International Civil Aviation Organization
Organisation de l'aviation civile internationale
Organización de Aviación Civil Internacional
Международная организация гражданской авиации
منظمة الطيران المدني الدولي
国际民用航空组织

Tel.: +1 (514) 954-8219 ext. 6712

Ref.: AN 7/1.3.94-09/46 18 June 2009

Subject: Proposals for the amendment of Annex 10, Volume I, concerning instrument landing system (ILS) coverage requirements, global navigation satellite system (GNSS) signal-in-space performance requirements and GLObal NAvigation Satellite System (GLONASS) system requirements

Action required: Comments to reach Montreal by 28 September 2009

Sir/Madam,

1. I have the honour to inform you that the Air Navigation Commission, at the fourth and fifth meetings of its 181st Session held on 21 May and 9 June 2009, considered proposals developed by the Navigation Systems Panel (NSP) Working Group of the Whole to amend the Standards and Recommended Practices (SARPs) in Annex 10 — *Aeronautical Telecommunications*, Volume I — *Radio Navigation Aids* concerning instrument landing system (ILS) coverage requirements, global navigation satellite system (GNSS) signal-in-space performance requirements and GLObal NAvigation Satellite System (GLONASS) system requirements, as shown in Attachment A, and authorized their transmission to Contracting States and appropriate international organizations for comments.

2. The purpose of the proposed amendment is to:

a) improve the ILS signal quality at aerodromes where building or terrain reflections cause interference of the reflected signal with the desired signal;

b) enable Category I approach operations supported by satellite-based augmentation system (SBAS); and

c) reflect the evolution of the GLONASS system.

999 University Street
Montréal, Quebec
Canada H3C 5H7
Tel.: +1 514-954-8219
Fax: +1 514-954-6077
E-mail: icaohq@icao.int
www.icao.int

3. In examining the proposed amendments, you should not feel obliged to comment on editorial aspects as such matters will be addressed by the Air Navigation Commission during its final review of the draft amendment.

4. May I request that any comments you may wish to make on the amendment proposals be dispatched to reach me not later than 28 September 2009. The Air Navigation Commission has asked me to specifically indicate that comments received after the due date may not be considered by the Commission and the Council. In this connection, should you anticipate a delay in the receipt of your reply, please let me know in advance of the due date.

5. For your information, the proposed amendment to Annex 10, Volume I, is envisaged for applicability on 18 November 2010. Any comments you may have thereon would be appreciated.

6. The subsequent work of the Air Navigation Commission and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the proposals. Please note that, for the review of your comments by the Air Navigation Commission and the Council, replies are normally classified as “agreement with or without comments”, “disagreement with or without comments” or “no indication of position”. If in your reply the expressions “no objections” or “no comments” are used, they will be taken to mean “agreement without comment” and “no indication of position”, respectively. In order to facilitate proper classification of your response, a form has been included in Attachment B which may be completed and returned together with your comments, if any, on the proposals in Attachment A.

Accept, Sir/Madam, the assurances of my highest consideration.

Taïeb Chérif
Secretary General

Enclosures:

A — Proposed amendment to Annex 10, Volume I
B — Response form

ATTACHMENT A to State letter AN 7/1.3.94-09/46

PROPOSED AMENDMENT TO ANNEX 10, VOLUME I

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1.	~~Text to be deleted is shown with a line through it~~.	text to be deleted
2.	New text to be inserted is highlighted with grey shading.	new text to be inserted
3.	~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

AERONAUTICAL TELECOMMUNICATIONS

ANNEX 10

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

VOLUME I
(RADIO NAVIGATION AIDS)

. . .

CHAPTER 3. SPECIFICATIONS FOR RADIO NAVIGATION AIDS

3.1 Specification for ILS

. . .

3.1.3.3 *Coverage*

Note.— Guidance material on localizer coverage is given in Figures C-7 and C-8 of Attachment C.

3.1.3.3.1 The localizer shall provide signals sufficient to allow satisfactory operation of a typical aircraft installation within the localizer and glide path coverage sectors. The localizer coverage sector shall extend from the centre of the localizer antenna system to distances of:

46.3 km (25 NM) within plus or minus 10 degrees from the front course line;

31.5 km (17 NM) between 10 degrees and 35 degrees from the front course line;

18.5 km (10 NM) outside of plus or minus 35 degrees from the front course line if coverage is provided;

except that, where topographical features dictate or operational requirements permit, the limits may be reduced to 33.3 km (18 NM) within the plus or minus 10-degree sector and 18.5 km (10 NM) within the remainder of the coverage when alternative navigational ~~facilities~~ means provide satisfactory coverage within the intermediate approach area. The localizer signals shall be receivable at the distances specified at and above a height of 600 m (2 000 ft) above the elevation of the threshold, or 300 m (1 000 ft) above the elevation of the highest point within the intermediate and final approach areas, whichever is the higher, except that, where needed to protect ILS performance and if operational requirements permit, the lower limit of coverage at angles beyond 15 degrees from the front course line shall be raised linearly from its height at 15 degrees to as high as 1 350 m (4 500 ft) above the elevation of the threshold at 35 degrees from the front course line. Such signals shall be receivable, to the distances specified, up to a surface extending outward from the localizer antenna and inclined at 7 degrees above the horizontal.

Note 1.— Where intervening obstacles penetrate the lower surface, it is intended that guidance need not be provided at less than line-of-sight heights.

Note 2.— Guidance material on reduction of localizer coverage where needed to protect ILS performance is given in 2.1.11 of Attachment C.

. . .

3.7 Requirements for the Global Navigation Satellite System (GNSS)

. . .

3.7.3.2 *GLONASS Channel of Standard Accuracy (CSA) (L1)*

. . .

3.7.3.2.1.1 *Positioning accuracy*. The GLONASS CSA position errors shall not exceed the following limits:

	Global average 95% of the time	Worst site 95% of the time
Horizontal position error	~~19~~ 5 m (~~62~~ 17 ft)	~~44~~ 12 m (~~146~~ 40 ft)
Vertical position error	~~29~~ 9 m (~~96~~ 29 ft)	~~93~~ 25 m (~~308~~ 97 ft)

3.7.3.2.1.2 *Time transfer accuracy*. The GLONASS CSA time transfer errors shall not exceed 700 nanoseconds 95 per cent of the time.

3.7.3.2.1.3 *Range domain accuracy*. The range domain error shall not exceed the following limits:

a) range error of any satellite — ~~30~~ 18 m (~~98.43~~59.7 ft);

b) range rate error of any satellite — ~~0.04~~0.02 m (~~0.12~~0.07 ft) per second;

c) range acceleration error of any satellite — ~~0.013~~0.007 m (~~0.039~~0.023 ft) per second squared;

d) root-mean-square range error over all satellites — ~~7~~ 6 m (~~22.97~~19.9 ft).

3.7.3.2.2 *Availability*. The GLONASS CSA availability shall be as follows:

a) ≥99 per cent horizontal service availability, average location (~~44~~ 12 m, 95 per cent threshold);

b) ≥99 per cent vertical service availability, average location (~~93~~ 25 m, 95 per cent threshold);

c) ≥90 per cent horizontal service availability, worst-case location (~~44~~ 12 m, 95 per cent threshold);

d) ≥90 per cent vertical service availability, worst-case location (~~93~~ 25 m, 95 per cent threshold).

. . .

Table 3.7.2.4-1 Signal-in-space performance requirements

Typical operation	Accuracy horizontal 95% (Notes 1 and 3)	Accuracy vertical 95% (Notes 1 and 3)	Integrity (Note 2)	Time-to-alert (Note 3)	Continuity (Note 4)	Availability (Note 5)
En-route	3.7 km (2.0 NM)	N/A	$1 - 1 \times 10^{-7}$/h	5 min	$1 - 1 \times 10^{-4}$/h to $1 - 1 \times 10^{-8}$/h	0.99 to 0.99999
En-route, Terminal	0.74 km (0.4 NM)	N/A	$1 - 1 \times 10^{-7}$/h	15 s	$1 - 1 \times 10^{-4}$/h to $1 - 1 \times 10^{-8}$/h	0.99 to 0.99999
Initial approach, Intermediate approach, Non-precision approach (NPA), Departure	220 m (720 ft)	N/A	$1 - 1 \times 10^{-7}$/h	10 s	$1 - 1 \times 10^{-4}$/h to $1 - 1 \times 10^{-8}$/h	0.99 to 0.99999
Approach operations with vertical guidance (APV-I)	16.0 m (52 ft)	20 m (66 ft)	$1 - 2 \times 10^{-7}$ in any approach	10 s	$1 - 8 \times 10^{-6}$ per 15 s	0.99 to 0.99999
Approach operations with vertical guidance (APV-II)	16.0 m (52 ft)	8.0 m (26 ft)	$1 - 2 \times 10^{-7}$ in any approach	6 s	$1 - 8 \times 10^{-6}$ per 15 s	0.99 to 0.99999
Category I precision approach (Note 7)	16.0 m (52 ft)	6.0 m to 4.0 m (20 ft to 13 ft) (Note 6)	$1 - 2 \times 10^{-7}$ in any approach	6 s	$1 - 8 \times 10^{-6}$ per 15 s	0.99 to 0.99999

NOTES.—

1. The 95th percentile values for GNSS position errors are those required for the intended operation at the lowest height above threshold (HAT), if applicable. Detailed requirements are specified in Appendix B and guidance material is given in Attachment D, 3.2.
2. The definition of the integrity requirement includes an alert limit against which the requirement can be assessed. The range of vertical limits for Category I precision approach relates to the range of vertical error bounds at the user location, depending on the monitor characteristics of the system. These alert limits are:
   ~~A range of vertical limits for Category I precision approach relates to the range of vertical accuracy requirements.~~

Typical operation	Horizontal alert limit	Vertical alert limit
En-route (oceanic/continental low density)	7.4 km (4 NM)	N/A
En-route (continental)	3.7 km (2 NM)	N/A
En-route, Terminal	1.85 km (1 NM)	N/A
NPA	556 m (0.3 NM)	N/A
APV-I	40 m (130 ft)	50 m (164 ft)
APV- II	40.0 m (130 ft)	20.0 m (66 ft)
Category I precision approach	40.0 m (130 ft)	~~15.0~~35.0 m to 10.0 m (~~50~~ 115 ft to 33 ft)

3. The accuracy and time-to-alert requirements include the nominal performance of a fault-free receiver.
4. Ranges of values are given for the continuity requirement for en-route, terminal, initial approach, NPA and departure operations, as this requirement is dependent upon several factors including the intended operation, traffic density, complexity of airspace and availability of alternative navigation aids. The lower value given is the minimum requirement for areas with low traffic density and airspace complexity. The higher value given is appropriate

for areas with high traffic density and airspace complexity (see Attachment D, 3.4.2). Continuity requirements for APV and Category I operations apply to the average risk (over time) of loss of service, normalized to a 15-second exposure time (see Attachment D, 3.4.3).

5. A range of values is given for the availability requirements as these requirements are dependent upon the operational need which is based upon several factors including the frequency of operations, weather environments, the size and duration of the outages, availability of alternate navigation aids, radar coverage, traffic density and reversionary operational procedures. The lower values given are the minimum availabilities for which a system is considered to be practical but are not adequate to replace non-GNSS navigation aids. For en-route navigation, the higher values given are adequate for GNSS to be the only navigation aid provided in an area. For approach and departure, the higher values given are based upon the availability requirements at airports with a large amount of traffic assuming that operations to or from multiple runways are affected but reversionary operational procedures ensure the safety of the operation (see Attachment D, 3.5).
6. A range of values is specified for Category I precision approach. The 4.0 m (13 feet) requirement is based upon ILS specifications and represents a conservative derivation from these specifications (see Attachment D, 3.2.7).
7. GNSS performance requirements for Category II and III precision approach operations are under review and will be included at a later date.
8. The terms APV-I and APV-II refer to two levels of GNSS approach and landing operations with vertical guidance (APV) and these terms are not necessarily intended to be used operationally.

. . .

APPENDIX B. TECHNICAL SPECIFICATIONS FOR THE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

. . .

3.2 Global navigation satellite system (GLONASS) channel of standard accuracy (CSA) (L1)

. . .

3.2.5 COORDINATE SYSTEM

3.2.5.1 *PZ-90 (Parameters of common terrestrial ellipsoid and gravitational field of the earth 1990).* The GLONASS broadcast ephemeris shall describe a position of transmitting antenna phase centre of a given satellite in the PZ-90 earth-centred earth-fixed reference frame.

3.2.5.2 *Conversion between PZ-90 and WGS-84.* The following conversion parameters shall be used to obtain position coordinates in WGS-84 from position coordinates in PZ-90 (Version 2):

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix}_{WGS-84} = \begin{bmatrix} -1.1 \\ -0.3 \\ -0.9 \end{bmatrix} + (1 - 0.12\times10^{-6}) \begin{bmatrix} 1 & -0.82\times10^{-6} & 0 \\ 0.82\times10^{-6} & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} X \\ Y \\ Z \end{bmatrix}_{PZ-90}$$

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix}_{WGS-84} = \begin{bmatrix} -0.36 \\ +0.08 \\ +0.18 \end{bmatrix} + \begin{bmatrix} X \\ Y \\ Z \end{bmatrix}_{PZ-90}$$

Note.— X, Y and Z are expressed in metres.

3.2.5.2.1 The conversion error shall not exceed 1.5 metres (1 sigma) along each coordinate axis.

. . .

ATTACHMENT C. INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE STANDARDS AND RECOMMENDED PRACTICES FOR ILS, VOR, PAR, 75 MHz MARKER BEACONS (EN-ROUTE), NDB AND DME

. . .

2. Material concerning ILS installations

. . .

Editorial Note.— Replace the entire section 2.1.11 with the following text and figures.

2.1.11 *Reducing localizer bends and areas with insufficient difference in depth of modulation (DDM)*

2.1.11.1 *Introduction.* Owing to site effects at certain locations, it is not always possible to produce with simple standard ILS installations localizer courses that are sufficiently free from troublesome bends or irregularities. If this is the case, it is highly preferable to use two radio frequency carriers to provide the standard coverage and signal characteristics. Additional guidance on two radio frequency carrier coverage is provided in 2.7 below. If standard coverage requirements can still not be met, reducing radiation in the direction of objects and accepting an increase of the lower vertical coverage boundaries as permitted in Chapter 3, 3.1.3.3.1 may be employed.

2.1.11.2 *Reducing standard localizer coverage.* When using the coverage reduction option defined in 3.1.3.3.1, care needs to be taken to ensure that the reduced coverage volume is consistent with the minimum altitudes published for the instrument approach procedure. Additionally, the lowest approach path altitudes encountered under normal vectoring operations need to be provided with vertical coverage.

2.1.11.2.1 *Operational considerations from an air traffic management perspective.* Air traffic services need to be able to ensure that aircraft are able to capture the ILS localizer reliably, using either an approach procedure or vectoring techniques. Consequently, a significant portion (2 NM minimum) of the initial segment must be within localizer coverage. Localizer coverage needs to be available sufficiently advance of the area where controllers usually give the approach or intercept clearance to permit pilots to verify the Morse code identification (IDENT).

2.1.11.2.2 *Operational considerations from a pilot/aircraft perspective.* For aircraft equipped with Automatic Flight Control Systems (AFCS), localizer coverage needs to be available sufficiently prior to the activation of the AFCS intercept mode (manual or automatic flight) in order to permit checking the IDENT signal. When flying manually or when using an AFCS, pilots normally check the IDENT of the ILS facility and then wait to arm the mode enabling localizer intercept turn initiation and capture until after receiving the approach or intercept clearance. Ideally, additional aids (if included in the approach procedure) should permit a determination of the relationship between the aircraft position and the localizer front course line by the pilot.

End of new text.

. . .

2.5 Diagrams (Figures C-6 to C-12 illustrate certain of the Standards contained in Chapter 3)

. . .

Editorial Note.— Replace Figures C-7 and C-8 with the following figures.

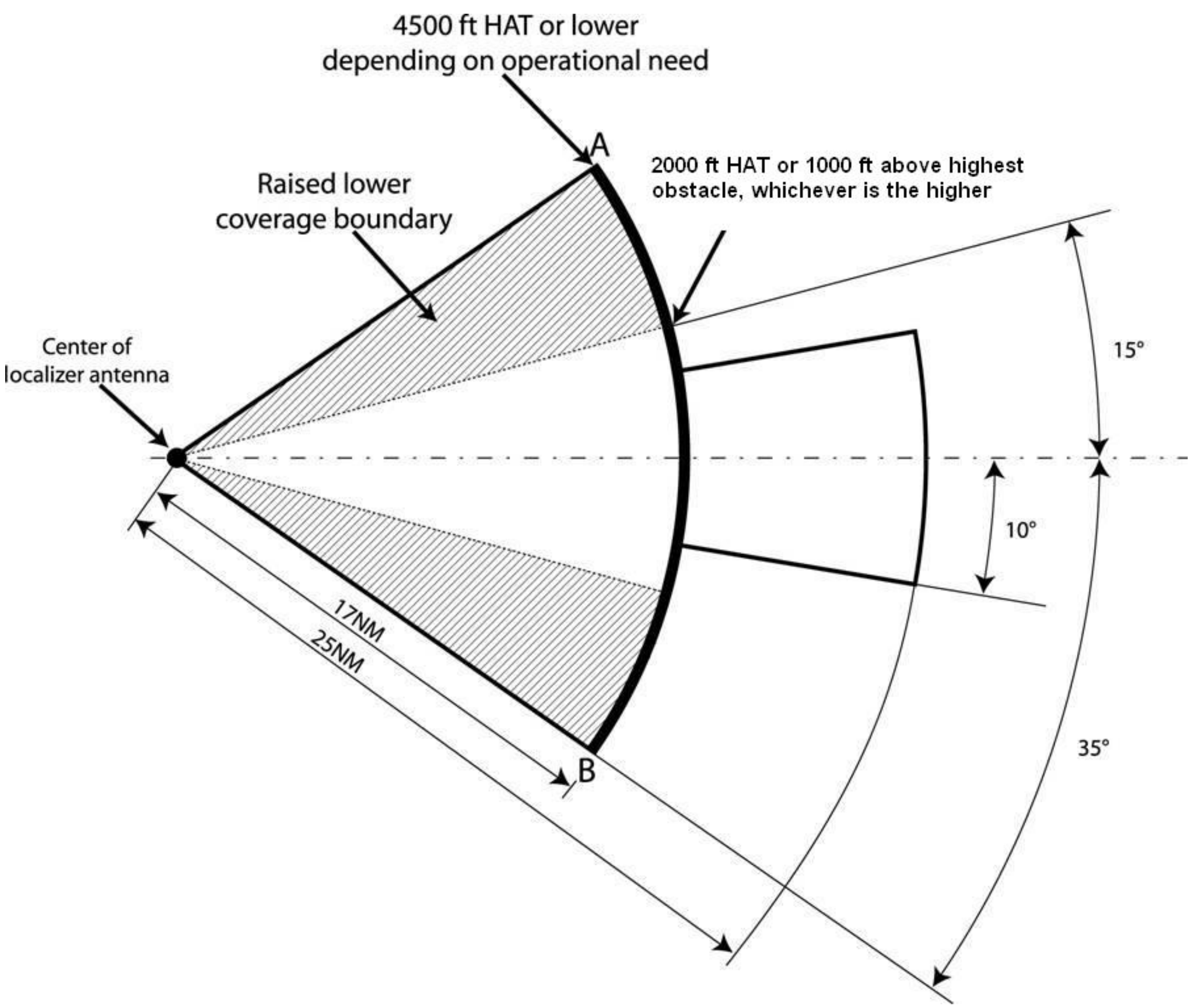

Figure C-7. Localizer coverage with respect to azimuth

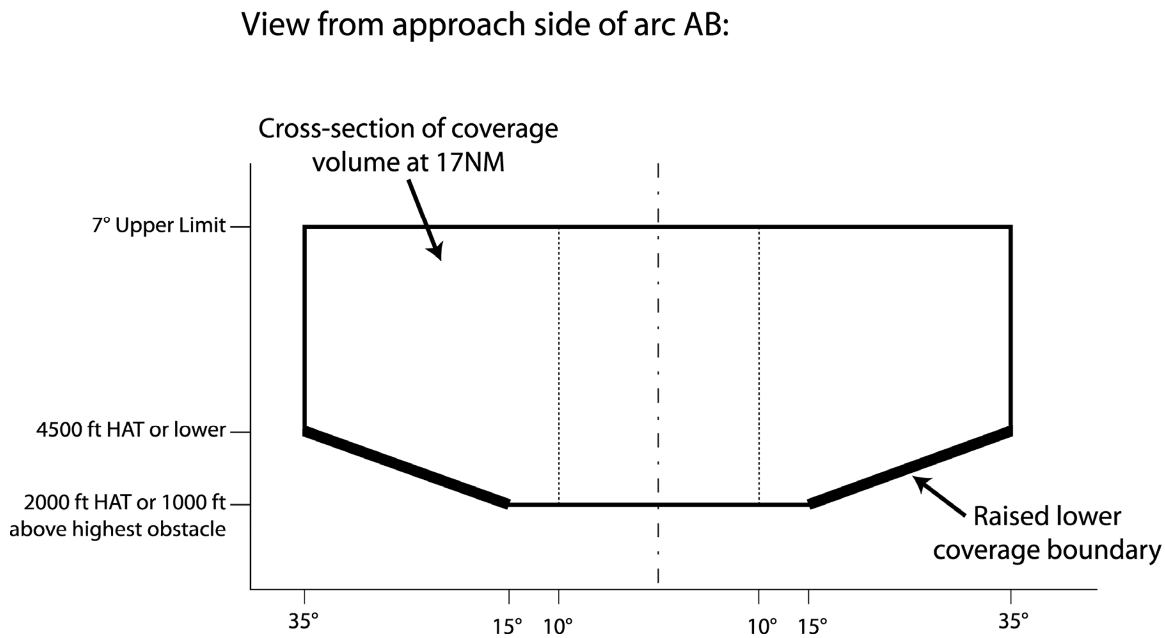

Figure C-8. Localizer coverage with respect to elevation

. . .

ATTACHMENT D. INFORMATION AND MATERIAL FOR GUIDANCE IN THE APPLICATION OF THE GNSS STANDARDS AND RECOMMENDED PRACTICES

. . .

3.2 Accuracy

. . .

3.2.7 A range of vertical accuracy values is specified for Category I precision approach operations which bounds the different values that may support an equivalent operation to ILS. A number of values have been derived by different groups, using different interpretations of the ILS standards. The lowest value from these derivations was adopted as a conservative value for GNSS; this is the minimum value given for the range. Because this value is conservative, and because GNSS error characteristics are different from ILS, it may be possible to achieve Category I operations using larger values of accuracy ~~and alert limits~~ within the range. The larger values would result in increased availability for the operation. The maximum value in the range has been proposed as a suitable value, subject to validation.

~~3.2.8 Specific alert limits have been defined for each augmentation system. For GBAS, technical provision has been made to broadcast the alert limit to aircraft. GBAS standards require the alert limit of 10 m. For SBAS, technical provisions have been made to standardize the alert limit through an updateable database (see *Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System (GPS/WAAS) Airborne Equipment* (RTCA/DO-229C)).~~

Editorial Note.— Renumber the following paragraphs.

. . .

3.3 Integrity and time-to-alert

. . .

3.3.5 For APV and precision approach operations, integrity requirements for GNSS signal-in-space requirements of Chapter 3, Table 3.7.2.4-1, were selected to be consistent with ILS requirements.

Editorial Note.— Insert the following new paragraphs and *renumber* current paragraphs 3.3.6 to 3.3.10.

3.3.6 Alert limits for typical operations are provided in Note 2 to Table 3.7.2.4-1. A range of alert limits is specified for precision approach operations, reflecting potential differences in system design that may affect the operation. In ILS, monitor thresholds for key signal parameters are standardized, and the monitors themselves have very low measurement noise on the parameter that is being monitored. With differential GNSS, some system monitors have comparably large measurement uncertainty, whose impact must be considered on the intended operation. In all cases, the effect of the alert limit is to restrict the satellite-user geometry to one where the monitor performance (typically in the pseudorange domain) is acceptable when translated into the position domain.

3.3.7 The smallest precision approach vertical alert limit value (10 m) was derived based on the monitor performance of ILS as it could affect the glideslope at a nominal decision altitude of 200 ft above the runway threshold. By applying this alert limit, the GNSS error under faulted conditions can be directly compared to ILS error under faulted conditions, such that the GNSS errors are less than or equal to ILS errors. For those fault conditions with comparably large monitor noise in GNSS, this results in monitor thresholds that are more stringent than ILS.

3.3.8 The largest precision approach vertical alert limit value (35 m) was derived to ensure equivalent obstacle clearance as ILS for those error conditions which can be modelled as a bias during the final approach, taking into account that the aircraft decision altitude is independently derived from barometric pressure. An assessment has been conducted of the worst-case effect of a latent bias error equal to the alert limit of 35 meters, concluding that adequate obstacle clearance protection is provided on the approach and missed approach (considering the decision altitude would be reached early or late, using an independent barometric altimeter). It is important to recognize that this assessment only addressed obstacle clearance, and is limited to those error conditions which can be modelled as bias errors. Analysis has shown 35 m bias high and low conditions can be tolerated up to the approach speed category (category A through D) glide path angle limits in ICAO Doc 8168 without impinging on the ILS obstacle clearance surfaces.

3.3.9 Since the analysis of a 35 m VAL is limited in scope, a system-level safety analysis should be completed before using any value greater than 10 m for a specific system design. The safety analysis should consider obstacle clearance criteria and risk of collision due to navigation error, and the risk of unsafe landing due to navigation error, given the system design characteristics and operational environment (such as the type of aircraft conducting the approach and the supporting airport infrastructure). With respect to the collision risk, it is sufficient to confirm that the assumptions identified in 3.3.8 are valid for the use of a 35 m VAL. With respect to an unsafe landing, the principal mitigation for a navigation error is pilot intervention during the visual segment. Limited operational trials, in conjunction with operational expertise, have indicated that navigation errors less than 15 metres consistently result in acceptable touchdown performance. For errors larger than 15 metres, there can be a significant increase in the flight crew workload and potentially a significant reduction in the safety margin, particularly for errors that shift the point where the aircraft reaches the decision altitude closer to the runway threshold where the flight crew may attempt to land with an unusually high rate of descent. The hazard severity of this event is Major (see ICAO Doc 9859, *Safety Management Manual*). One acceptable means to manage the risks in the visual segment is for the system to comply with the following criteria:

a) the fault-free accuracy is equivalent to ILS. This includes system 95 per cent vertical NSE less than 4 metres, and fault-free system vertical NSE exceeds 10 meters with a probability less than 10^{-7} for each location where the operation is to be approved. This assessment is performed over all environmental and operational conditions under which the service is declared available;

b) under system failure conditions, the system design is such that the probability of an error greater than 15 meters is lower than 10^{-5}, so that the likelihood of occurrence is Remote. The fault conditions to be taken into account are the ones affecting either the core constellations or the GNSS augmentation under consideration. This probability is to be understood as the combination of the occurrence probability of a given failure with the probability of detection for applicable monitor(s). Typically, the probability of a single fault is large enough that a monitor is required to satisfy this condition.

3.3.10 For GBAS, technical provision has been made to broadcast the alert limit to aircraft. GBAS standards require the alert limit of 10 m. For SBAS, technical provisions have been made to specify the alert limit through an updateable database (see Attachment C, paragraph 6.6).

End of new text.

. . .

4.2 GLONASS

. . .

4.2.2 *Accuracy*. Accuracy is measured with a representative receiver and a measurement interval of 24 hours for any point within the coverage area. The positioning and timing accuracy are for the signal-in-space (SIS) only and do not include such error sources as: ionosphere, troposphere, interference, receiver noise or multipath. The accuracy is derived based on the worst two of 24 satellites being removed from the constellation and a ~~7~~6-metre constellation RMS SIS user range error (URE).

4.2.3 *Range domain accuracy*. Range domain accuracy is conditioned by the satellite indicating a healthy status and transmitting standard accuracy code and does not account for satellite failures outside of the normal operating characteristics. Range domain accuracy limits can be exceeded during satellite failures or anomalies while uploading data to the satellite. Exceeding the range error limit constitutes a major service failure as described in 4.2.6. The range rate error limit is the maximum for any satellite measured over any 3-second interval for any point within the coverage area. The range acceleration error limit is the maximum for any satellite measured over any 3-second interval for any point within the coverage area. The root-mean-square range error accuracy is the average of the RMS URE of all satellites over any 24-hour interval for any point within the coverage area. Under nominal conditions, all satellites are maintained to the same standards, so it is appropriate for availability modelling purposes to assume that all satellites have a ~~7~~6-metre RMS SIS URE. The standards are restricted to range domain errors allocated to space and control segments.

4.2.4 *Availability*. Availability is the percentage of time over any 24-hour interval that the predicted 95 per cent positioning error (due to space and control segment errors) is less than its threshold, for any point within the coverage area. It is based on a ~~44~~12-metre horizontal 95 per cent threshold and a ~~93~~25-metre vertical 95 per cent threshold, using a representative receiver and operating within the coverage area over any 24-hour interval. The service availability assumes the worst combination of two satellites out of service.

. . .

4.2.6 *Major service failure*. A major service failure is defined as a condition over a time interval during which a healthy GLONASS satellite's ranging signal error (excluding atmospheric and receiver errors) exceeds the range error limit of ~~30~~ 18 m (as defined in Chapter 3, 3.7.3.2.1.3 a)) and/or failures in radio frequency characteristics of the CSA ranging signal, navigation message structure or navigation message contents that deteriorate the CSA receiver's ranging signal reception or processing capabilities.

. . .

— — — — — — — —

ATTACHMENT B to State letter AN 7/1.3.94-09/46

RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS

To: The Secretary General
International Civil Aviation Organization
999 University Street
Montreal, Quebec
Canada, H3C 5H7

(State) ____________________________________

Please make a checkmark (✓) against one option for each amendment. If you choose options "agreement with comments" or "disagreement with comments", **please provide your comments on separate sheets.**

	Agreement without comments	*Agreement with comments**	*Disagreement without comments*	*Disagreement with comments*	*No position*
Amendment Annex 10 — *Aeronautical Telecommunications*, Volume I — *Radio Navigation Aids* (Attachment A refers)					

* "Agreement with comments" indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature ____________________________________ Date ____________________________________

— END —