 4.575 (3)	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	classified as a HEAVY aircraft if leading and as a MEDIUM aircraft if following.			
10.13.1.1	**Section 10.13 Separation Standards—Aerodrome** **10.13.1 Taxiing and Runway Standards** The separation of aircraft taxiing on the manoeuvring area is a joint pilot and controller responsibility.		No equivalent	Doc. 4444 7.6.3.1.1.1 Air traffic control service. A service provided for the purpose of: a) preventing collisions: 1) between aircraft, and 2) on the manoeuvring area between aircraft and obstructions; and b) expediting and maintaining an orderly flow of air traffic. 7.6.3.1.1.1 Prior to issuing a taxi clearance, the controller shall determine where the aircraft concerned is parked. Taxi clearances shall contain concise instructions and adequate information so as to assist the flight crew to follow the correct taxi routes, to avoid collision with other aircraft or objects and to minimize the potential for the aircraft inadvertently entering an active runway.
10.13.1.2	When providing runway separation, the wake turbulence standards must be applied in conjunction with the runway standards.		No equivalent	Doc. 4444 7.7.1.1 7.7.1 General Aircraft in the traffic circuit shall be controlled to provide the separation minima outlined in 7.9.2, 7.10.1 and 7.11 and Chapter 5, Section 5.8, except that: a) aircraft in formation are exempted from the separation minima with respect to separation from other aircraft of the same flight; b) aircraft operating in different areas or different runways on aerodromes suitable for simultaneous landings or take-offs are exempted from the separation minima; c) separation minima shall not apply to aircraft operating under military necessity in accordance with Chapter 16, Section 16.1.
10.13.1.3	Runway separation standards apply equally to runway operations or to a strip having a single landing and take-off path.		No equivalent	Doc. 4444 Definitions Definition Runway. A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.
10.13.1.4	When take-off or landing separation is based on the position of a preceding landing or taxiing aircraft and visual determination is limited, particularly at night or in reduced visibility, by poor azimuth resolution or other factors, the pilot of that aircraft must be instructed to report when the aircraft has: (a) crossed and is clear of a runway intersection; or (b) stopped short of a runway strip; or		No equivalent	Doc. 4444 7.6.3.1.2.2 7.6.3.1.2.2 If the control tower is unable to determine, either visually or via an ATS surveillance system that a vacating or crossing aircraft has cleared the runway, the aircraft shall be requested to report when it has vacated the runway. The report shall be made when the entire aircraft is beyond the relevant runway-holding position.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(c) vacated the runway.			
10.13.1.5	As local circumstances such as aerodrome configuration and day/night visibility conditions may restrict controller visibility, unit Instructions must specify when mandatory confirmation of position is required from the pilot.		No equivalent	Doc. 4444 7.6.3.1.2.2 7.6.3.1.2.2 If the control tower is unable to determine, either visually or via an ATS surveillance system that a vacating or crossing aircraft has cleared the runway, the aircraft shall be requested to report when it has vacated the runway. The report shall be made when the entire aircraft is beyond the relevant runway-holding position.
10.13.2.1	**10.13.2 Arriving Aircraft and an Aircraft Taking Off** Lateral separation is considered to exist between an arriving aircraft that subsequently commenced final approach, and a departing aircraft that has been cleared on a segregated flight path.	4.0570.01	**4.570 Separation of departing aircraft from arriving aircraft** (1) The separation standard in this section: (a) applies when take-off clearance is based on the position of an arriving aircraft; and (b) must be used instead of the equivalent standard in ICAO Doc. 4444. (2) In this section, ***arrival protection area*** means the area contained within 45 degrees of the range of bearings containing the flight path of the arriving aircraft from its present position until the landing threshold. (3) ATC may authorise a departing aircraft to take-off if: (a) ATC has issued a clearance that ensures the departing aircraft will not infringe the arrival protection area for the arriving aircraft unless or until another separation minimum is in place; and (b) ATC arranges the take off clearance so that: (i) if the take-off runway is the same as the landing runway – the departing aircraft commences its take-off run before the arriving aircraft reaches the cut off point or cut off time mentioned in paragraphs (4), (5) or (6) relevant for the arrival procedure being used by the arriving aircraft; or (ii) if the take-off runway is a runway that intersects with the landing runway – the departing aircraft commences its take-off run such that it crosses the intersection before the arriving aircraft reaches the cut-off point or cut off time mentioned in paragraphs (4), (5) or (6) relevant for the arrival procedure being used by the arriving aircraft; and (c) where the arriving aircraft is conducting an instrument approach involving a base turn procedure from overhead the landing aerodrome — the aircraft has reported established on the outbound leg of the procedure.	Doc. 4444 5.7 5.7 SEPARATION OF DEPARTING AIRCRAFT FROM ARRIVING AIRCRAFT 5.7.1 Except as otherwise prescribed by the appropriate ATS authority, the following separation shall be applied when take-off clearance is based on the position of an arriving aircraft. 5.7.1.1 If an arriving aircraft is making a complete instrument approach, a departing aircraft may take off: a) in any direction until an arriving aircraft has started its procedure turn or base turn leading to final approach; b) in a direction which is different by at least 45 degrees from the reciprocal of the direction of approach after the arriving aircraft has started procedure turn or base turn leading to final approach, provided that the take-off will be made at least 3 minutes before the arriving aircraft is estimated to be over the beginning of the instrument runway (see Figure 5-40).
10.13.2.2	For this purpose, a segregated flight path is considered to exist when the departing aircraft will not be manoeuvring within 45 degrees either side of the reciprocal of the final approach path while the arriving aircraft is on the final approach track.		Covered by 4.570 (2)	Doc. 4444 5.7 Separation of departing aircraft from arriving aircraft (see 5.7.1.1 b) and 5.7.1.2 b))
10.13.2.3	Except as specified in subsections 10.13.2.4 and 10.13.2.5, take-offs must not be permitted after an arriving aircraft has commenced final approach until: (a) it is sighted by the tower controller and reasonable assurance	4.0570.02	CUT-OFF POINTS AND CUT-OFF TIMES (4) For (3) (b) and for an arriving aircraft making a straight in approach or a straight-in approach using a base turn procedure — cut off points and cut off times are:	Doc. 4444 6.5.6.1.2 6.5.6.1.2 Succeeding aircraft shall be cleared for approach: a) when the preceding aircraft has reported that it is

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	exists that a landing can be accomplished; or (b) separation standards can be applied between an arriving aircraft which misses its approach and an aircraft desiring take-off clearance.		(a) 3 minutes before the arriving aircraft is estimated to be over the threshold of the arrival runway; or (b) a point: (i) 5 NM from the landing runway threshold as determined by one of the following: (A) ATS surveillance system; (B) GNSS report; (C) DME report adjusted for the distance between the landing threshold in use and the DME site; or (ii) when an ATS surveillance system suitable for 3 NM separation is used – a point 3 NM from the landing runway threshold. ***Note*** For guidance only, see Figure 4.570-1  **Figure 4.570-1 Protection area for aircraft arriving via straight-in or base turn approach (illustrates matters)**	able to complete its approach without encountering instrument meteorological conditions; or b) when the preceding aircraft is in communication with and sighted by the aerodrome control tower, and reasonable assurance exists that a normal landing can be accomplished; or c) when timed approaches are used, the preceding aircraft has passed the defined point inbound, and reasonable assurance exists that a normal landing can be accomplished; d) when the use of an ATS surveillance system confirms that the required longitudinal spacing between succeeding aircraft has been established.
10.13.2.4	When the take-off direction differs by at least 45 degrees from the reciprocal of a straight-in final approach, a departing aircraft may commence take-off before an arriving aircraft on final approach passes a point 5 NM from the landing threshold as determined by 1 of the following: (a) ATS surveillance system; (b) GNSS report; (c) DME report adjusted for the distance between the landing threshold in use and the DME site.	4.0570.03		Doc. 4444 5.7 5.7.1.2If an arriving aircraft is making a straight-in approach, a departing aircraft may take off: a) in any direction until 5 minutes before the arriving aircraft is estimated to be over the instrument runway; b) in a direction which is different by at least 45 degrees from the reciprocal of the direction of approach of the arriving aircraft: 1) until 3 minutes before the arriving aircraft is estimated to be over the beginning of the instrument runway (see Figure 5-40); or 2) before the arriving aircraft crosses a designated fix on the approach track; the location of such fix to be determined by the appropriate ATS authority after consultation with the operators.
10.13.2.5	In the application of this standard, the controller must estimate that the required separation will exist at the time the take-off is commenced, and ATS surveillance system observation or DME report		No equivalent	Doc. 4444 5.7 Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	must be used to confirm that separation is not infringed.			
10.13.2.6	For subsections 10.13.2.3 and 10.13.2.4, when an ATS surveillance system suitable for 3 NM separation is used to determine aircraft position, the controller must ensure that an arriving aircraft is not closer than 3 NM from the landing threshold at the time a departing aircraft: (a) commences take-off on the runway to be used by the landing aircraft; or (b) crosses the intersection of the runway to be used by the landing aircraft.	4.0570.04		Doc. 4444 5.7 Nil
		4.0570.05	(5) For (3) (b) and for an arriving following an RNAV or RNP instrument flight procedure as shown in figure 4.570-2 — a point established as a designated waypoint on the instrument flight procedure, the location of such waypoint to be determined by the ATS provider and published in local instructions.  **Figure 4.570-2 Protection area for aircraft arriving following an RNAV or RNP instrument flight procedure (illustrates matters)** (6) For (3) (b) and for the arriving aircraft by use of a procedure other than one described in paragraphs (4) or (5) — a point 10NM from the aerodrome. ***Note*** For guidance only, see Figure 4.570-3	5.7.1.3 If an arriving aircraft is following an RNAV or RNP instrument flight procedure, a departing aircraft may take off on a departure path that is clear of the arrival protection area for the arriving aircraft (see Figure 5-41) provided: a) vertical separation is applied until the arriving aircraft has reported passing the compulsory reporting waypoint on the instrument flight procedure, the location of such waypoint to be determined by the appropriate ATS authority; b) the take-off takes place before the arriving aircraft crosses a designated waypoint on the instrument flight procedure, the location of such waypoint to be determined by the appropriate ATS authority; and c) the departing aircraft remains clear of the arrival protection area until another form of separation is established.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			 **Figure 4.570-3 Protection area for aircraft arriving via an arrival procedure (illustrates matters)**	
10.13.3.1	**10.13.3 Simultaneous Parallel Operations** Use by fixed wing aircraft of more than one landing/take-off path in the same direction on the one aerodrome is permissible if, the paths proposed to be used are treated as one runway for separation purposes.		No equivalent	Nil
10.13.3.2	The suitability of a landing area for simultaneous parallel landings or take-offs by fixed wing aircraft and the associated control procedures must be established in consultation with CASA.		No equivalent	Nil
10.13.4.1	**10.13.4 Training Approaches** If an aircraft, person or vehicle within the runway strip on a controlled aerodrome is likely to be overflown by an aircraft making a training approach, the controller must: (a) instruct the training aircraft not to descend below: (i) the relevant minimum altitude for the approach; or (ii) for a practice visual approach — not below 300 ft AGL; and (b) pass traffic information to the other aircraft before it enters the flight path over which the approaching aircraft will fly; and (c) pass traffic information to persons, including the drivers of vehicles, operating within the runway strip of the runway to be overflown by the aircraft, other than persons operating within the works area associated with a displaced threshold.	4.0710	**4.710 Training low approach restrictions** (1) Subject to (2), if the runway in use is occupied by aircraft or vehicles and an approaching aircraft that has requested a low approach or a touch and go, ATC may clear the aircraft for a low approach if: (a) the clearance restricts the approach to a height not below 300 feet above the threshold elevation, and (b) the pilot must be informed of the aircraft or vehicles on the runway; and (c) the aircraft or vehicle on the runway must be informed of the aircraft carrying out the low approach. (2) (1) (b) and (c) do not apply if the clearance restricts the approach to a height not below: (a) if the aircraft has an MTOW of 7 000 kg or less—500 ft above the threshold elevation; otherwise (b) 1 000 ft above the threshold elevation.	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
10.13.5.1	**10.13.5 Land and Hold Short Operations (LAHSO)** Notwithstanding aerodrome separation standards, operations by an aircraft landing on one runway and another aircraft either taking off or landing simultaneously on a crossing runway may be permitted subject to the provisions of LAHSO.	4.01lahso	***LAHSO*** means a Land and Hold Short Operation; being an operation on two intersecting runways whereby aircraft land and depart on one runway while aircraft landing on the other runway hold short of the intersection.	Nil
		4.01active	***active participation*** for LAHSO, means accepting a requirement to hold short of a hold short line.	
		4.01passive	***passive participation*** for LAHSO means having unrestricted use of the full length of the runway.	
10.13.5.2	LAHSO are to be considered a 'dependent' procedure, with participating aircraft classified as either: (a) Active: when an aircraft is issued a hold short requirement and is alerted about traffic on a crossing runway; or (b) Passive: when an aircraft has unrestricted use of the full runway length and is alerted about traffic on a crossing runway.		Covered by (1)	Nil
10.13.5.3	Active participation in LAHSO is available only to pilots of aircraft in the following categories: (a) Australian registered aircraft of performance categories A, B, or C engaged in operations conducted under a training and checking organisation approved under regulation 217 of the Civil Aviation Regulations 1988, if the operator provides Operations Manual information and certifies participating pilots for LAHSO; (b) Australian registered aircraft of performance category A, B, or C, if the pilot holds a log book endorsement for LAHSO; (c) Australian military aircraft in performance categories A, B, or C; (d) foreign military aircraft in performance categories A, B, or C, if there is a letter of agreement between the relevant military authority and the ATS provider; (e) Australian registered aircraft approved in writing by CASA.	4.0750.01	**4.750 Land and Hold Short Operations (LAHSO)** (1) Subject to (3) and (4), the following categories of aircraft are eligible for active participation in a LAHSO: (a) Australian registered civil aircraft in performance category A, B, or C; (b) Australian military aircraft in performance category A, B, or C; (c) if there is a letter of agreement between the relevant military authority and the ATS provider — foreign military aircraft in performance categories A, B, or C; (d) specific aircraft types for identified aircraft operators authorised in writing by CASA.	Nil
10.13.5.4	Passive participation in LAHSO is available to pilots of aircraft in the following categories: (a) Australian civil and military aircraft of performance category A, B and C at pilot discretion; (b) RAAF Hawk, F111 and FA18 aircraft; (c) foreign military aircraft, if there is a letter of agreement, between the relevant military authority and the ATS provider, that excludes foreign military aircraft of performance category D.	4.0750.02	(2) The following categories of aircraft are eligible for passive participation in a LAHSO: (a) Australian registered civil aircraft of performance category A, B, or C; (b) Australian military aircraft: (i) in performance category A, B or C; or (ii) authorised by the Australian Defence Force; (c) if there is a letter of agreement between the relevant military authority and the ATS provider — foreign military aircraft in performance categories A, B, or C; (d) specific aircraft types for identified aircraft operators authorised in writing by CASA.	Nil
10.13.5.5	Pilots who at the time expect and elect to participate actively in LAHSO, must on receipt of an ATIS broadcast that advises LAHSO in progress, confirm ability to participate by advising "LAHSO APPROVED" to the last en-route ATS provider prior to descent into		No equivalent – pilot procedure	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	the destination terminal area or on initial contact with Tower or Approach.			
10.13.5.6	Pilots of civil aircraft operating under a flight number as advised in flight notification, and pilots of Australian military aircraft, may omit the words “LAHSO APPROVED” as required above. ATC may sequence these aircraft for LAHSO unless the pilot expressly states an intention not to participate.	4.0750.03	(3) An aircraft identified in paragraph (2) is eligible for active participation in a LAHSO only if: (a) the pilot of the aircraft informs ATC that he or she is LAHSO approved; or (b) the aircraft is a civil aircraft operating under a flight number callsign. (4) An aircraft must not be subject to a LAHSO if the pilot has expressly stated an intention not to participate in LAHSO.	Nil
10.13.5.7	Notwithstanding the provisions above, pilots of foreign registered civil aircraft and of Australian registered aircraft operating under foreign air carrier flight numbers must not be permitted to participate actively or passively in LAHSO.		No equivalent – covered by the (2) and (3)	Nil
10.13.5.8	LAHSO must only be permitted as follows: (a) runways are equipped with standard LAHSO signs, lights and runway markings as specified in AIP Aerodromes (AD); (b) the ceiling is not less than 1,000 FT and visibility is not less than 5,000 M; (c) ‘active’ participation is restricted to runways where the crosswind component including gusts does not exceed 20 KT; (d) simultaneous landings may be permitted by day and night; (e) a simultaneous take-off and landing is only permitted by day; (f) a “HOLD SHORT” requirement must not be given when low level wind shear of intensity greater than LIGHT is reported; (g) when the runway is damp or wet, a “HOLD SHORT” requirement must only be issued if the braking characteristics are assessed as GOOD by a pilot of an aircraft in the same performance category.	4.0750.04	(5) LAHSO is only to take place in accordance with all the following: (a) The following meteorological conditions must exist for all the runways involved in the LAHSO: (i) Crosswind, including gusts — not more than 20 kts; (ii) Tailwind: (A) if the runways are dry — no more than 5 kts; otherwise (B) no tailwind may exist; (iii) Ceiling — High enough for aircraft to be able to establish and maintain visual reference with ground or water at or below an altitude not lower than the lowest minimum vectoring altitude (MVA) applicable to final approach leg and missed approach area of the runway or runways as applicable to the LAHSO being conducted. (iv) Visibility: not less than 8 km. (v) Windshear — No reports of low-level wind shear with an intensity greater than light. (b) A LAHSO involving a simultaneous take-off and landing may be conducted only by day. (c) Measures must be in place and in use for all runways: (i) To resolve conflicts in the event of one or more aircraft going around or rejecting a landing; and (ii) To prevent participating aircraft infringing the intersection of two runways at the same time should a landing aircraft fail to hold short. (d) Unless LAHSO was already taking place for a particular runway configuration as at [date of making of the MOS], LAHSO only takes place at an aerodrome for which: (i) A safety assessment has demonstrated that use of LAHSO is essential for the safety and efficiency of operations at the aerodrome; and (ii) the procedure is conducted in accordance with, and only by signatories of, a letter of agreement between the ATS provider, the aerodrome operator, and any participating Part 121 operator. (e) If the runway preceding the hold short point is not completely	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			dry: (i) immediately prior to the first aircraft to carry out a LAHSO operation, the runway braking action must have been assessed as good by the pilot of an aircraft in the same performance category; and (ii) there are no subsequent reports the runway braking action is less than good; and (iii) when precipitation is occurring, ATC must obtain pilot assessments of the runway braking action at intervals at least hourly. (f) The runway to be used for holding short (active participation) must: (i) be equipped in accordance with Part 139 of CASR for LAHSO; and (ii) have serviceable and operating ground based visual or electronic glide slope guidance.	
10.13.5.9	In the application of LAHSO, controllers must: (a) ensure that the published distance from the landing threshold to the hold short point of the crossing runway is adequate for the performance category of the aircraft as detailed in the Landing Distance Required (LDR) table below; (b) alert aircraft that land and hold short runway operations are in progress by notification on the ATIS; (c) issue directed traffic information to both aircraft participating in the procedure; (d) ensure readback of a hold short requirement; (e) withhold issuing a take-off clearance to a departing aircraft while another aircraft is landing on a crossing runway having been issued with a duly acknowledged hold short requirement, until such time that in the opinion of the controller, there is no possibility that both aircraft could occupy the intersection at the same time should the landing aircraft subsequently fail to hold short.	4.0750.05	(6) In the application of LAHSO, ATC must: (a) alert aircraft by ATIS or voice that LAHSO are in progress; (b) issue traffic information to both aircraft participating in the procedure; (c) ensure readback of any hold short requirement; (d) for LAHSO conducted at night and where a straight-in instrument approach for the landing runway is not available, ensure aircraft intercept final at least 8NM from the runway threshold.	Nil
10.13.5.10	When circumstances warrant, controllers may require a pilot issued with a hold short requirement to report “(callsign) HOLDING SHORT”.		No equivalent – operational procedure	Nil
10.13.5.11	When an issued hold short instruction no longer applies, pilots must be advised that “FULL RUNWAY LENGTH NOW AVAILABLE”.		No equivalent – operational procedure	Nil
10.13.5.12	When a landing aircraft has been issued with requirements to hold short of a crossing runway strip, aircraft and vehicles may be approved to cross the ‘non operational’ end of the runway in the following circumstances: (a) by day; (b) at the discretion of, and under the jurisdiction of the aerodrome controller; (c) traffic information must be provided.	4.0750.06	(7) ATC may permit aircraft or vehicles to cross the portion of the runway surface beyond the hold short point if: (a) it is daytime; and (b) the pilot or operator crossing the runway is informed about landing traffic. All other operations beyond the hold short point are prohibited.	Nil
10.13.6.1	**10.13.6 Landing Distance Required (LDR) for LAHSO** ATC may sequence participating aircraft for LAHSO regardless of		No equivalent – Clause (6) (d) sets a requirement that LAHSO only takes place at an existing location or for new locations on the basis of agreement	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	category of aircraft if the controller is aware that the aircraft may be able to land within the landing distance available (LDA). In all circumstances, the pilot is responsible for determining that the LDA is sufficient in the prevailing conditions. ATC may sequence non-jet Category B aircraft below 5,700 KG MTOW for LAHSO using Category A LDRs.		between all participants – which presumes confirmation that the LDA for LAHSO will be sufficient for participating aircraft.	
10.13.6.2	The LDR table below shows the approved minimum LDR for an aircraft Performance Category (PC) in the conditions specified and must be used as a guide for ATC when determining whether an aircraft can land in the available runway distance while participating in LAHSO.		No equivalent – Clause (6) (d) sets a requirement that LAHSO only takes place at an existing location or for new locations on the basis of agreement between all participants – which presumes confirmation that the LDA for LAHSO will be sufficient for participating aircraft.	Nil
10.13.6.3	Reduced LDRs, as determined by CASA, may be applied provided a Letter of Agreement between the ATS Provider/Department of Defence and an aircraft operator that has been approved by the local CASA District Office. These LoAs must be promulgated in Local Instructions.		No equivalent – Clause (6) (d) sets a requirement that LAHSO only takes place at an existing location or for new locations on the basis of agreement between all participants – which presumes confirmation that the LDA for LAHSO will be sufficient for participating aircraft.	Nil
10.13.6.3: Table	Table 10.13-1: Landing Distance Required		No equivalent – Clause (6) (d) sets a requirement that LAHSO only takes place at an existing location or for new locations on the basis of agreement between all participants – which presumes confirmation that the LDA for LAHSO will be sufficient for participating aircraft.	Nil
10.13.7.1	**10.13.7 Letters of Agreement for LAHSO** A Letter of Agreement between the relevant ATS provider and any foreign military authority must be raised by the ATS unit following an initial request from the relevant military authority.		No equivalent – admin procedure	Nil
10.13.7.2	The Letter of Agreement must include, but is not limited to, the following items: (a) the specific aerodrome at which the Agreement is valid; (b) the ATC service provider bound by the Agreement; (c) foreign military authority bound by the Agreement; (d) a validity period; (e) the LAHSO procedures that are the subject of the Agreement; (f) a statement authorising active and/or passive participation by pilots of specified aircraft types and categories.		No equivalent – admin procedure	Nil
10.13.8: a.: Take-off behind a preceding departing aircraft	**10.13.8 Runway Separation Minima** Fixed Wing Aircraft A departing aircraft must not be permitted to commence take-off until the preceding departing aircraft: 1. has crossed the up-wind end of the runway-in-use; or 2. has commenced a turn; or 3. is airborne and has reached a point at least 1 800 m (6 000 ft) ahead of the following aircraft, the runway is longer than 1 ,800 m (6 000 ft) and the distance can be readily determined; or 4. is airborne and has reached a point at least 600 m (2 000 ft) ahead of the following aircraft, and:	4.0740.01	**4.740 Separation of departing aircraft** (1) Subject to the application of wake turbulence separation – where relevant, the separation standards in this section apply in addition to the equivalent separation standards in ICAO Doc. 4444. (2) An aircraft may be permitted to commence take-off, only if a preceding departing aircraft on the same runway: (a) is airborne and (i) has reached a point at least 1,800 m ahead of the following aircraft, and (ii) the runway is longer than 1,800 m; and (iii) ATC can readily determine the distance in (i); or (b) is airborne and has reached a point at least 600 m ahead of the	Doc. 4444 7.9.2 & 7.11 7.9.2 Separation of departing aircraft Except as provided in 7.11 and Chapter 5, Section 5.8, a departing aircraft will not normally be permitted to commence take-off until the preceding departing aircraft has crossed the end of the runway-in-use or has started a turn or until all preceding landing aircraft are clear of the runway-in-use.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(a) the preceding aircraft has a MTOW of 7 000 kg or less; and (b) the following aircraft has an MTOW of less than 2 000 kg; and (c) the following aircraft is slower than the preceding aircraft; or 5. is airborne and has reached a point at least 600 m (2 000 ft) ahead of the following aircraft, and both aircraft have an MTOW of less than 2 000 kg.		following aircraft, and: (i) the preceding aircraft has a MTOW of 7,000 kg or less; and (ii) the following aircraft has an MTOW of less than 2,000 kg; and (iii) the following aircraft is slower than the preceding aircraft; or (c) is airborne and (i) has reached a point at least 600 m ahead of the following aircraft, and (ii) both aircraft have an MTOW of less than 2,000 kg.	
10.13.8: b.: Take-off behind preceding landing aircraft	Fixed Wing Aircraft The departing aircraft must not be permitted to commence take-off until the preceding aircraft has vacated and is taxiing away from the runway; and, if applicable, the appropriate wake turbulence separation has been achieved.		No equivalent	Doc. 4444 7.9.2 7.9.2 Separation of departing aircraft Except as provided in 7.11 and Chapter 5, Section 5.8, a departing aircraft will not normally be permitted to commence take-off until the preceding departing aircraft has crossed the end of the runway-in-use or has started a turn or until all preceding landing aircraft are clear of the runway-in-use.
10.13.8: c.: Take-off behind landing or departing aircraft on intersecting runways	Fixed Wing Aircraft A departing aircraft must not be permitted to commence take-off until: 1. a preceding departing aircraft on an intersecting runway has crossed the intersection; or 2. an aircraft landing on the crossing runway has either crossed the intersection or stopped short.	4.0740.02	(3) An aircraft may be permitted to commence take-off from one runway while another aircraft lands simultaneously on an intersecting runway only if: (a) the landing aircraft has passed the runway intersection; or (b) the landing aircraft has completed its landing roll and is stopped short of the runway intersection; or (c) for a LAHSO: (i) the operation is in accordance with the requirements of Section 4.0750 [the section in MOS about LAHSO]; and (ii) the landing aircraft has accepted a requirement to hold short of the hold short line for the intersecting runway. (4) An aircraft may be permitted to commence take-off from one runway if a preceding departing aircraft on an intersecting runway has passed the intersection.	7.10.3.1 When necessary or desirable in order to expedite traffic, a landing aircraft may be requested to: a) hold short of an intersecting runway after landing;
10.13.8: d.: Take-off after an aircraft has departed in the opposite direction	Fixed Wing Aircraft A departing aircraft must not be permitted to commence take-off until: 1. the preceding aircraft has crossed the point at which the following aircraft will commence take-off; and 2. if applicable, the appropriate wake turbulence separation standard has been achieved.	4.0740.03	(5) An aircraft may be permitted to commence take-off from one runway only if a preceding aircraft departing in the opposite direction on the same runway has passed the crossed the point at which the following aircraft will commence take-off.	No equivalent
10.13.8: e.: Take-off behind a previous departing helicopter	Helicopters departing from an HLS Helicopter (1) may be cleared for take-off when a preceding departing helicopter (2) has departed the HLS, or a preceding arriving helicopter (3) has moved clear of the HLS.	4.0740.04	(6) A helicopter may be permitted to take-off from a helicopter landing site (HLS) only if: (a) a preceding departing helicopter is clear of the HLS; or (b) a preceding arriving helicopter has moved clear of the HLS.	No helicopter/HLS equivalent
10.13.8: f.: Helicopter	Where the helicopter uses a runway for a take-off roll	4.0740.07	(7) If a helicopter uses a runway for a take-off roll, the helicopter may be permitted to commence take-off if:	No equivalent

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
taking-off behind a preceding departing aircraft	A departing helicopter must not be permitted to commence take-off until: 1. the preceding departing aircraft is airborne; and 2. ATC ensures visual separation is in place; and 3. if applicable, the appropriate wake turbulence separation standard has been achieved.		(a) a preceding departing aircraft is airborne; and (b) the controller ensures visual separation between the helicopter and the preceding aircraft is in place.	
		4.0725.01	**4.725 Separation of landing aircraft** (1) Subject to the application of wake turbulence separation – where relevant, the separation standards in this section apply in addition to the equivalent separation standards in ICAO Doc. 4444.	
10.13.8: g.: Landing behind a preceding landing aircraft	Fixed Wing Aircraft A landing aircraft must not be permitted to cross the runway threshold until the preceding aircraft has vacated and is taxiing away from the runway.		No equivalent	Doc. 4444 7.10.1 Separation of landing aircraft and preceding landing and departing aircraft using the same runway Except as provided in 7.11 and Chapter 5, Section 5.8, a landing aircraft will not normally be permitted to cross the runway threshold on its final approach until the preceding departing aircraft has crossed the end of the runway-in-use, or has started a turn, or until all preceding landing aircraft are clear of the runway-in-use.
10.13.8: h.: Landing behind preceding departing or landing aircraft	Fixed Wing Aircraft A landing aircraft must not be permitted to cross the runway threshold unless, in the opinion of the tower controller, no collision risk exists, and: 1. the landing aircraft has an MTOW below 3 000 kg and is a Performance Category A aircraft; and 2. the preceding aircraft has an MTOW of 7 000 kg or less, and: (a) if landing, will vacate the runway without backtracking; or (b) if departing, is at least 1 000 m from the runway threshold, and has commenced its take-off run.	4.0725.02	(2) When there is a preceding aircraft, a landing aircraft may be permitted to cross the runway threshold on its final approach only if: (a) in the opinion of the controller, no collision risk exists; and (b) the landing aircraft has an MTOW below 3,000 kg and is a performance category A aircraft; and (c) the preceding aircraft has an MTOW of 7,000 kg or less, and: (i) if landing, will vacate the runway without backtracking; and (ii) if departing, is at least 1,000 m from the runway threshold, and has commenced its take-off.	Doc. 4444 7.11 (but the standard in Doc. 4444 7.1.1 is not a direct equivalent and the MOS standard will apply as well as Doc. 4444 7.1.1.
10.13.8: i.: Landing behind a preceding departing aircraft	Fixed Wing Aircraft The landing aircraft must not be permitted to cross the runway threshold until the preceding aircraft is airborne and: 1. has commenced a turn; or 2. is beyond the point on the runway at which the landing aircraft could be expected to complete its landing roll and there is sufficient distance to enable the landing aircraft to manoeuvre safely in the event of a missed approach.	4.0725.03	(3) A landing aircraft may be permitted to cross the runway threshold on its final approach only if: (a) a preceding departing aircraft on the same runway: (i) is airborne and: (ii) beyond the point on the runway at which the landing aircraft could be expected to complete its landing roll; and (b) there is sufficient distance to enable the landing aircraft to manoeuvre safely in the event of a missed approach.	
10.13.8: j.: Landing after intersecting runway traffic	Fixed Wing Aircraft The landing aircraft must not be permitted to cross the runway threshold until a preceding departing or landing aircraft on an intersecting runway has either crossed the intersection or stopped short.	4.0725.04	(4) A landing aircraft may be permitted to cross the runway threshold on its final approach with another aircraft operating on an intersecting runway only if: (a) for a preceding aircraft departing on an intersecting runway — the preceding aircraft has passed the runway intersection; or (b) for a preceding aircraft landing on an intersecting runway — if	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			the preceding aircraft has: (i) passed the runway intersection; or (ii) has completed its landing roll and is stopped short of the runway intersection (c) for another aircraft simultaneously landing on an intersecting runway: (i) the action is in accordance with the requirements of Section 4.0750 [the section in MOS about LAHSO] for LAHSO; and (ii) one aircraft has accepted a requirement to hold short of the hold short line for the intersecting runway.	
10.13.8: k: Landing Helicopter Landing – HLS	A helicopter (1) may be cleared to land when a departing helicopter (2) has left the HLS, or a preceding arriving helicopter (3) has moved clear of the HLS..	4.0725.05	(5) A departing helicopter may be cleared to land on an HLS only if: (a) a preceding departing helicopter is clear of the HLS; or (b) a preceding arriving helicopter has moved clear of the HLS.	No equivalent
10.13.8: l: Landing - Helicopter Landing – Runway	Helicopter A landing helicopter may be permitted to land when: 1. the preceding landing or departing aircraft is at least 300 m down the runway from the landing threshold; and 2. in the opinion of tower controller, no collision risk exists.	4.0725.06	(6) If landing on a runway, a helicopter may be permitted to cross the runway threshold on its final approach only if: (a) a preceding aircraft landing or departing on the same runway is at least 300 m down the runway from the landing threshold; and (b) in the opinion of tower controller, no collision risk exists.	No equivalent
10.13.8: m.: Landing behind a preceding landing aircraft	Applies only where: (a) the following landing aircraft has an MTOW of 2 000 kg or less; and (b) the preceding aircraft has an MTOW of less than 7 000 kg. The landing aircraft must not be permitted to cross the runway threshold until the preceding aircraft: (a) has landed; and (b) has passed a point at least 600 m from the threshold of the runway; and (c) is still in motion; and (d) will vacate the runway without backtracking.	4.0725.07	(7) When there is a preceding landing aircraft, a landing aircraft may be permitted to cross the runway threshold on its final approach only if: (a) the following landing aircraft has an MTOW of 2,000 kg or less; and (b) the preceding aircraft has an MTOW of less than 7,000 kg; and: (i) has landed; and (ii) has passed a point at least 600 m from the threshold of the runway; and (i) is still in motion; and (ii) will vacate the runway without backtracking.	Doc. 4444 7.11 7.11.4 For the purpose of reduced runway separation, aircraft shall be classified as follows: a) Category 1 aircraft: single-engine propeller aircraft with a maximum certificated take-off mass of 2 000 kg or less; b) Category 2 aircraft: single-engine propeller aircraft with a maximum certificated take-off mass of more than 2 000 kg but less than 7 000 kg; and twin-engine propeller aircraft with a maximum certificated take-off mass of less than 7 000 kg; c) Category 3 aircraft: all other aircraft. 7.11.7 Reduced runway separation minima which may be applied at an aerodrome shall be determined for each separate runway. The separation to be applied shall in no case be less than the following minima: a) landing aircraft: 1) a succeeding landing Category 1 aircraft may cross the runway threshold when the preceding aircraft is a Category 1 or 2 aircraft which either: i) has landed and has passed a point at least 600 m from the threshold of the runway, is in motion and will vacate the runway without backtracking; or
11.1.1.1	**Chapter 11: Information Provided To Pilots** **Section 11.1 General**		No equivalent	Doc. 4444 6.6.5 During final approach, the following information shall be transmitted without delay:

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	11.1.1 Take-off or Landing Information Changes to ATIS wind information must be provided to pilots with a take-off or landing clearance if it is considered that it would be of significance to the aircraft operation.			a) the sudden occurrence of hazards (e.g. unauthorized traffic on the runway); b) significant variations in the current surface wind, expressed in terms of minimum and maximum values; c) significant changes in runway surface conditions; d) changes in the operational status of required visual or non-visual aids; e) changes in observed RVR value(s), in accordance with the reported scale in use, or changes in the visibility representative of the direction of approach and landing. 7.4.1.2.2 Prior to take-off aircraft shall be advised of: a) any significant changes in the surface wind direction and speed, the air temperature, and the visibility or RVR value(s) given in accordance with 7.4.1.2.1; b) significant meteorological conditions in the take-off and climb-out area, except when it is known that the information has already been received by the aircraft.
11.1.1.2	The ATIS code 'ZULU' must be retained exclusively in all locations for use only with ATIS broadcasts relating to out of hours operations or when a control zone is de-activated.		No equivalent	Doc. 4444 7.4.1.2.1 7.4.1.2 AERODROME AND METEOROLOGICAL INFORMATION Prior to taxiing for take-off, aircraft shall be advised of the following elements of information, in the order listed, with the exception of such elements which it is known the aircraft has already received: a) the runway to be used; b) the surface wind direction and speed, including significant variations therefrom; c) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting; d) the air temperature for the runway to be used, in the case of turbine-engined aircraft; e) the visibility representative of the direction of take-off and initial climb, if less than 10 km, or, when applicable, the RVR value(s) for the runway to be used; f) the correct time. 7.4.1.2.3 Prior to entering the traffic circuit or commencing its approach to land, an aircraft shall be provided with the following elements of information, in the order listed, with the exception of such elements which it is known the aircraft has already received: a) the runway to be used; b) the surface wind direction and speed, including

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				significant variations therefrom; c) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting.
11.1.1.3	ATIS ZULU: (a) must include the following: (i) the expected re-opening time of the Tower; (ii) CTAF and PAL frequency; (iii) the preferred runway or circuit direction; (iv) noise abatement procedures; (v) works in progress; and (b) may include operational information of an unchanging nature which provides immediately useful information to pilots.		No equivalent	Doc. 4444 7.4.1.2.1 7.4.1.2 AERODROME AND METEOROLOGICAL INFORMATION Prior to taxiing for take-off, aircraft shall be advised of the following elements of information, in the order listed, with the exception of such elements which it is known the aircraft has already received: a) the runway to be used; b) the surface wind direction and speed, including significant variations therefrom; c) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting; d) the air temperature for the runway to be used, in the case of turbine-engined aircraft; e) the visibility representative of the direction of take-off and initial climb, if less than 10 km, or, when applicable, the RVR value(s) for the runway to be used; f) the correct time. 7.4.1.2.3 Prior to entering the traffic circuit or commencing its approach to land, an aircraft shall be provided with the following elements of information, in the order listed, with the exception of such elements which it is known the aircraft has already received: a) the runway to be used; b) the surface wind direction and speed, including significant variations therefrom; c) the QNH altimeter setting and, either on a regular basis in accordance with local arrangements or if so requested by the aircraft, the QFE altimeter setting.
11.1.2.1	**11.1.2 Safety Alerts** A safety alert must be issued to an aircraft when a controller is aware the aircraft is in a situation which is considered to place it in unsafe proximity to terrain, obstructions, or other aircraft.	4.1501-01	**4.1501 Safety Alerts** (1) A safety alert must be issued to an aircraft when a controller is aware the aircraft is in a situation which is considered to place it in unsafe proximity to terrain, obstructions, or other aircraft.	Numerous Annex 11 standards and PANS provisions
11.1.2.2	Once the pilot advises that action is being taken to resolve the situation, the issuance of further alerts may be discontinued.	4.1501-02	(2) Once the pilot advises that action is being taken to resolve the situation, the issuance of further alerts may be discontinued.	Nil
11.1.3.1	**11.1.3 Altimetry** Information concerning Transition Altitude and Transition Layer can be found in AIP ENR 1.7.		No equivalent	Nil
11.1.3.2	The differences between Area QNH for adjacent zones and terminal	4.1005.01	**4.1005 Area/Local QNH mismatch**	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	areas must not exceed 5 hectopascals. On the occasions that ATS observe a difference greater than 5 hectopascals between the terminal QNH and the forecast Area QNH, ATS must notify the appropriate meteorological office immediately.		ATS must notify the appropriate meteorological office if the local QNH and the relevant Area QNH is observed to differ by more than 5 hectoPascals.	
11.1.4.1	**11.1.4 Traffic Information** In providing ATS surveillance services within controlled airspace, including Class E airspace, or designated restricted airspace, ATC has no responsibility to initiate avoiding action in respect of unknown aircraft which can reasonably be assumed to be outside controlled airspace.		No equivalent	Doc. 4444 8.8.2 Collision hazard information 8.8.2.1 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: a) be informed of the unknown aircraft, and if so requested by the controlled flight or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists. 8.8.2.2 When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should: a) be informed as to the need for collision avoidance action to be initiated, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists.
11.1.4.2	ATC must advise aircraft leaving controlled airspace of observed traffic within the airspace to be entered where: (a) the pressure altitude derived level information of observed traffic indicates it is operating within 2000 FT of the base of CTA; or (b) in the opinion of the controller other information indicates a potential conflict exists.	3.0405.01	**3.405 Traffic information requirements** (1) ATC must advise aircraft leaving controlled airspace of observed traffic within the airspace to be entered if: (a) the pressure altitude derived level information of observed traffic indicates it is operating within 2,000 ft of the level at which the aircraft leaves controlled airspace; or (b) in the judgement of the controller other information indicates a potential conflict exists.	Doc. 4444 8.8.2.4 Pressure-altitude-derived level information, even when unverified, should be used in the provision of collision hazard information because such information, particularly if available from an otherwise unknown aircraft (e.g. a VFR flight) and given to the pilot of a known aircraft, could facilitate the location of a collision hazard. 8.8.2.4.1 When the pressure-altitude-derived level information has been verified, the information shall be passed to pilots in a clear and unambiguous manner. If the level information has not been verified, the accuracy of the information should be considered uncertain and the pilot shall be informed accordingly.
11.1.4.3	In Class G airspace, IFR and MLJ aircraft must be provided with traffic information on other conflicting IFR and MLJ aircraft.	3.0405.02	(2) In Class G airspace, ATS must provide IFR or MLJ flights known to be operating on the designated ATS frequency for the airspace with traffic information on conflicting IFR, MLJ and observed conflicting VFR flights.	ANNEX 11 4.2.2 Flight information service provided to flights shall include, in addition to that outlined in 4.2.1, the provision of information concerning: a) weather conditions reported or forecast at departure, destination and alternate aerodromes; b) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G; c) 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. Doc. 4444 8.8.2.2 When an identified IFR flight

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should: a) be informed as to the need for collision avoidance action to be initiated, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists.
11.1.4.4	In Class E airspace, flights: (a) maintaining VFR-on-top; or (b) operating VFR climb/descent; or (c) using IFR Pick-up; must be provided with: (d) mutual traffic information: (i) on each other; and (ii) on IFR and MLJ flights; and (e) traffic information on VFR flights as far as practicable. *Note Provision of traffic information is based on flight category, and not on the chosen procedure at the time of the request.*	3.0405.03	(3) In Class E airspace, ATS must provide flights: (a) maintaining VFR-on-top; or (b) operating VFR climb/descent; or (c) using IFR Pick-up; with: (d) mutual traffic information: (i) on each other; and (ii) on IFR or MLJ flights; and (e) traffic information on VFR flights as far as practicable. ***Note*** Provision of traffic information is based on flight category, and not on the chosen procedure at the time of the request.	Doc. 4444 8.8.2.2 When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should: a) be informed as to the need for collision avoidance action to be initiated, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists.
11.1.4.5	If the pilot in command of an IFR or MLJ aircraft at a non-towered aerodrome reports to the unit providing an ATS for the aerodrome that his or her aircraft is taxiing at or airborne from, the aerodrome, the unit must inform the pilot of conflicting traffic which is not on the CTAF.	3.0405.04	(4) If the pilot in command of an IFR or MLJ aircraft at a non-controlled aerodrome reports to the unit providing an ATS for the airspace in the vicinity of the aerodrome that the aircraft is taxiing at or airborne from the aerodrome, the unit must inform the pilot of known or observed conflicting traffic which is not on the CTAF.	Doc. 4444 8.8.2.2 When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should: a) be informed as to the need for collision avoidance action to be initiated, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists.
11.1.4.6	The unit providing an ATS for a non-towered aerodrome must inform IFR or MLJ aircraft inbound to the aerodrome of conflicting traffic regardless of where the confliction will occur. However, this obligation ceases when the pilot reports “CHANGING CTAF” or that he or she is changing to the MULTICOM frequency.	3.0405.05	(5) The ATS unit responsible for the airspace in the vicinity of a non-controlled aerodrome must inform IFR or MLJ aircraft inbound to the aerodrome of known or observed conflicting traffic regardless of where the confliction will occur. However, this obligation ceases when the pilot reports changing to the CTAF or the local aerodrome frequency.	Doc. 4444 8.8.2.2 When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should: a) be informed as to the need for collision avoidance action to be initiated, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and b) be notified when the conflict no longer exists.
12.1.1.1	**Chapter 12: Information Transfer** **Section 12.1 General** **12.1.1 Validity of an ATC Clearance**		No equivalent	Doc. 4444 4.5.2 Aircraft subject to ATC for part of flight 4.5.2.1 When a flight plan specifies that the initial portion of a flight will be uncontrolled, and that the subsequent portion of the flight will be subject to ATC,

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	An ATC clearance, and its amendments during the flight apply only: (a) to the first point at which the aircraft leaves controlled airspace; or (b) to the first landing point if the flight is wholly within controlled airspace; or (c) to the clearance limit if issued; or (d) until the expiration of a clearance void time; or (e) until cancelled by a controller.			the aircraft shall be advised to obtain its clearance from the ATC unit in whose area controlled flight will be commenced. 4.5.2.2 When a flight plan specifies that the first portion of a flight will be subject to ATC, and that the subsequent portion will be uncontrolled, the aircraft shall normally be cleared to the point at which the controlled flight terminates. 4.5.3 Flights through intermediate stops 4.5.3.1 When an aircraft files, at the departure aerodrome, flight plans for the various stages of flight through intermediate stops, the initial clearance limit will be the first destination aerodrome and new clearances shall be issued for each subsequent portion of flight. 4.5.3.2 The flight plan for the second stage, and each subsequent stage, of a flight through intermediate stops will become active for ATS and search and rescue (SAR) purposes only when the appropriate ATS unit has received notification that the aircraft has departed from the relevant departure aerodrome, except as provided for in 4.5.3.3. 4.5.3.3 By prior arrangement between ATC units and the operators, aircraft operating on an established schedule may, if the proposed route of flight is through more than one control area, be cleared through intermediate stops within other control areas but only after coordination between the ACCs concerned. 4.5.7 Description of air traffic control clearances 4.5.7.1 CLEARANCE LIMIT 4.5.7.1.1 A clearance limit shall be described by specifying the name of the appropriate significant point, or aerodrome, or controlled airspace boundary. 4.5.7.1.2 When prior coordination has been effected with units under whose control the aircraft will subsequently come, or if there is reasonable assurance that it can be effected a reasonable time prior to their assumption of control, the clearance limit shall be the destination aerodrome or, if not practicable, an appropriate intermediate point, and coordination shall be expedited so that a clearance to the destination aerodrome may be issued as soon as possible. 4.5.7.1.3 If an aircraft has been cleared to an intermediate point in adjacent controlled airspace, the appropriate ATC unit will then be responsible for issuing, as soon as practicable, an amended clearance to the destination aerodrome. 4.5.7.1.4 When the destination aerodrome is outside controlled airspace, the ATC unit responsible for the

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				last controlled airspace through which an aircraft will pass shall issue the appropriate clearance for flight to the limit of that controlled airspace.
12.1.2.1	**12.1.2 Level Assignment** Clearances issued must enable the pilot to comply with CAR 157.		No equivalent	4.5.1.3 The issuance of air traffic control clearances by air traffic control units constitutes authority for an aircraft to proceed only in so far as known air traffic is concerned. ATC clearances do not constitute authority to violate any applicable regulations for promoting the safety of flight operations or for any other purpose; neither do clearances relieve a pilot-in-command of any responsibility whatsoever in connection with a possible violation of applicable rules and regulations.
12.1.2.2	Block Level Clearances must not be issued to: (a) civil aircraft in Class E airspace; or (b) aircraft to which the Mach Number Technique has been applied.		No equivalent	Nil
12.1.2.3	Unless ATC instructs otherwise, a pilot intending to land at an aerodrome within Class D airspace may descend to join the aerodrome traffic circuit after he or she has established 2-way communications with the Tower.	4.0410.03	(3) If an aircraft has established 2-way communications with the aerodrome control facility at a Class D aerodrome, ATC must either: (a) provide its services on the basis that the aircraft will: (i) track to the aerodrome and join the aerodrome traffic circuit; and (ii) if necessary; descend to the circuit altitude; or else (b) issue appropriate instructions to the pilot.	Consistent with changes to the standards for aerodrome control facilities, the only change proposed for this part of the MOS is to rename control tower as aerodrome control facility.
12.1.3.1	**12.1.3 Clearances for Special VFR Aircraft** At pilot request, a SPECIAL VFR clearance may be issued for a VFR flight when: (a) within a control zone; (b) in a control area next to a control zone for the purpose of entering or leaving the zone; (c) by day; (d) when VMC do not exist; and (e) an IFR flight will not be unduly delayed.	4.0775.01	**4.775 Clearances for special VFR Aircraft** (1) Subject to (2), when weather conditions preclude VFR flight within a control zone, the ATC unit responsible for a particular control zone may issue a special VFR clearance to a VFR flight, but only: (a) in response to a specific request from the pilot; and (b) by day; and (c) for the purpose of allowing the aircraft to: (i) arrive at or depart from an aerodrome within the control zone; or (ii) cross or operate locally within the control zone; and (d) if granting the clearance will not unduly delay aircraft operating under the IFR.	Doc. 4444 Definition Special VFR flight. A VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC. 7.14 SUSPENSION OF VISUAL FLIGHT RULES OPERATIONS 7.14.1 Any or all VFR operations on and in the vicinity of an aerodrome may be suspended by any of the following units, persons or authorities whenever safety requires such action: a) the approach control unit or the appropriate ACC; b) the aerodrome control tower; c) the appropriate ATS authority. 7.14.2 All such suspensions of VFR operations shall be accomplished through or notified to the aerodrome control tower. 7.14.3 The following procedures shall be observed by the aerodrome control tower whenever VFR operations are suspended:

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				a) hold all VFR departures; b) recall all local flights operating under VFR or obtain approval for special VFR operations; c) notify the approach control unit or ACC as appropriate of the action taken; d) notify all operators, or their designated representatives, of the reason for taking such action, if necessary or requested. 7.15 AUTHORIZATION OF SPECIAL VFR FLIGHTS 7.15.1 When traffic conditions permit, special VFR flights may be authorized subject to the approval of the unit providing approach control service and the provisions of 7.14.1.3. 7.15.1.1 Requests for such authorization shall be handled individually. 7.15.1.3 When the ground visibility is not less than 1 500 m, special VFR flights may be authorized 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.
12.1.3.2	In the application of Special VFR, the following are Australian requirements, which differ from those stated in ICAO PANS-ATM: (a) Special VFR is not available in Class E airspace. (b) Visibility assessment is the responsibility of the pilot.	4.0775.02	(2) Despite ICAO Doc. 4444, the pilot is responsible for assessing that the weather conditions are suitable and meet the requirements for flight under special VFR.	Nil
12.1.4.1	**12.1.4 Clearances Below LSALT** A pilot may be assigned a level below the LSALT provided that: (a) the pilot has reported “VISUAL”; and (b) “VISUAL” is appended to the level assigned; and (c) by night, the clearance is prefixed with “WHEN ESTABLISHED IN THE CIRCLING AREA”.	4.0405.01	**4.405 Terrain clearance or minimum assignable altitudes** (1) Subject to subsection (3), ATC must ensure that levels providing adequate terrain clearance are assigned to: (a) any controlled IFR flight, and (b) at night — any controlled VFR flight. (2) For subsection (1), adequate terrain clearance exists if the assigned level: (a) is a relevant minimum altitude for the current position of the aircraft as specified on an instrument flight procedure chart; or (b) is not lower than the applicable MSA, or en route or grid minimum altitude specified on a chart for the current position of the aircraft; or (c) for an aircraft receiving an ATS surveillance service: (i) is not lower than a minimum altitude specified for the position of the aircraft on a minimum vectoring altitude (MVA) chart; or (ii) where no MVA chart exists, provides at least 984ft of vertical clearance over any obstacle: (A) where 3 NM surveillance separation minima applies — within 3 NM of the aircraft; otherwise (B) within 5 NM of the aircraft; or (d) is not lower than a pilot-calculated minimum altitude notified to	Doc. 4444 6.5.1.3 An IFR flight shall not be cleared for an initial approach below the appropriate minimum altitude as specified by the State concerned nor to descend below that altitude unless: a) the pilot has reported passing an appropriate point defined by a navigation aid or as a waypoint; or b) the pilot reports that the aerodrome is and can be maintained in sight; or c) the aircraft is conducting a visual approach; or d) the controller has determined the aircraft’s position by the use of an ATS surveillance system, and a lower minimum altitude has been specified for use when providing ATS surveillance services.

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			ATC by the pilot concerned. (3) Subsection (1) does not apply if: (a) by day only — the pilot has: (i) reported having continuous visual reference to ground or water; or (ii) for a departing aircraft – accepted responsibility to fly with continuous visual reference to ground or water; or ***Note*** A pilot reporting "visual" or acknowledging a departure clearance with the inclusion of the word "visual" satisfies this requirement. (b) the aircraft is executing a visual approach in accordance with sections 4.620 or 4.625; or (c) for a VFR flight by night, the aircraft is within 3NM of destination; or (d) the pilot has specifically requested clearance to operate below the level or levels normally expected to provide adequate terrain clearance; or ***Note*** Circumstances include or refer to, but are not limited to, flights with the aid of night vision imaging systems or other electronic means, or with the use of pilot calculated minimum altitude. (e) an aircraft is operating visually within the aerodrome circuit. (4) For any level assignment where paragraph (3) (a) applies, ATC must append the word "VISUAL" to any assigned level. (5) For any level assignment or clearance for which paragraph (3) (d) applies, ATC must include with the clearance a statement clearly indicating that the clearance is in accordance with the pilot's request.	
12.1.4.2	ATC may authorise operations below the LSALT to the pilot of a military or Coastwatch flight when requested by the pilot of the operation for operational reasons. This procedure does not substitute for the conditions of a visual approach at night.		Covered by 4.0405 (3) (d)	Nil
12.1.5.1	**12.1.5 Clearance Limits** When a clearance limit is cancelled, an onwards clearance specifying the level and route to be flown from that point must be issued.		No equivalent	Doc. 4444 4.5.7.1.3If an aircraft has been cleared to an intermediate point in adjacent controlled airspace, the appropriate ATC unit will then be responsible for issuing, as soon as practicable, an amended clearance to the destination aerodrome.
12.1.5.2	A description of a holding path to be flown at the clearance limit is not required when: (a) the holding point is published in aeronautical documents; (b) a clearance limit has been imposed temporarily and it is expected that the requirement to hold will have elapsed before the aircraft arrives at the designated holding point.		No equivalent	Doc. 4444 6.5.5.5 Holding and holding pattern entry shall be accomplished in accordance with procedures established by the appropriate ATS authority and published in AIPs. If entry and holding procedures have not been published or if the procedures are not known to a flight crew, the appropriate air traffic control unit shall specify the designator of the location or aid to be used, the inbound track, radial or bearing, direction of turn in the holding pattern as well as the time of the outbound leg or the distances between which to hold.
12.1.6.1	**12.1.6 Clearance Readbacks**		No equivalent	Doc. 4444 4.5.7.5.2 The controller shall listen to the readback to ascertain that the clearance or instruction

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	ATS personnel must ensure that those elements identified in AIP are to be read back correctly by the pilot.			has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the readback.
12.1.7.1	**12.1.7 Transfer of identification** Transfer of identification may be carried out by 1 of the following methods: (a) designation of the position indication by automated means, if only 1 position indication is indicated and there is no possible doubt of correct identification; (b) notification of the aircraft's discrete SSR code or aircraft address; (c) notification that the aircraft is SSR Mode S-equipped with an aircraft identification feature when SSR Mode S coverage is available; (d) notification that the aircraft is ADS-B equipped with an aircraft identification feature when compatible ADS-B coverage is available; (e) direct designation (pointing with the finger) of the position indication, if the 2 situation displays are adjacent, or if a common conference type of situation display is used; Note Attention must be given to any errors which might occur due to parallax effects. (f) designation of the position indication by reference to, or in terms of, bearing and distance from a geographical position or navigational facility accurately indicated on both situation displays, together with the track of the observed position indication if the route of the aircraft is not known to both controllers; *Note Caution must be exercised before transferring identification using this method, particularly if other position indications are observed on similar headings and in close proximity to the aircraft under control. Inherent radar deficiencies, such as inaccuracies in bearing and distance of the radar position indications displayed on individual situation displays and parallax errors, may cause the indicated position of an aircraft in relation to the known point to differ between the 2 situation displays.* (g) the transferring controller instructing the aircraft to change SSR code, and the accepting controller observing the change; (h) the transferring controller instructing the aircraft to squawk/transmit IDENT, and the accepting controller observing this response. *Note Use of procedures (g) and (h) requires prior coordination between the controllers, since the indications to be observed by the accepting controller are of short duration.*		No equivalent	Doc. 4444 8.6.3.2 Transfer of identification shall be effected by one of the following methods: a) designation of the position indication by automated means, provided that only one position indication is thereby indicated and there is no possible doubt of correct identification; b) notification of the aircraft's discrete SSR code or aircraft address; c) notification that the aircraft is SSR Mode S-equipped with an aircraft identification feature when SSR Mode S coverage is available; d) notification that the aircraft is ADS-B-equipped with an aircraft identification feature when compatible ADS-B coverage is available; e) direct designation (pointing with the finger) of the position indication, if the two situation displays are adjacent, or if a common "conference" type of situation display is used; f) designation of the position indication by reference to, or in terms of bearing and distance from, a geographical position or navigational facility accurately indicated on both situation displays, together with the track of the observed position indication if the route of the aircraft is not known to both controllers; "g) where applicable, issuance of an instruction to the aircraft by the transferring controller to change SSR code and the observation of the change by the accepting controller; or h) issuance of an instruction to the aircraft by the transferring controller to squawk/transmit IDENT and observation of this response by the accepting controller.
12.1.8.1	**12.1.8 Clearance by Establishment of 2-way Communications** For this subsection, 2-way communication is established if ATC responds to a pilot's radio call with the aircraft's radio identification.	4.0410.01	**4.410 Clearance by Establishment of 2-way Communications** (1) For this subsection, 2-way communication is established if ATC responds to a pilot's radio call with the aircraft's radio identification.	Nil
12.1.8.2	In addition to issuing a pilot with a specific clearance or instruction, ATC may authorise an aircraft to enter Class D airspace by establishing 2-way communication with it.	4.0410.02	(2) In addition to issuing a pilot with a specific clearance or instruction, ATC may authorise an aircraft to enter Class D airspace by establishing 2-way communication with it.	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	Note "1 If ATC responds to a radio call with the aircraft identification (generally including an instruction or report requirement), 2-way radio communications have been established and the pilot can enter the Class D airspace. 2 If ATC responds to the initial radio call without using the aircraft identification, 2-way radio communication has not been established and the pilot may not enter the Class D airspace. 3 If workload or traffic conditions prevent immediate entry into the Class D airspace, ATC should expressly instruct the pilot to remain outside the Class D airspace. 4 The pilot of an aircraft is required to comply with any instruction that ATC includes with the establishment of 2-way communication, including an instruction to remain outside the Class D airspace"		***Note:*** 1 If ATC responds to a radio call with the aircraft identification (generally including an instruction or report requirement), 2-way radio communications have been established and the pilot can enter the Class D airspace. 2 If ATC responds to the initial radio call without using the aircraft identification, 2-way radio communication has not been established and the pilot may not enter the Class D airspace. 3 If workload or traffic conditions prevent immediate entry into the Class D airspace, ATC should expressly instruct the pilot to remain outside the Class D airspace. 4 The pilot of an aircraft is required to comply with any instruction that ATC includes with the establishment of 2-way communication, including an instruction to remain outside the Class D airspace"	
12.2.1.1	**Section 12.2 En-route/Terminal Clearances** **12.2.1 Departure Clearances** Where SIDs are published, they must be issued to IFR aircraft departing at night, or by day in IMC.		No equivalent	Doc. 4444 6.3.1.2 At aerodromes where standard instrument departures (SIDs) have been established, departing aircraft should normally be cleared to follow the appropriate SID.
12.2.1.2	Tracking instructions must be specified when: (a) SIDS are not published; or (b) a SID is cancelled; or (c) a visual departure clearance is issued in VMC by day in lieu of a SID; or (d) aircraft or ground based navigation aid(s) are not available.	4.0605	**4.605 Visual departure instead of SID** ATC may offer a visual departure instead of a SID to the pilot of an IFR aircraft, but only: (a) by day; and (b) if the weather conditions allow the aircraft to maintain terrain clearance visually until reaching MSA or LSALT.	Doc. 4444 6.3.1 General 6.3.1.1 Clearances for departing aircraft shall specify, when necessary for the separation of aircraft, direction of take-off and turn after take-off; heading or track to be made good before taking up the cleared departure track; level to maintain before continuing climb to assigned level; time, point and/or rate at which a level change shall be made; and any other necessary manoeuvre consistent with safe operation of the aircraft. 6.3.1.2 At aerodromes where standard instrument departures (SIDs) have been established, departing aircraft should normally be cleared to follow the appropriate SID.
12.2.1.3	ATC must notify the pilot of the expectation for a visual departure.		No equivalent	Nil
12.2.2.1	**12.2.2 ATC Route Clearances** An ATC route clearance must include at least the first position at which the flight-planned route is joined.		No equivalent	Doc. 4444 4.5.7.2.1The route of flight shall be detailed in each clearance when deemed necessary. The phrase “cleared flight planned route” may be used to describe any route or portion thereof, provided the route or portion thereof is identical to that filed in the flight plan and sufficient routing details are given to definitely establish the aircraft on its route. The phrases “cleared (designation) departure” or “cleared (designation) arrival” may be used when standard departure or arrival routes have been established by the appropriate ATS authority and published in Aeronautical Information Publications (AIPs).
12.2.2.2	Route clearances issued to aircraft operating VFR at night must be in accordance with the flight-planned route except:	4.0415	**4.415 Route clearances for VFR aircraft at night** ATC must ensure route clearances issued to aircraft operating VFR	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(a) when the pilot specifically requests another route; or (b) when an amended route is deemed satisfactory in relation to the planned route (e.g. coastline flying); or (c) for short-term route variations: (i) by vectoring; or (ii) within 30 NM of a controlled aerodrome, by visual tracking.		at night are in accordance with the flight-planned route except: (a) when the pilot specifically requests another route; or (b) when an amended route is deemed satisfactory in relation to the planned route (e.g. coastline flying); or (c) for short-term route variations: (i) by vectoring; or (ii) within 30 NM of a controlled aerodrome, by visual tracking.	
12.2.2.3	Route clearances authorising RNAV tracking must only be permitted for flight segments contained within ATS surveillance system coverage unless: (a) the route is published in AIP; or (b) prior coordination has been conducted between affected units.		No equivalent	Nil
12.2.3.1	**12.2.3 STAR Clearances** A STAR clearance must contain: (a) STAR identifier; (b) a TRANSITION route when applicable; (c) a RUNWAY when applicable; and (d) an instrument or visual termination procedure when applicable; and (e) a LEVEL assignment.		No equivalent	Doc. 4444 6.5.2.3 Standard clearances for arriving aircraft shall contain the following items: a) aircraft identification; b) designator of the assigned STAR if applicable; c) runway-in-use, except when part of the STAR description; d) cleared level; and e) any other necessary instructions or information not contained in the STAR description, e.g. change of communications.
12.2.3.2	Descent must be assigned in sufficient time to allow pilots to comply with vertical navigation requirements.		No equivalent	Doc. 4444 4.5.1.5 ATC clearances must be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for it to comply with them.
12.2.3.3	When an aircraft is vectored away from a Transition Route associated with a STAR, and the intention is that the aircraft will rejoin the Transition to complete the STAR procedure, ATC must re-state any restrictions/requirements applicable to the Transition Route. When an aircraft is vectored, the aircraft must be re-positioned to enable the Arrival Route to be flown and re-cleared.		No equivalent	Doc. 4444 6.5.2.4.5 When an arriving aircraft is vectored or cleared to proceed to a point that is not on the STAR, all the published speed and level restrictions of the STAR are cancelled and the controller shall: a) reiterate the cleared level; b) provide speed and level restrictions as necessary; and c) notify the pilot if it is expected that the aircraft will be instructed to subsequently rejoin the STAR. Note. — See 8.6.5.2 regarding prescribed obstacle clearance." 6.5.2.4.6 ATC instructions to an aircraft to rejoin a STAR shall include: a) the designator of the STAR to be rejoined, unless advance notification of rejoin has been provided in accordance with 6.5.2.4.5; b) the cleared level on rejoining the STAR in accordance with 6.5.2.4.1; and

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				c) the position at which it is expected to rejoin the STAR.
12.2.4.1	**12.2.4 Approach Clearances** A controller must not issue an air traffic clearance which authorises or requires a pilot to descend in IMC below the lowest safe altitude for the route segment in a manner different from that specified in: (a) DME, DME or GPS, or GPS Arrival procedures; (b) the procedures, plan and profile diagram of IAL charts published in AIP/FLIP Terminal; (c) an approved instrument approach procedure published in NOTAM; (d) approved ATS surveillance system procedures.		Covered by 4.405 (2)	Doc. 4444 6.5.1.3 An IFR flight shall not be cleared for an initial approach below the appropriate minimum altitude as specified by the State concerned nor to descend below that altitude unless: a) the pilot has reported passing an appropriate point defined by a navigation aid or as a waypoint; or b) the pilot reports that the aerodrome is and can be maintained in sight; or c) the aircraft is conducting a visual approach; or d) the controller has determined the aircraft's position by the use of an ATS surveillance system, and a lower minimum altitude has been specified for use when providing ATS surveillance services.
12.2.4.2	When a flight other than that described in paragraph 12.2.4.3 is within 30 NM of an aerodrome, a visual approach may be authorised by day or night to: (a) a VFR flight; or (b) an IFR flight when: (i) the pilot has established and can continue flight to the aerodrome with continuous visual reference to the ground or water; and (ii) the visibility along the flight path is not less than 5,000 M (or by day, the aerodrome is in sight).	4.0620.01	**4.620 Visual approach** (1) Subject to subsection (2), ATC may approve a request for or initiate a clearance for, a visual approach to an aerodrome, but only when all the following apply: (a) The aircraft is within 30 NM of the aerodrome. (b) The pilot has established and can continue flight to the destination aerodrome with continuous visual reference to ground or water. (c) Either: (i) the visibility at the destination aerodrome is 5,000 m or more, or (ii) by day only — the pilot has reported the aerodrome in sight.	Doc. 4444 Definition Visual approach. An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain. 6.5.3.1 Subject to the conditions in 6.5.3.3, clearance for an IFR flight to execute a visual approach may be requested by a flight crew or initiated by the controller. In the latter case, the concurrence of the flight crew shall be required." 6.5.3.3 "An IFR flight may be cleared to execute a visual approach provided the pilot can maintain visual reference to the terrain and: a) the reported ceiling is at or above the level of the beginning of the initial approach segment for the aircraft so cleared; or b) the pilot reports at the level of the beginning of the initial approach segment or at any time during the instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed."
12.2.4.3	In addition to the requirements of paragraph 12.2.4.2, with the exception of Australian and New Zealand operators and aircraft conducting independent visual approaches at Sydney, HEAVY jet aircraft may only be assigned a visual approach when: (a) specifically requested by the pilot and the pilot has reported the landing runway is in sight; or (b) the straight-in approach aid is unserviceable.	4.0620.02	(d) For a HEAVY or SUPER category aircraft: (i) the aircraft is one operated by an Australian or New Zealand operator; or (ii) the visual approach is being conducted in accordance with section 4.625 (approaches to multiple runways); or (iii) the pilot has specifically requested a visual approach and has reported the runway in sight.	Doc. 4444 6.5.3.1 Subject to the conditions in 6.5.3.3, clearance for an IFR flight to execute a visual approach may be requested by a flight crew or initiated by the controller. In the latter case, the concurrence of the flight crew shall be required."
12.2.4.4	In the case of the straight-in approach aid being unserviceable, the aircraft must be: (a) vectored to intercept final no closer than 8 NM from the runway threshold, at an altitude not less than 2,500 FT above aerodrome level	4.0620.03	(e) When the visual approach will take place at night: (i) ATC has issued instructions ensuring the adequate terrain clearance is maintained until the aircraft is established on final approach with vertical guidance – either electronic or optical, or within the relevant circling area; and	Doc. 4444 8.9.5.1 "8.9.5 Vectoring for visual approach The controller may initiate vectoring of an aircraft for visual approach provided the reported ceiling is above the minimum altitude applicable to vectoring and

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	(AAL); and (b) assigned a straight-in visual approach when: (i) established on final or on a heading to intercept final course at an angle of not more than 30 degrees; (ii) visual glideslope guidance (VASIS/PAPI) is available; and (iii) the pilot has reported the runway in sight.		(ii) for aircraft being vectored or under ATC instructions that deviate the aircraft from flight planned track — the aircraft has been given heading or tracking instructions to: (A) intercept final; or (B) position the aircraft within the circling area of the aerodrome.	meteorological conditions are such that, with reasonable assurance, a visual approach and landing can be completed." 8.9.5.2 Clearance for visual approach shall be issued only after the pilot has reported the aerodrome or the preceding aircraft in sight, at which time vectoring would normally be terminated.
12.2.4.5	When being vectored at night, an IFR aircraft, other than a HEAVY jet aircraft as described at paragraph 12.2.4.3, may be assigned a visual approach at any distance from an aerodrome, if: (a) the aircraft has been assigned the minimum vector altitude; and (b) the aircraft has been given heading instructions to intercept final or to position the aircraft within the circling area of the aerodrome; and (c) the following phraseology is used to assign the visual approach: (i) “WHEN ESTABLISHED ON THE VASIS/GLIDEPATH CLEARED VISUAL APPROACH”; or (ii) “WHEN ESTABLISHED IN THE CIRCLING AREA CLEARED VISUAL APPROACH”.		Covered by (e) above	
12.3.1.1	**Section 12.3 Aerodrome Clearances** **12.3.1 General** In addition to the provisions of ICAO PANS-ATM, Chapter 7.1, aerodrome controllers must issue information and clearances with the object of preventing collisions between aircraft and vehicles operating on the helicopter movement area, but excluding helicopter landing sites situated on apron areas or beyond the sight of the tower controller.		No equivalent	Doc. 4444 7.1 FUNCTIONS OF AERODROME CONTROL TOWERS 7.1.1 General 7.1.1.1 Aerodrome control towers shall issue information and clearances to aircraft under their control to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of an aerodrome with the object of preventing collision(s) between: a) aircraft flying within the designated area of responsibility of the control tower, including the aerodrome traffic circuits; b) aircraft operating on the manoeuvring area; c) aircraft landing and taking off; d) aircraft and vehicles operating on the manoeuvring area; e) aircraft on the manoeuvring area and obstructions on that area.
12.3.1.2	Whenever more than one runway is in use, the runway number must be included in the line up, take-off or landing clearance.	4.0730.01	**4.730 Control of departing aircraft** (1) Whenever more than one runway is in use, ATC must include the designator of the departure runway in a line up, take-off or landing clearance. ***Note*** This standard supersedes the ICAO Doc. 4444 provision requiring the inclusion of the designator of the departure runway in all circumstances.	Doc. 4444 7.9.3.4 Subject to 7.9.3.2, the take-off clearance shall be issued when the aircraft is ready for take-off and at or approaching the departure runway, and the traffic situation permits. To reduce the potential for misunderstanding, the take-off clearance shall include the designator of the departure runway.
12.3.1.3	When issuing clearances or instructions, controllers must take into account the hazards that may be caused by thrust stream turbulence.		No equivalent	Doc. 4444 7.4.1.6.2 In issuing clearances or instructions, air traffic controllers should take into

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	When such hazards may not be obvious to other aircraft, vehicles and personnel, an appropriate caution must be issued.			account the hazards caused by jet blast and propeller slipstream to taxiing aircraft, to aircraft taking off or landing, particularly when intersecting runways are being used, and to vehicles and personnel operating on the aerodrome.
12.3.2.1	**12.3.2 Taxi and Pre-Taxi Instructions** A taxi instruction which contains a taxi limit beyond a runway must include a “CROSS RUNWAY (number)” instruction.		No equivalent	7.6.3.1.1.2 When a taxi clearance contains a taxi limit beyond a runway, it shall contain an explicit clearance to cross or an instruction to hold short of that runway.
12.3.2.2	Aircraft required to hold short of a runway intersecting the taxi route, must be issued a taxi instruction limit of the holding point associated with the intersecting runway. Taxi instructions must not include a position beyond that of a required intermediate holding point.		No equivalent	Doc. 4444 7.6.3.1.1.2 When a taxi clearance contains a taxi limit beyond a runway, it shall contain an explicit clearance to cross or an instruction to hold short of that runway.
12.3.2.3	Departing and arriving aircraft must be issued with an instructions to “CROSS RUNWAY (number)” if previously issued with: (a) a taxi instruction limit of the holding point of a runway intersecting the taxi route; or (b) an instruction to “HOLD SHORT” of a runway.		No equivalent	Doc. 4444 7.6.3.1.1.2 When a taxi clearance contains a taxi limit beyond a runway, it shall contain an explicit clearance to cross or an instruction to hold short of that runway. 12.3.4.7 TAXI PROCEDURES ... for departure *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 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))]; ... where aerodrome information is not available from an alternative source such as ATIS 12.3.4.9 TO CROSS A RUNWAY *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)]; Note.— The pilot will, when requested, report “RUNWAY VACATED” when the entire aircraft is

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				beyond the relevant runway-holding position. *e) RUNWAY VACATED. * Denotes pilot transmission.
12.3.3.1	**12.3.3 Line Up and Take-off Clearances** When aircraft are authorised to line up on the same or intersecting runways simultaneously, traffic information must be provided as appropriate.	4.0730.02	(2) When aircraft are authorised to line up on the same or intersecting runways simultaneously, ATC must tell each aircraft involved about the simultaneous line up	Nil
12.3.3.2	An aircraft delayed by the traffic situation must be issued traffic information if appropriate, and instructed to hold position off the runway, or must be issued a conditional line-up clearance.		No equivalent	Doc. 4444 6.3.3 Departure sequence 6.3.3.1 Departing aircraft may be expedited by suggesting a take-off direction which is not into the wind. It is the responsibility of the pilot-in-command of an aircraft to decide between making such a take-off or waiting for take-off in a preferred direction. 6.3.3.2 If departures are delayed, the delayed flights shall normally be cleared in an order based on their estimated time of departure, except that deviation from this order may be made to: a) facilitate the maximum number of departures with the least average delay; b) accommodate requests by an operator in respect of that operator's flights to the extent practicable. 6.3.3.3 Air traffic control units should, when practicable, advise aircraft operators or their designated representatives when anticipated delays are expected to exceed 30 minutes.
12.3.3.3	When an instruction to line up does not include a take-off clearance and is issued with the departure instructions, the appropriate holding instruction must be given.	4.0730.03	(3) When an instruction to line up does not include a take-off clearance and is issued with the departure instructions, ATC must issue the departure instructions at the beginning of the instruction and give the appropriate holding instruction at the end.	Doc. 4444 12.3.4.10 PREPARATION FOR TAKE-OFF a) UNABLE TO ISSUE (designator) DEPARTURE (reasons); b) REPORT WHEN READY [FOR DEPARTURE]; 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);

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				... 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.
12.3.3.4	The words “TAKE-OFF” must be used only for clearing an aircraft for take-off.		No equivalent	Doc. 4444 7.9.3.3 The expression TAKE-OFF shall only be used in radiotelephony when an aircraft is cleared for take-off or when cancelling a take-off clearance. Note. — The expression TORA, pronounced TOR-AH, may be used to indicate take-off run available.
12.3.3.5	The words “TAKE-OFF” must be used as the last words of a take-off clearance, except when the following information must be appended: (a) an instruction specifying a turn or circuit direction; or (b) at a military airfield the state of the arrestor system;		No equivalent	Doc. 4444 12.3.4.11 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; ... for helicopter operations i) CLEARED FOR TAKE-OFF [FROM (location)] (present position, taxiway, final approach and take-off area, runway and number);
12.3.3.6	In all other cases, the words “TAKE-OFF” must be used as the last words of the take- off clearance.		No equivalent	

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
				*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.
12.3.3.7	Unless requested, a take-off clearance must not be issued to a helicopter when the tailwind component exceeds 5 KT.		Dealt with in another standard for helicopters.	Nil
12.3.3.8	Within controlled airspace and at a controlled aerodrome, helicopters may be granted an airways and/or take-off clearance from any area which is nominated by ATC or the pilot, and assessed by the pilot as being suitable as a HLS.		Dealt with in another standard for helicopters.	Nil
12.3.3.9	Within a Class D CTR, a clearance to take-off is a clearance to operate within the CTR.	4.0730.04	(4) At a controlled aerodrome in Class D airspace, ATC must consider a clearance to take-off as including a clearance to operate within the control zone or depart the control zone in accordance with the ready report.	Nil
12.3.4.1	**12.3.4 Landing Clearances** Clearance to land must not be issued before: (a) the aircraft has commenced final approach of a PAR or straight in instrument approach; or (b) the aircraft has been sighted by the tower controller: (i) on the late downwind leg of the circuit pattern; (ii) on base leg; or (iii) on final in the case of a straight in visual approach.		No equivalent	Doc. 4444 6.5.3.6 Transfer of communications to the aerodrome controller should be effected at such a point or time that information on essential local traffic, if applicable, and clearance to land or alternative instructions can be issued to the aircraft in a timely manner. 7.10.2 Clearance to land An aircraft may be cleared to land when there is reasonable assurance that the separation in 7.10.1, or prescribed in accordance with 7.11 will exist when the aircraft crosses the runway threshold, provided that a clearance to land shall not be issued until a preceding landing aircraft has crossed the runway threshold. To reduce the potential for misunderstanding, the landing clearance shall include the designator of the landing runway. 8.9.6.1.7 Clearance to land or any alternative clearance received from the aerodrome controller or, when applicable, the procedural controller should normally be passed to the aircraft before it reaches a distance of 4 km (2 NM) from touchdown.
12.3.4.2	Observation by radar satisfies the sighting requirement.		No equivalent	
12.3.4.3	Unless requested by the pilot, a landing clearance must not be issued to a helicopter when the tailwind exceeds 5 KT.	4.0715.01	**4.715 Control of helicopters** (1) Unless requested or the pilot agrees, ATC must not require a helicopter to take-off or land in a direction when the tailwind component exceeds 5 kts. (2) With appropriate tracking instructions, ATC may issue take-off clearance to helicopters: (a) from manoeuvring areas other than active runways or (b) in diverse directions from active runways. (3) At pilot request, ATC may authorise the aircraft to become airborne from or land on: (a) non−movement areas,	Nil

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
			(b) an area not authorised for helicopter use, or (c) an area off the aerodrome; however, the authorisation must, respectively, be in the form of an authorisation to become airborne or an instruction to report on the ground.	
12.3.4.4	When a tower controller has been advised that a general aviation aircraft with retractable undercarriage has experienced abnormal operations, a check gear down call must be made with the landing clearance.	4.0720.01	**4.720 Control of arriving aircraft** (1) When ATC has been advised that an aircraft with retractable undercarriage has experienced abnormal operations, ATC must include the phrase 'CHECK GEAR DOWN' with the landing clearance.	Doc. 4444 7.4.1.7.1 Whenever an abnormal configuration or condition of an aircraft, including conditions such as landing gear not extended or only partly extended, or unusual smoke emissions from any part of the aircraft, is observed by or reported to the aerodrome controller, the aircraft concerned shall be advised without delay.
12.3.4.5	A military aircraft must be instructed to check gear down when being cleared for an overshoot, cleared to land or cleared for a touch-and-go landing. Controllers must issue the instruction as soon as possible after a pilot indicates that his undercarriage is down and locked. Where a pilot neglects to declare his undercarriage status, the controller must instruct the pilot to check gear down.			Nil
12.3.4.6	If an arriving aircraft reports at a position where it should normally have been seen but has not been sighted, the aircraft must be advised of not being in sight by the controller when cleared to land.		No equivalent	Doc. 4444 6.5.3.6 Transfer of communications to the aerodrome controller should be effected at such a point or time that information on essential local traffic, if applicable, and clearance to land or alternative instructions can be issued to the aircraft in a timely manner. 7.10.2 Clearance to land An aircraft may be cleared to land when there is reasonable assurance that the separation in 7.10.1, or prescribed in accordance with 7.11 will exist when the aircraft crosses the runway threshold, provided that a clearance to land shall not be issued until a preceding landing aircraft has crossed the runway threshold. To reduce the potential for misunderstanding, the landing clearance shall include the designator of the landing runway. 8.9.6.1.7 Clearance to land or any alternative clearance received from the aerodrome controller or, when applicable, the procedural controller should normally be passed to the aircraft before it reaches a distance of 4 km (2 NM) from touchdown.
12.3.4.7	Landing clearances must apply to aircraft which are restricted to the same or crossing landing paths. However, when such aircraft are permitted to land in parallel paths, clearances may be given for simultaneous landings. In these circumstances, notwithstanding that the pilot of each aircraft must be responsible for the maintenance of separation, the tower controller must issue alternative instructions should the possibility of a confliction arise.		No equivalent	Nil
12.3.4.8	The tower controller must allocate one landing sequence number to a landing formation, thus treating the formation as one aircraft.		No equivalent	Doc. 4444 7.7.1.1 Aircraft in the traffic circuit shall be controlled to provide the separation minima outlined in 7.9.2, 7.10.1 and 7.11 and Chapter 5, Section 5.8,

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				except that: a) aircraft in formation are exempted from the separation minima with respect to separation from other aircraft of the same flight; b) aircraft operating in different areas or different runways on aerodromes suitable for simultaneous landings or take-offs are exempted from the separation minima; c) separation minima shall not apply to aircraft operating under military necessity in accordance with Chapter 16, Section 16.1.
12.3.4.9	When the landing area is occupied by another aircraft or is obstructed, arriving aircraft may be issued with a clearance to: (a) continue approach if there is no immediate assurance that the landing areas will become available. This must be followed by the appropriate clearance; or (b) go around, or orbit if in a position to do so, should the landing area not be available. When required, a clearance to commence a second approach or hold must follow these instructions. The nature of the obstruction must be advised if not apparent to the approaching aircraft.		No equivalent	Doc. 4444 6.5.5.10 For the purpose of maintaining a safe and orderly flow of traffic, an aircraft may be instructed to orbit at its present or at any other position, provided the required obstacle clearance is ensured. 12.3.4.15 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].
13.1.1.1	**Chapter 13: Abnormal Operations** **Section 13.1 Weather Deviation and RVSM Contingency Procedures** **13.1.1 Weather Deviation in Oceanic Airspace** In order to indicate priority, the pilot may initiate communication by stating “WEATHER DEVIATION REQUIRED”. The pilot retains the option of initiating the communications using the urgency call “PAN PAN” three times to alert all listening parties of a special handling condition which will receive ATC priority for issuance of a clearance or assistance.		No equivalent	Doc. 4444 15.2.3 Weather deviation procedures 15.2.3.1 GENERAL Note. — The following procedures are intended for deviations around adverse meteorological conditions. 15.2.3.1.1 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 should initiate the communications using the urgency call “PAN PAN” (preferably spoken three times).
13.1.1.2	When a pilot requests clearance to deviate from track, the controller must: (a) issue a clearance to deviate from track, if there is no conflicting traffic in the lateral dimension; or (b) establish vertical separation and issue a clearance to deviate from track, if there is conflicting traffic in the lateral dimension; or (c) if unable to establish vertical separation, and there is conflicting		No equivalent	Doc. 4444 15.2.3.2.2 ATC should take one of the following actions: a) when appropriate separation can be applied, issue clearance to deviate from track; or b) if there is conflicting traffic and ATC is unable to establish appropriate separation, ATC shall: 1) advise the pilot of inability to issue clearance for the

Original MOS ref	Original MOS provision	Proposed MOS order ref	Proposed MOS	ICAO Reference Annex 11 or ICAO Doc. 4444 standard
	traffic in the lateral dimension; (i) advise the pilot that clearance for the requested deviation is not available; (ii) provide traffic about, and to, all affected aircraft; and (iii) request pilot intentions. *Note Position may be expressed as direction and distance, or actual or estimated location or ATS route/ track code.*			requested deviation; 2) advise the pilot of conflicting traffic; and 3) request the pilot's intentions.
13.1.2.1	**13.1.2 Aircraft Equipment Failures in RVSM Airspace** If a pilot of an RVSM approved aircraft operating in the RVSM flight level band advises "NEGATIVE RVSM", the controller must, as required: (a) pass traffic information; (b) obtain the pilot's intentions; (c) provide alternative separation; (d) update the FDR; and (e) advise adjacent ATC facilities/sectors of the situation.		No equivalent	Doc. 4444 9.5.2.2 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 the RVSM airspace by ATC when it is possible to do so. 9.5.2.3 Pilots shall inform ATC, as soon as practicable, of any restoration of the proper functioning of equipment required to meet the RVSM requirements. 9.5.2.4 The first ACC to become aware of a change in an aircraft's RVSM status shall coordinate with adjacent ACCs, as appropriate.
13.1.2.2	If a pilot advises that redundancy in primary altimetry systems is lost, but the remaining altimetry system is functioning normally, the controller should acknowledge the situation and continue to monitor the flight's progress. *Note RVSM separation may still be applied in this instance.*		No equivalent	Nil
13.2.1.1	**Section 13.2 In Flight Emergency Response** **13.2.1 Emergency Changes of Level** As an emergency measure, the use of flight levels separated by 500 FT (below FL290 or in RVSM airspace) or 1,000 FT (at or above FL290 in non-RVSM airspace) may be used temporarily when standard procedural separation cannot be applied provided that traffic information is issued.		No equivalent	Doc. 4444 15.7.1.1 If, during an emergency situation, it is not possible to ensure that the applicable horizontal separation can be maintained, emergency separation of half the applicable vertical separation minimum may be used, i.e. 150 m (500 ft) between aircraft in airspace where a vertical separation minimum of 300 m (1 000 ft) is applied, and 300 m (1 000 ft) between aircraft in airspace where a 600 m (2 000 ft) vertical separation minimum is applied.
13.2.1.2	If an emergency makes it necessary to clear all traffic from a particular area, ATC must broadcast the following message: (a) "EMERGENCY TO ALL CONCERNED. EMERGENCY CLIMB/DESCENT AT… (location)." Then as required by circumstances; (b) (for aircraft in holding pattern) "ALL AIRCRAFT ABOVE/BELOW ... (level) TURN RIGHT 90 DEGREES (for left hand holding pattern or left 90 degrees for right hand pattern)".		No equivalent	Doc. 4444 12.3.2.5 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.
13.2.2.1	**13.2.2 Fuel Dumping** Airspace affected by the fuel dumped from an aircraft in flight is known as the 'vapour zone' and is defined as that airspace at least		No equivalent	Doc. 4444 15.5.3.2 SEPARATION Other known traffic should be separated from the aircraft dumping fuel by:

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	1,000 FT above, 2,000 FT below, 5 NM horizontally behind and ½ NM on each side of the aircraft.			a) at least 19 km (10 NM) horizontally, but not behind the aircraft dumping fuel; b) vertical separation if behind the aircraft dumping fuel within 15 minutes flying time or a distance of 93 km (50 NM) by: 1) at least 300 m (1 000 ft) if above the aircraft dumping fuel; and 2) at least 900 m (3 000 ft) if below the aircraft dumping fuel.
13.2.2.2	In an emergency, or when fuel must be dumped without adequate warning or delay, controllers must make every effort to keep other aircraft clear of the 'vapour zone'. Additionally, ATS is responsible for: (a) noting the area where jettison was affected; (b) recording weather conditions and reporting the incident to the appropriate authority without delay.		No equivalent	Doc. 4444 15.5.3.2 SEPARATION Other known traffic should be separated from the aircraft dumping fuel by: a) at least 19 km (10 NM) horizontally, but not behind the aircraft dumping fuel; b) vertical separation if behind the aircraft dumping fuel within 15 minutes flying time or a distance of 93 km (50 NM) by: 1) at least 300 m (1 000 ft) if above the aircraft dumping fuel; and 2) at least 900 m (3 000 ft) if below the aircraft dumping fuel.
13.2.2.3	In other than emergency circumstances ATS must specify which section of a nominated track may be used for the dumping of fuel and recommend that aircraft maintain a minimum height of 6,000 FT AGL. For safety reasons fuel is not to be dumped in a circular or race-track pattern.		No equivalent	15.5.3.1.2 When an aircraft operating within controlled airspace needs to dump fuel, the flight crew shall advise ATC. The ATC unit should then coordinate with the flight crew the following: a) the route to be flown, which, if possible, should be clear of cities and towns, preferably over water and away from areas where thunderstorms have been reported or are expected; b) the level to be used, which should be not less than 1 800 m (6 000 ft); and c) the duration of the fuel dumping.
13.2.2.4	For the purpose of providing separation, all the airspace containing the track specified, the selected altitude and a full allowance for the 'vapour zone' must be treated as reserved airspace from the time dumping is expected to commence until 5 MIN after it has been completed.		No equivalent	Nil
13.2.2.5	Known aircraft in Class G airspace likely to be affected are to be warned of the fuel dumping and the approximate location of the 'vapour zone'.		No equivalent	Doc. 4444 15.5.3.4.1 15.5.3.4 INFORMATION TO OTHER ATS UNITS AND NON-CONTROLLED TRAFFIC A warning message shall be broadcast on appropriate frequencies for non-controlled traffic to remain clear of the area concerned. Adjacent ATC units and control sectors should be informed of the fuel dumping taking place and requested to broadcast on applicable frequencies an appropriate warning message for other

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				traffic to remain clear of the area concerned.
13.2.2.6	The warning must also be broadcast on the appropriate frequencies. Warnings are to continue during the period of fuel dumping and for 5 MIN after it has been completed.		No equivalent	Doc. 4444 15.5.3.4.1 15.5.3.4 INFORMATION TO OTHER ATS UNITS AND NON-CONTROLLED TRAFFIC A warning message shall be broadcast on appropriate frequencies for non-controlled traffic to remain clear of the area concerned. Adjacent ATC units and control sectors should be informed of the fuel dumping taking place and requested to broadcast on applicable frequencies an appropriate warning message for other traffic to remain clear of the area concerned.
14.1.1.1	**Chapter 14: Aeronautical Communications** **Section 14.1 General** **14.1.1 Acknowledging Receipt of Verbal Coordination** When an ATS unit receives a verbal clearance or instruction from another ATS unit that includes any of the following, it must read back: (a) any ATS route number or name; (b) any tracking point; (c) assigned level; (d) any SID; (e) any STAR identifier, including any runway specified; (f) assigned SSR code; (g) an assigned Mach No.; (h) any heading, including direction of turn; (i) any item notified in the clearance as “AMENDED” or “RECLEARED”; (j) cancellation of a clearance; (k) a level requirement/restriction; (l) any clearance limit imposed; (m) the word “VISUAL” when appended to level, heading, or turn instructions.	4.1010.01	**4.1010 Acknowledging receipt of verbal coordination** A controller must read back the key elements of any received coordination, clearance or instruction received from another ATS unit.	Nil
14.1.1.2	When an ATS unit receives a position report, a level check or a change of level from another ATS unit, the acknowledgment must include: (a) the aircraft callsign; (b) the advised level.		No equivalent	Nil
14.1.1.3	The originating unit must obtain a correct readback. Under no circumstances must receipt of a message be acknowledged by the callsign only of the acknowledging unit.		No equivalent	Nil
14.1.1.4	An acknowledgment must not be given until the receiving operator is satisfied that the transmitted information has been received correctly.		No equivalent	Nil

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14.1.2.1	**14.1.2 Telephony Protocols** The use of radiotelephony on aeronautical channels is to be in accordance with ICAO Annex 10, Vol. II, ICAO PANS-ATM and the Australian Aeronautical Information Publication (AIP). However, the AIP takes precedence in the event of any inconsistency.		No equivalent	CASR 172.070 Aeronautical telecommunications procedures An ATS provider must ensure that any air traffic service that it provides is provided in accordance with: (a) the radiotelephony procedures set out in Parts 1 and 2 of the AIP; and (b) the procedures for aeronautical telecommunications set out in Volume II of Annex 10, as varied by Gen 1.7 of Part 1 of the AIP.
14.1.3.1	**14.1.3 Aeronautical Fixed Telecommunications Network** The use of the Aeronautical Fixed Telecommunication Network (AFTN) must be in accordance with the provisions of ICAO.		No equivalent	CASR 172.070 Aeronautical telecommunications procedures An ATS provider must ensure that any air traffic service that it provides is provided in accordance with: (a) the radiotelephony procedures set out in Parts 1 and 2 of the AIP; and (b) the procedures for aeronautical telecommunications set out in Volume II of Annex 10, as varied by Gen 1.7 of Part 1 of the AIP.