INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE SECOND MEETING OF THE ICAO AERONAUTICAL INFORMATION SERVICES IMPLEMENTATION TASK FORCE (AITF/2)

BANGKOK, THAILAND, 6 – 9 FEBRUARY 2007

The views expressed in this Report should be taken as those of the Task Force and not the Organization

Adopted by the Task Force
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PART I - HISTORY OF THE MEETING

1. Introduction

1.1 The Second Meeting of the AIS Implementation Task Force (AITF/2) was held at ICAO Asia and Pacific Office from 6 to 9 February 2007.

1.2 The meeting was attended by 52 experts from Australia, Bangladesh, Bhutan, Cambodia, China, Hong Kong China, India, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, United States, Viet Nam, EUROCONTROL, FREQUENTIS and JEPPESEN. A list of participants is attached at **Appendix A** to this Report.

2. Officer and Secretariat

2.1 Mr. Peter Hobson, AIS Specialist, Safety Management, Airservices Australia continued as the Chairperson of the Task Force. Mr. Kyotaro Harano, Regional Officer Air Traffic Management, ICAO Asia and Pacific Office was the Secretary for the meeting.

3. Language and Documentation

3.1 All discussions were conducted in English. Documentation was issued in English with a total of 10 Working Papers and 5 Information Papers being considered by the meeting. A list of the Working and Information Papers is attached at **Appendix B**.

4. Opening of the Meeting

4.1 Mr. Peter Hobson welcomed all delegates and thanked those from Japan and ICAO who had already made a strong contribution towards this AITF/2; which would search for practical remedies to some of the AIS difficulties facing us in this region. In advance Mr. Hobson also wished to thank the industry observers, presenters and participants for their attendance and participation. His hope for this event was that we could openly discuss and explore the benefits that new technologies and protocols (like AIXM) can offer, but further, that we can give at least equal consideration to the mechanisms and contemporary wisdom regarding the requirements for assured data quality to be moving through those systems. It was already recognised that future ATM advancements were highly data dependent and the AIS of the world must meet the data quality challenges if the industry is to receive the level of reliability it requires. He declared the AITF/2 meeting open.

5.1 On behalf of Mr. Lalit B. Shah, Regional Director of ICAO Asia and Pacific Office, Mr. Kyotaro Harano welcomed all the delegates to Bangkok and the AITF/2. Mr. Harano highlighted the importance of aeronautical information and charts services in the context of the CNS/ATM systems, which was confirmed at the APANPIRG meetings and reaffirmed at the Global AIS Congress (June 2006, Madrid). Accordingly, it was important for the Task Force to explore the way forward and how best AIS/MAP should support the new global ATM operational concept in Asia and Pacific region. The meeting was expected to find ways to solve the problems identified by APANPIRG and the recent AIS Congress, the AIS survey and the deficiency list. He wished the meeting a successful outcome.

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PART II - REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

1.1 A provisional agenda was circulated to States and international organizations on 8 December 2006, attached to the invitation letter to the meeting. The Secretariat proposed to replace the provisional agenda with the revised agenda, which was reviewed by the meeting. Having received a useful working paper from the United States, the meeting decided to include additional new agenda item: **Agenda Item 9: Status of the AICM/AIXM Implementation** and renumber the subsequent agenda items accordingly. The approved agenda is as follows:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Review of the AITF/1

Agenda Item 3: Review of APANPIRG/17 Report with Respect to AIS Issues

Agenda Item 4: Conduct of Comprehensive AIS Survey

Agenda Item 5: Review of Air Navigation Deficiencies in the AIS Field

Agenda Item 6: Outcomes of Global AIS Congress

Agenda Item 7: Latest Developments in the AIS Fields

Agenda Item 8: Review of Euro OPADD (Operating Procedures for AIS Dynamic Data) Edition 2.0 and Determination of Update Requirements for Asia/Pacific OPADD

Agenda Item 9: Status of AIXM Implementation

Agenda Item 10: Any Other Business

Agenda Item 11: Date and Venue for the Next Meeting

1.2 The meeting noted that the Terms of Reference (TOR) of the AITF was reviewed by the 17th meeting of Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/17, August 2006). APANPIRG/17 identified that the AITF should report to the ATM/AIS/SAR Sub-Group, rather than directly to APANPIRG, and adopted the following decision:

Decision 17/15 – Terms of Reference of the AIS Implementation Task Force

That, the AIS Implementation Task Force (AITF) be directed to report to the ATM/AIS/SAR Sub-group and the Terms of Reference of the AITF be amended accordingly .

1.3 APANPIRG/17 suggested the text “The Task Force will report to the ATM/AIS/SAR Sub-Group of APANPIRG” for inclusion in the TOR. Accordingly, the meeting confirmed the TOR of the Task Force as follows:

Terms of Reference of the AIS Implementation Task Force (AITF)

The objectives of the Task Force are to:

a) study means of aeronautical data management by civil aviation authorities and/or ATS providers in other regions including the aeronautical information exchange model (AIXM) and the electronic AIP (eAIP), and consider the feasibility in making use of these methods/models in the Asia/Pacific Region;

b) examine the means of aeronautical data exchange used in other regions and application in the Asia/Pacific Region;

c) based on a), develop guidance material for operation of data management systems;

d) assist States to implement Quality Systems for aeronautical information in an expeditious manner;

e) develop training material and conduct workshops on the Guidance Manual for AIS in the Asia/Pacific Region;

f) develop guidance material for Static Data Procedures and the AIS Automation Plan

g) review and update the Guidance Manual taking into account amendments to ICAO SARPs, guidance material; and

h) monitor and review technical and operating developments in the AIS field especially in the area of automation and database management.

To achieve the above objectives, the Task Force shall consider:

a) results of the ICAO Aeronautical Data Model Study Group (ADMSG);

b) results of the AIS/MAP Study Group;

c) amendments to Annex 4, Annex 5, the AIS Manual (Doc 8126), and the Aeronautical Chart Manual (Doc 8697);

d) revisions to the EUROCONTROL Operating Procedures for AIS Dynamic Data (OPADD);

The Task Force will report to the ATM/AIS/SAR Sub-Group of APANPIRG

(Adopted by the 14th Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group, 2003 [APANPIRG/14], and amended by APANPIRG/17, 2006)

Agenda Item 2: Review of the AITF/1

2.1 The meeting viewed the AITF/1 (March 2006, Bangkok) items carried through to the 16th meeting of the ATM/AIS/SAR Sub-group (ATM/AIS/SAR/SG/16, June 2006) and a summary of the important issues raised and discussed at the Aeronautical Information Conceptual Model (AICM) and Aeronautical Information Exchange Model (AIXM) Management Seminar. The review provided a starting point and reflection point for the work about to be undertaken at the AITF2.

2.2 The meeting noted that a full review report of the activities of the AICM/AIXM Management Seminar and the AITF/1 was available on the ICAO web site.

2.3 ATS/AIS/SAR/SG16 noted the following items of relevance from the AITF/1:

a) AITF/1 agreed that the importance of the AICM/AIXM data and exchange model needed to be communicated to ATM/AIS/SAR/SG;

b) AITF/1 endorsed the recommendations of the 11th Air Navigation Conference regarding adopting a common aeronautical information exchange model format such as AICM/AIXM, but expressed concern at the apparent lack of recent progress in the implementation of international standards and complementary guidance material for these aeronautical data exchange protocols. It was noted that several States had expressed their intention to table those views at the forthcoming Madrid conference.

c) The Task Force advised that resolution of that key issue was necessary before much progress can be made towards meeting its TOR. Further, the relevance of the AITF TOR in regard to developing unique regional guidance material for Static Data Procedures and the AIS Automation Plan, and monitoring and reviewing operation of data management systems may require further more detailed consideration given the emerging global nature of these activities.

d) Australia had advised that ICAO and EUROCONTROL, in cooperation with the Government of Spain and representatives from Australia, Canada, China, Japan, South Africa and the United States were organizing the Global Aeronautical Information Service (AIS) Congress to be held in the Auditorium of the Congress Centre “Palacio Municipal de Congresos” in Madrid, Spain, from 27-29 June 2006. The Regional Director of ICAO Europe and North Atlantic Office had invited all Administrations to arrange attendance at the Congress. The participation of the Heads of AIS of all ICAO Contracting States was particularly sought. The meeting also noted that the Global AIS Congress would be an important event for members of the AIS family. ICAO had set the challenge by its adoption of the Global ATM Operating Concept which calls for a significantly enhanced level of performance from AIS. It will be the task of the Congress to identify a way forward for AIS, through ICAO.

e) AITF/1 considered what information could be forwarded from the Task Force to the Global Congress. The meeting was advised that States could elect to raise matters discussed at the Task Force; however the Task Force was not able to make recommendations to the AIS Congress.

f) AITF/1 proposed an updated survey be carried out, particularly in relation to new Aeronautical Data requirements and electronic Terrain/Obstacle Data.

g) Australia offered to lead a working group of the Task Force to draft an improvement plan for consideration at the AITF/2. The plan might consider joint ventures/operations and solutions, an initial focus on primary international aerodromes, AIS automated solutions, peer review/audit, Key Performance Indicators (KPIs), ISO 9000 accreditation, and staff training.

h) New Zealand expressed the view that the Asia/Pacific Region harmonise with the new European Region OPADD Edition 2.0 and that it seemed unnecessary to adopt different standards. Japan requested the AITF/1 to review the extensive data on the CD distributed to the meeting. Japan was invited to present a paper of recommendations to the AITF/2, where the necessity for a different Regional standard would be considered.

Agenda Item 3: Review of APANPIRG/17 Report with Respect to AIS Issues

Asia/Pacific Air Navigation System and Related Activities

ATM/AIS/SAR Matters

3.1 APANPIRG/17 noted that Global AIS Congress recognized the critical role of aeronautical information in the ICAO ATM Concept by linking available, timely, high integrity aeronautical information with safety and efficiency. APANPIRG/17 supported the conclusions and recommendations of the AIS Congress and, to promote the development and implementation of data system that provides timely, accurate and high integrity data, adopted the following Conclusion:

Conclusion 17/14 – Improvement of aeronautical information exchange and management

That, in order to increase the reliability and integrity of the aeronautical information in support of navigation functions, ICAO be invited to establish, as a matter of urgency, a standard model for the electronic exchange of aeronautical information.

3.2 APANPIRG/17 noted and supported the intention of the Task Force to establish the following two work groups under the AIS Implementation Task Force.

a) A work group of the Task Force to draft an improvement plan to address the deficiencies in the AIS field; and

b) A work group of the Task Force to investigate the differences between EUROCONTROL OPADD (Operating Procedures for AIS Dynamic Data) and the current Asia/Pacific Region OPADD.

3.3 APANPIRG/17 was informed of the continuing examples of implementations occurring without sufficient notice and not in alignment with the 28 day AIRAC cycle. The States presented at the ATM/AIS/SAR/SG/16 highlighted that in many instances, matters were outside the control of AIS officials as they were driven by political and institutional agendas that lacked knowledge of AIS matters. APANPIRG/17 reviewed previous APANPIRG Conclusion 14/9 in this respect.

3.4 APANPIRG/17 recognized that the Regional Office would ensure the matter was highlighted to the next meeting of the AITF, scheduled in February 2007, with a view to identifying a solution to this persistent problem. APANPIRG/17 agreed that the text of Conclusion 14/9 continued to adequately describe the long standing regional concerns in this respect and should be further promulgated. The meeting elected to adopt the following Conclusion, incorporating and superseding Conclusion 14/9:

Conclusion 17/17 − Non Compliance with Annex 15 Provisions

That, noting the regular and ongoing non-compliance with Annex 15 – Aeronautical Information Services *provisions in respect to AIRAC notification periods, the ICAO Regional Office be requested to reinforce to States the critical safety nature of AIS and adherence to Annex 15 provisions, in particular those relating to AIRAC, as well as the need to ensure accurate and timely publication of AIS data.*

Deficiencies in the Air Navigation Field

3.5 APANPIRG/17 expressed concern on the slow progress in eliminating the safety-related deficiencies. It was stressed that the States listed in the APNPIRG List of deficiencies should make firm commitments and undertake decisive actions to resolve the deficiencies as soon as possible.

3.6 The meeting noted that the APANPIRG/17 agreed to put highest priority in its future work programme on the urgent elimination of the safety-related deficiencies in the region. States listed in the APANPIRG List of deficiencies should be urged to establish action plans with fixed target dates as soon as possible and inform the Regional Office accordingly. It was suggested that APANPIRG member States should take lead and endeavor to resolve any safety-related deficiencies pertinent to their States within a period of one year with all other ASIA/PAC States included in the List of Deficiencies to follow similar actions and timeframe.

3.7 APANPIRG/17 further agreed that the Deficiency Review Task Force, established by APANPIRG Conclusion 13/46, should convene one meeting in the first quarter of 2007 to undertake a review of the implementation aspects of the Regional Supplement to the Uniform Methodology.

Discussion at the Meeting

3.8 In light of the above, the meeting noted that the APANPIRG/17 expressed concerns about the regular and ongoing non-compliance with Annex 15 provisions in respect to AIRAC notification periods, and that all the Asia/Pacific States listed in the APANPIRG List of Deficiencies were urged by APANPIRG to establish action plans with fixed target dates for resolution of all safety-related deficiencies and inform the Regional Office by mid-2007 of their plans.

3.9 In regard to the discussions of the improvement of aeronautical information exchange (Conclusion 17/14), the meeting heard of recent representations from ICAO European and North Atlantic Office to the ICAO headquarters. The Task Force will review the results of that initiative at the AITF/3.

3.10 The meeting had a lengthy discussion on particularly how the Task Force could address the issue of the continuing occurrences of implementations without sufficient notice and not in alignment with the 28 day AIRAC cycle.

3.11 In this regard, Australia suggested that one of the causes of the non-compliance to AIRAC cycles by States was the late arrival of information, and suggested that mitigation strategies be developed. Ensuring that project managers be aware of AIS cut-off dates was provided as an example.

3.12 The observer of Jeppesen informed the meeting of the process and the timeline for data to be disseminated. The meeting was informed that data were forwarded from originators to AIS, data houses then to the avionics companies. It was suggested that if the cut-off date cannot be met, the project itself should be postponed.

3.13 Cambodia reported that their AIS office was a small organization, which has the limitation in human/financial resources. Cambodia expressed that they would hold a seminar to introduce the parties concerned what the AIRAC cycle systems are. Likewise, Sri Lanka, Malaysia and Indonesia reported that there was the lack of understanding in the administration.

3.14 In this regard, the meeting considered that the lack of knowledge in the field of AIS among the administrations, project managers, navaid maintenance technicians, etc. could be brought to the attention of an Annual Conference of the Directors General of Civil Aviation for the commitment to eliminate the non-compliance of the AIRAC cycles. The Chairman suggested that he consider how best to relay the Task Force's concerns via APANPIRG to the Director General level.

3.15 EUROCONTROL informed that they had had the similar cases and letters to make sure the AIRAC cycles be met had been issued from ICAO Europe and North Atlantic Office. The meeting learned that use of the EUROCONTROL AGORA website had significantly improved compliance. The Secretariat advised the meeting that ICAO Asia and Pacific Office had previously sent many similar letters to remind Sates of the AIRAC cycles, however there had not been any positive response.

3.16 In light of the forgoing, the meeting developed the following recommendation:

Recommendation AITF/2 - 1

That, in light of the importance of the regular and ongoing compliance with Annex 15 – *Aeronautical Information Services* provisions in respect of AIRAC cycles, and in order to make stakeholders aware of the AIRAC system, States take practical measures to promulgate the awareness of the AIRAC system to aviation administrations, airport authorities, project managers, airspace planners, construction companies, etc.

Agenda Item 4: Conduct of Comprehensive AIS Survey

4.1 The meeting recalled that the AITF/1 was informed by Japan of the necessity of survey of the current status to cover the other areas of AIS. AITF/1 noted that a previous survey in relation to AIS such as automation, Quality Systems and AIS database was conducted to investigate how the requirements in the regional *Guidance Material* on *Common Operating Procedures* (replaced by the *Operating Procedures of AIS Dynamic Data* in 2003) could be met. This survey also aimed to find out necessary supporting method if requested by any State having hardness to meet the guidance material. The result of the AIS Automation Survey in Asia/Pacific Region was reported to the Seventh Meeting of the AIS Automation Task Force in 2001.

4.2 AITF/1 was suggested that an updated survey be carried out, particularly in relation to new Aeronautical Data requirements and electronic Terrain/Obstacle Data. AITF/1 considered the draft Survey on AIS in Asia/Pacific Regions as proposed by Japan. Additionally, a draft Survey of Application of AIRAC System in Aeronautical Information Package was also presented.

4.3 APANPIRG/17 supported the initiative of AITF/1 and formulated the following Conclusion:

Conclusion 17/16 – Conduct of Comprehensive AIS Survey

That, recognizing that GPI-18 - Aeronautical Information requires the real time availability of quality assured electronic information (aeronautical, terrain and obstacle), the AITF, in conjunction with the ICAO Regional Office, conduct a comprehensive survey of all Asia/Pacific States in relation to AIS matters, including details of status in relation to the automation of dynamic data, automation of static data and availability of electronic terrain and obstacle data.

4.4 The Secretariat received replies to the survey from Australia, Cambodia, China, Hong Kong China, Democratic People's Republic of Korea, Fiji, French Polynesia, Indonesia, Japan, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka and Thailand, as in **Appendix C** to this Report.

4.5 With regard to the first group of questions relating to the status of implementation of the AIRAC system, the meeting noted that three States out of 19 issued AIP Supplement/Amendment NOT in accordance with the AIRAC procedures.

4.6 For the third group of questions regarding to the Dynamic Data Automation, the meeting noted that seven States responded that they had not established a Dynamic Data Automation, the information stored in the database was not accessible by and/or exchangeable with other users, and NOTAM production/reception process did not automatically use the database. As to the fourth group of questions regarding the Static Data Automation, 11 States responded likewise.

4.7 The sixth group of questions relating to the Electronic Terrain and Obstacle data discovered that as many as 14 States out of 19 were having difficulties in implementing the Electronic Terrain and Obstacle data systems.

4.8 The meeting reviewed thoroughly the result of the comprehensive AIS survey, and some States updated the information at the meeting. The meeting agreed to consider the supporting method together with the deficiencies recorded in the APANPIRG List of Deficiencies under the Agenda Item 5.

4.9 The meeting expressed appreciation to Australia and Japan for the work provided to establish the questionnaires for this survey.

Agenda Item 5: Review of Air Navigation Deficiencies in the AIS Field

5.1 Australia proposed a preliminary plan for the eventual elimination of Asia/Pacific regional navigation deficiencies in the AIS Field.

5.2 The following information relating to AIS deficiencies (actual and potential) in the Region was summarised:

a) Implementation of WGS84;
b) Implementation of ICAO format AIP;
c) Implementation of AIS Quality Systems (including training of AIS staff);
d) AIRAC adherence;
e) AIS automation;
f) Implementation of Digital Terrain data; and
g) Implementation of Digital aeronautical charts.

5.3 Australia invited the AITF/1 to accept its offer to lead a sub-group of the Task Force in the development of an improvement plan for consideration at the next meeting, and that was agreed.

5.4 Regrettably; and primarily owing to internal restructuring and personnel changes, Australia had found little opportunity to pursue this in a timely manner. In fact there had been little progress and no coordination with the other participants.

5.5 Australia was keen to assist with reducing the regional AIS deficiencies; and offered to continue to lead a sub-group of the task force and requested continuing assistance from China, Fiji, India and New Zealand.

5.6 Australia proposed that the following preliminary range of activities be comprehensively reviewed prior to the development of a full plan.

Number	Task
1	Examine the most recent AIS survey and identify areas of highest concern
2	Discover shortest path to finalisation of WGS84 implementation wherever that is not yet completed
3	Discover shortest path to finalisation of ICAO format AIP implementation wherever that is not yet completed
4	Discover shortest path to finalisation of Quality Systems (including training of AIS staff) implementation wherever that is not yet completed
5	Discover shortest path to finalisation of NOTAM/AIS Automation wherever that is not yet completed
6	Implement a quality improvement system to track and demonstrate improvement in rate of non-adherence to AIRAC.
7	Broaden the opportunity for Asia/Pacific AIS to conduct peer reviews on their activities
8	Investigate and then replicate successful Eurocontrol KPIs and AIS checklist (as demonstrated to the 2002 Task Force)
9	Investigate opportunities for cooperative and collaborative approaches to AIS investments and functionalities
10	Monitor Implementation Tasks associated with Electronic Terrain and Obstacle Data (eTOD)
11	Monitor Implementation Tasks associated with Digital Aeronautical Charts

5.7 Sri Lanka requested the meeting to prepare/arrange an awareness program on “How to implement the quality system and AIS automation for the countries where less AIS staff is occupied”. Further, Sri Lanka observed a difficulty with poorly trained and under-qualified AIS staff. The meeting acknowledged the AIS difficulties faced by developing States and noted that immediate assistance was not readily available.

5.8 There were few alternative approaches, suggestions or offers of assistance from the Task Force members. The meeting agreed that Australia should continue to lead the working group and that the recent AIS survey be utilised to maximum benefit in highlighting the areas in need of most urgent attention.

Agenda Item 6: Outcomes of Global AIS Congress

6.1 Australia presented the meeting the outcomes of the Global AIS Congress. The meeting reviewed the recommendations of the AIS Congress as follows:

Recommendation 1: ICAO adopt the AICM/AIXM as the standard aeronautical information conceptual model and the standard aeronautical information exchange model, and develop appropriate means of compliance, and global mechanisms to manage and develop the AICM/AIXM.

Recommendation 2: ICAO should evolve the AIM Concept and associated performance requirements and develop a road map to plan, manage and facilitate on a world-wide basis the transition from AIS to AIM.

Recommendation 3: ICAO instigate an urgent review of Annex 4 and Annex 15 in accordance with the recommendation of the 11th Air Navigation Conference.

Recommendation 4: ICAO should incorporate transition activities into the Global Air Navigation Plan in order to ensure broad-based development of AIS/AIM capabilities across all ICAO Regions.

Recommendation 5: ICAO should, as a matter of urgency address legal and institutional issues including those associated with an expansion of service from AIS to AIM that could constrain the adoption and implementation of AIM.

Recommendation 6: States working in close coordination with international organisations should support ICAO in any activity to accommodate the transition from AIS to AIM.

Recommendation 7: Recognising the critical nature of aeronautical information in the present and future ATM systems, States should give high priority to the implementation of existing Standards such as WGS-84 and Quality Management Systems and should, if necessary, request assistance from ICAO or if appropriate international organisations to do so.

Recommendation 8: Recognising the social dimension associated with change, ICAO working with States and international organisations determine the required Staff Profile(s) for AIM and determine appropriate skills and competencies and amend existing guidance material and develop new guidance and training material, under the Trainair programme perhaps, to assist States and other AIS organisations in the transition process.

Recommendation 9: ICAO should promote open access to information.

Recommendation 10: ICAO consider as a matter of priority how a Global Forum could be established.

6.2 The meeting reviewed the outcomes and recommendations from the AIS Congress and noted their continuing relevance. The question was put as to whether or not ICAO had made progress on the Madrid recommendations, however there was no up to date information available to the meeting in this regard.

Agenda Item 7: Latest of Developments in the AIS Fields

7.1 Japan reported the detail of the new provisions relating to the electronic Terrain and Obstacle Data which were included in the recent amendments to Annexes 4, 14 and 15. The proposed amendments to Annexes 15, 4, 14 as in **Appendices D, E** and **F** to this Report, respectively, originally stemmed from the Aeronautical Information Services/Aeronautical Charts (AIS/MAP) Divisional Meeting (1998, Montreal) and were subsequently developed by the Secretariat in consultation with the joint RTCA Special Committee 193/European Organization for Civil Aviation Electronics (EUROCAE) Working Group 44. The additional background information is contained in **Appendix G** to this Report.

7.2 Japan reported the activity of EUROCONTROL as follows:

a) Terrain and Obstacle Workshop was held by EUROCONTROL on 10 November 2006 and the Working Group (WG) of the Terrain and Obstacle (TOD) was established and TOR of the TOD WG was set by EUROCONTROL.

b) At the first meeting of the WG (December 2006), the main conclusion of the meeting was that there was much discussion and many issues were raised but that very few questions could be answered. It was obvious that the requirements published in Annex 15, and in particular those within Chapter 10, needed further review and clarification before any practical guidance could be made to support States.

7.3 Japan reported the activity in Japan as follows:

a) Japan has been investigating eTOD (electronic Terrain and Obstacle Data) and GIS (Geographic Information System) since 2004, and is now conducting final investigation whether Japan can afford to implement eTOD. According to the result, Japan will request budget necessary for survey of the data and development of eTOD database.

b) Current prospect is as follows:

i) Terrain data for the Area 1 can be implemented based on DEM (Digital Elevation Model) data of Japan Geographical Survey Institute. Methodology to add vegetations' height on DEM is under study.

ii) Obstacle data for the Area 1 can be implemented based on the exiting obstacle data. Methodology to check omission in those data is under study.

iii) Terrain data for Area 4 can be implemented based on the precision approach charts in AIP.

c) Terrain data and obstacle data for the Areas 2 and 3 is still under investigation. Especially, Japan is considering who should survey and take the responsibility.

d) Japan has joined the eTOD WG established by EUROCONTROL and is now studying the Amendment 33 to Annex 15 and reviewing the draft of ICAO guidance material of eTOD (*Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information*, Doc 9881) in cooperation with European regions.

Agenda Item 8: Review of Euro OPADD (Operating Procedures for AIS Dynamic Data) Edition 2.0 and Determination of Update Requirements for Asia/Pacific OPADD

EUROCONTROL Operating Procedures for AIS Dynamic

8.1 The Secretariat presented the WP/4, Adoption of EUROCONTROL Operating Procedures for AIS Dynamic, on behalf of New Zealand. New Zealand was of view that the Asia/Pacific procedures, which are published in the Guidance Manual for Aeronautical Information Services (Chapter 3 - Common Operating Procedures for Automated AIS Systems), required updating in order to ensure global harmonisation,

8.2 The meeting noted that the new OPADD provided more detailed explanations of procedures and examples were more comprehensive.

8.3 The meeting was informed that improvements in NOTAM Office automation relied on States conforming with internationally accepted procedures. New Zealand reported that 50% of NOTAM received by New Zealand from Asia/Pacific NOTAM Offices in 2006 required manual validation/correction.

Asia/Pacific OPADD

8.4 Japan presented the meeting the Euro OPADD Editions 2.0 and 2.1, which had been distributed to participants at the AITF/1 with CDs. The purpose of the presentation was to have the meeting to determine whether or not the EUROCONTROL Procedures were appropriate for use in the Asia/Pacific Region. The differences between the Editions 2.0 and 2.1 are summarized in **Appendix H** to this Report.

8.5 The *Guidance Manual for Aeronautical Information Services (AIS) in the Asia/Pacific Region* (First Edition, 2002) was also presented by Japan and distributed to the participants with CD. The difference between Euro OPADD and the current Asia/Pacific Region OPADD were tabled for consideration as in **Appendix I** to this Report. The meeting was requested to review these differences.

8.6 Japan proposed an amendment to Chapter 3 of the Asia/Pacific Region Guidance Manual to adopt the new Euro OPADD Edition 2.0 except for Section 6 “SPECIFIC EUROPEAN ARRANGEMENTS”, which is specific to the European region.

8.7 New Zealand had responded to the proposal by Japan via the email to the Secretariat beforehand. New Zealand supported Japan to adopt the European OPADD. Regarding the exception of Section 6, New Zealand recommend the adoption of the European Multi-Part NOTAM procedures, because if an Asia/Pacific State exchanges NOTAM with European States, the Asia/Pacific State will need to accept the European procedure in the interests of automation. If the meeting accepts the format from Europe, the meeting might as well apply the same format to the NOTAM. The involvement with the EUROCONTROL AIS Operations (AISOPS) Sub-Group would be good. New Zealand had asked the Chairman of the AISOPS Sub-Group, EUROCONTROL about the getting the OPADD incorporated into ICAO documents, the Chairman had replied as follows:

a) EUROCONTROL forwarded two proposals to EANPG in December 2005;
b) EANPG supported this and it went to ICAO Headquarters Montreal; and
c) Since then the Chairman had not received any formal feedback.

8.8 Consequently, the meeting agreed the recommendation by Japan, and the draft for the amendment to Chapter 3 of the *Guidance Manual for Aeronautical Information Services (AIS) in the Asia/Pacific Region* would be proposed at the ATM/AIS/SAR/SG/17. Japan will forward the paper to the Secretariat.

8.9 The meeting noted the information from EUROCONTROL AISOPS meeting. The Secretariat sought clarification on the status of participation when Asia/Pacific region is involved in the work of the EUROCONTROL AISOPS meetings. EUROCONTROL expressed that EUROCONTROL AISOPS meeting retained the possibility to expand the participation from other region as observers. The meeting was reminded that the AISOPS looked into a wider work program thus the OPADD FG may be considered more appropriate in that regard.

8.10 The meeting expressed the appreciation to Japan for their tireless and hard work to research the Euro OPADD Editions 2.0 and 2.1, and to identify the hundreds of differences between the Euro OPADD and Asia/Pacific OPADD. The Secretariat requested Japan to convey their appreciation to the staff involved in this work at Japan Civil Aviation Bureau.

Agenda Item 9: Status of the AICM/AIXM Implementation

9.1 The meeting noted that the FAA's modernizations efforts, such as Next Generation Air Transportation System (NextGen) and System Wide Information Management (SWIM), provided the mandate and the genesis for achieving aeronautical information modernization. The modernization of current AIS into Aeronautical Information Management (AIM) was part of these efforts. FAA began by identifying the FAA AIM mission. This mission is:

a) to provide the customers quality data in support of safe and efficient operations;
b) to meet the customers' current and future information needs; and
c) to commit to global aeronautical information coordination.

9.2 The meeting was advised that in order to achieve this mission, the FAA had adopted AIXM, which consists of a global model of aeronautical data content and an exchange format.

AIS Background

9.3 United States reported that AIS managed and delivered the aeronautical information necessary for the United States National Airspace System (NAS) to operate, and those services had safety, system, institutional, and operational-constraint problems. Examples of AIS problems included loss in situational awareness due to incomplete, inaccurate and untimely information, capacity restrictions, cockpit bandwidth/storage limitations, and the need to align policies, procedures and regulations with future systems.

9.4 The meeting noted that AIXM Version 5 was designed to meet expanded requirements for aeronautical information exchange. AIXM 5 aligned with ISO 19100 series standards for geospatial information and included the use of the Geography Mark-up Language (GML). It provides for a temporality model to deal with temporary information like the data contained in a Notice to Airmen (NOTAM). AIXM 5 supports the latest industry and ICAO requirements for aeronautical data, including obstacles, terminal procedures, and airport mapping databases. The new version of the model is modular and extensible to support current and future aeronautical information messaging requirements.

9.5 The FAA was of view that AIM must be globally interoperable. Implementing AIXM achieves that goal. Finally, the work with global partners and ICAO to develop standards and systems that ensure global exchange of aeronautical information services should continue.

Agenda Item 10: Any Other Business

Item B) of the NOTAM Format in Appendix 6 of Annex 15

10.1 Japan informed the meeting that an amendment to Annex 15 with regard to Item B) of the NOTAM Format had been proposed as follows:

5. Item B

For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN, NOTAMR OR NOTAMC comes into force. ~~*In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination.*~~

10.2 Japan presented the summary of replies from each Contract State and international organizations as in AN-WP/8153, which is attached as **Appendix J** to this Report. Seventy-one replies were received from 67 States and 4 international organizations to the proposed amendment to Annex 15.

10.3 Japan informed the meeting that the ANC had decided that the proposed amendment would be reported as consolidated draft report concerning Amendment 34 of Annex15, which would become applicable on 22 November 2007, to the Council.

10.4 Japan presented the possibility of different interpretations, and potential confusion and system impact when a future date-time in Item B) of NOTAMR and NOTAMC is allowed. Basing on to the Asia/Pacific OPADD, Japan considered as follows:

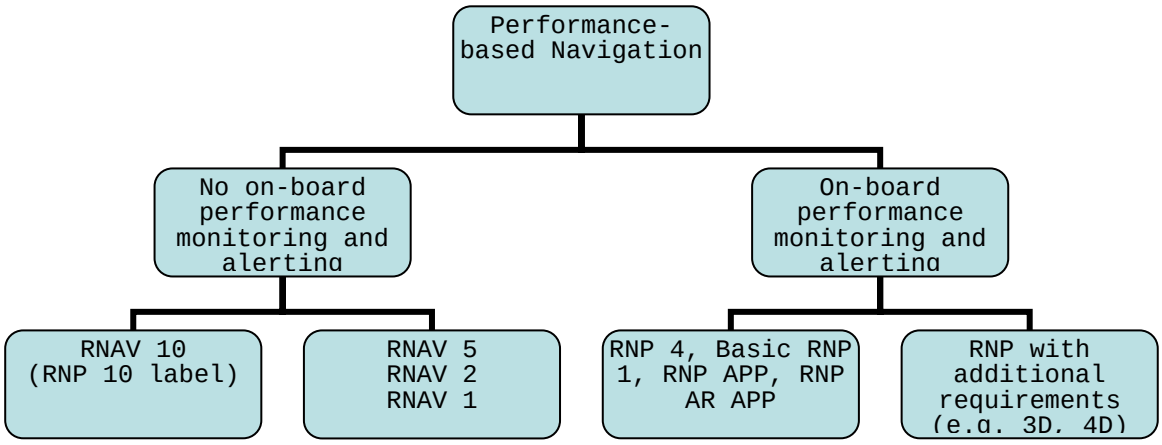
a) The actual date-time of NOTAM origination should be set in Item B) of NOTAMR or NOTAMC; and

b) The issuance of NOTAMR and NOTAMC with future validity should not be allowed.

Performance Based Navigation

10.5 In order to address the lack of global harmonization resulting from the differing required navigation performance (RNP) and area navigation (RNAV) naming conventions and proliferation of navigation specifications, ICAO, with the assistance of the RNP Special Operational Requirements Study Group (RNPSORSG), commenced work to ensure a common global understanding of RNP/RNAV and the relationship between RNP and RNAV system functionality.

10.6 Considering that the navigation containment is based on accuracy, functional integrity, continuity and systems availability, the RNPSORSG agreed on the need to specify future applications of performance based navigation **without** a requirement for on-board performance monitoring and alerting, to **be designated as RNAV**, and applications **with** a requirement for on-board performance monitoring and alerting, to **be designated as RNP**, as follows:



10.7 It was noted that in addition to the harmonized navigation specifications, also some new navigation specifications were developed for terminal area and approach applications. Work was complete on navigation specifications for RNAV 10 (RNP 10), RNP 4, RNAV 5, RNAV 1, Basic RNP 1, RNP Approach and RNP AR Approach.

10.8 The meeting noted that the Separation and Airspace Safety Panel (SASP) was in the process of drafting an amendment to Annex 11 – *Air Traffic Services*, Attachment B, *"Method of establishing ATS routes for use by RNAV-equipped aircraft"*, and its work included updating relevant guidance material on safety and separation.

10.9 Also, the meeting was informed that new ICAO guidelines with amendments to Annexes 6 – *Aircraft Operations* and 11, a revised *Performance Based Navigation Manual* and other related provisions would be presented in due course.

10.10 The meeting noted that ICAO had established a tentative set of global goals for implementation of PBN for each of the following areas of operation:

a) Oceanic and remote airspace (RNP-X)
b) Enroute continental (RNAV-X and RNP-X)
c) Terminal area (RNAV-X and RNP-X); and
d) Approach (RNP-X)

10.11 The meeting noted that a computer-based training CD-ROM would be developed by EUROCONTROL and be available by March/April 2007. Subsequently, workshops were tentatively planned for the Asia/Pacific region from 10-14 September 2007 at the Regional Office and 17-21 September 2007 in New Delhi, India.

10.12 The meeting noted the above information and was provided with the soft copy of the draft PBN Manual with a CD. The meeting also noted that the workshops were tentatively planned for the Asia/Pacific region from 10-14 September 2007 at the Regional Office and 17-21 September 2007 in New Delhi, India, and States were invited to participate in the workshops.

Development of the AITF Task List

10.13 The Secretariat informed the meeting that many ICAO meetings had developed the Task List and update it at each meeting. The Task List was to facilitate the works of the Task Force by indicating the timeframe, responsible parties and the current status of the task.

10.14 The Secretariat suggests the meeting to adopt the same approach for the Task Force. The draft Task List had been prepared by the Secretariat.

10.15 The meeting considered developing the Task List; and reviewed the draft AITF Task List. The AITF Task List as updated by the meeting is included as **Appendix K** to this Report.

Presentations

Jeppesen

10.16 Jeppesen informed the meeting that prior to the SRTM mission, high resolution worldwide datasets for terrain were not readily available for commercial aviation applications. During the meeting Jeppesen gave a presentation to show the States that Jeppesen has built a global terrain database which fulfills DO-276A and ICAO Annex 15 requirements for area 1 and which is in compliance with DO-200A.

10.17 Aeronautical Information Services plays a critical role in the emerging world air navigation system. Air safety and operational efficiency are driving navigation technology. Information is the fuel that drives RNAV, RNP, GNSS and other navigation technology. High quality and timely information is critical to an RNAV bases airspace system. The presentation expressed reasons for the shift to information centered navigation and cited and standards that apply to aeronautical information.

EUROCONTROL

10.18 EUROCONTROL provided a series of material and deliverables stemming from current work undertaken in the European region. EUROCONTROL generously provided the meeting information package containing the following elements:

a) *Aeronautical Information Management (AIM*)
b) *Controlled & Harmonised Aeronautical Information Network (CHAIN)*
c) *European AIS Database*
d) *AIS AGORA* leaflet; and
e) *OPADD* Edition 2.0.

10.19 In particular, the following topics were presented to the meeting:

a) ‘Interoperability - Towards a future AIM’ A strategic overview on where Europe sees Aeronautical Information Management (AIM) going in the next 10 to 15 years.

b) Controlled Harmonised Aeronautical Information Network (CHAIN). An implementation support programme that looks into improvements of the aeronautical data supply chain by focusing on quality and integrity aspects of the originated aeronautical data. Most recent deliverables were provided on a CD such as the ‘Best practice guide’ or the ‘Service Level Agreement package’.

c) European AIS Database (EAD). The concept and a general overview of a major European program being a service provided and owned by EUROCONTROL on behalf of its Member States.

10.20 The EAD presentation was supplemented by a presentation of Mr. Heinz Schaefer, Frequentis to outline the system development and system architecture of EAD/FR-AIS also indicating possibilities for further clients to exploit the capabilities and synergies of cooperation with the EAD/FR-AIS.

Agenda Item 11: Date and Venue for the next meeting

11.1 The meeting agreed on the next meeting of the Task Force as follows:

AITF/3	Three days in the first quarter 2008	Bangkok, Thailand

12. **Closing of the Meeting**

12.1 Mr. Hobson thanked all the participants for their contributions and attendance at the AITF/2; noting that clearly there is more work to be undertaken but a success indicator for this meeting is the strong attendance and energy from States AIS representatives. We have learned from the information provided by "front-running" players in the AIS world like Jeppesen, Frequentis, EAD and Eurocontrol. We have reinforced the knowledge that future ATM systems will be not only data dependent, but dependent on data of precise quality and assurance. It is already recognised that future ATM advancements are highly data dependent and the AIS of the world must meet the data quality challenges if the industry is to receive the level of reliability it requires.

12.2 Mr. Hobson was reflecting that from the previous AITF/1, they took a message to the ATM/AIS/AIS/SG that the AITF/1 had "*agreed that the importance of the AICM/AIXM data and exchange model need to be communicated to ATM/AIS/SAR/SG; and further, that the AITF1meeting endorsed the recommendations of the 11th Air Navigation Conference regarding adopting a common aeronautical information exchange model format (such as AICM/AIXM), but expressed concern at the apparent lack of recent progress in the implementation of international standards and complementary guidance material for these aeronautical data exchange protocols. The AITF1 Task Force also advised its Sub-Group that resolution of that key issue was necessary before much progress can be made towards meeting its Terms of Reference*". Clearly it was repetitive to make the same remark, but despite the 11th ANC recommendations on AIS matters and the recommendations from the Madrid conference, the delay in response from ICAO was still of concern to the AITF/2 and the AITF/1 remarks to the Sub-Group remain valid.

12.3 Mr. Hobson also expressed his sincere thanks to ICAO Regional Office for the use of their excellent facilities, their administration and refreshments. His personal thanks went to the Secretariat, Mr. Harano for his work before, during and after the Task Force meeting. He asked that the ICAO Regional Office send letters of thanks to the industry participants for their attendance and presentations.

12.4 During the week the meeting learned that:

a) This Task-Force now directly reports to the ATM/AIS/SAR/SG;

b) The result of survey from the States AIS in regard to meeting their ICAO requirements (although the Chairman will seek from the Regional Office a follow up letter to the States that have not yet responded, as the collected data underpins the important work of this Task Force);

c) That some States non-adherence to AIRAC to is still causing concern within the industry;

d) That although off to a slow start Australia will continue to lead a working group searching for remedies to regional AIS deficiencies (at the same time noting however that during the presentations to AITF/2 there did appear to be significant advantage in learning how some of the ex-USSR States had quickly adapted available AIS automation and quality assured status in the European environment);

e) Cautions on the NOTAM Field B use flowing from proposed amendments to Annex 15;

f) Following the extensive work from Japan the meeting has endorsed for the region adoption of the European OPADD;

g) There is enormous effort and expense required to meet the requirements for Electronic Terrain and Obstacle data, again thanked Japan for the comprehensive research presented;

h) There is a large effort underway in the FAA to update their AIS operating architecture and capability; and

i) Finally, the meeting noted that information regarding the Performance Based Navigation (PBN).

12.5 Mr. Harano noted that this meeting counted as many as 52 delegates. In spite of the large number, the meeting was conducted very smoothly because the core members from Australia and Japan prepared the meeting very well in advance. He mentioned that the core team started the preparation in November 2006. Mr. Harano thanked the Chairman, Mr. Hobson and Japan for the preparation of the meeting and drafting the report.

12.6 Mr. Hobson declared closed AITF/2 Bangkok February 2007.

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LIST OF WORKING PAPERS (WPs) and INFORMATION PAPERS (IPs)

WORKING PAPER

WP No.	Agenda Items	Presented by	Subject
1	1	Secretariat	Provisional Agenda
2	3	Secretariat	Review of the Report of APANPIRG/17 and Follow-Up on Decisions and Conclusion Relevant to the AIS Field
3	4	Secretariat	Outcome of the Comprehensive Survey in Aeronautical Information Services
4	8	Secretariat on behalf of New Zealand	Adoption of Eurocontrol Operating Procedures For AIS Dynamic Data
5	8	Japan	Update Requirements For Asia/Pacific OPADD
6	9	Secretariat	Development of AITF Task List
7	2	Chairman	Review of AITF/1
8	5	Australia	Review of Air Navigation Deficiencies in the AIS Field
9	6	Australia	Outcomes of Global AIS Congress – Spain June 2006
10	(9)	United States	Status of FAA AIM/AIXM Modernization and Next Generation Aeronautical Information Management

INFORMATION PAPER

IP No.	Agenda Items	Presented by	Subject
1	-	Secretariat	Tentative List of Working Papers (WPs) and Information Papers (IPs)
2	-	Secretariat	Terms of Reference of the AITF
3	7	Japan	Electronic Terrain and Obstacle Data (eTOD)
4	9	Japan	Item B) of the NOTAM Format in Appendix 6 of Annex 15
5	9	Secretariat	Implementation of Performance Based Navigation (PBN)

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(as of 30 January 2007)

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
Australia	Jennifer Cogan Aeronautical Infromation Servicees, Manager Airservices Australia Tel: 61-2-6268 4983 Fax: 61-2-6258 5696 Eamil: jennifer.cogan@airservicesaustralia.com	New format	Yes	Yes	Yes	Yes	Yes	Yes
Bangladesh								
Bhutan								
Brunei Darussalam								
Cambodia	Hul NenState Chief of AIS Secretariat of Civil Aviation Tel: 58823725937 Fax: 85523725938	New format	Yes	NOTAM is issued.	Yes	Yes	Yes	Yes
China	Chen Xiangyang Deputy Director Air Traffic Management Bureau, CAAC Tel: 0086-10-87786810 Fax: 0086-10-8776810 Email: cxy@atmb.net.cn	New format	Yes	Yes	Yes	Yes	Yes	Yes

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
Hong Kong,China	Mr. P.F. Wong Chief (Technical and Development) Air Traffic Division/Hong Kong Civil Aviation Department Tel: (852) 2910 0186 Fax: (852) 2910 0186 Email: pfwong@cad.gov.hk	New format	Yes	Yes	Yes	Yes	Yes	Yes
Macau, China								
Cook Islands								
DPR Korea	An Kyong Hwa Director of AIS Aeronautical Information Service Tel: 850-2-1811-999 (Ext-8108) Fax: 850-2-3814410 (Ext-4625) Eamil:gaca@silibank.com attn: An Kyong Hwqa, Director of AIS, GACA	New format	Yes	Yes	Yes	Yes	Yes	Yes
Fiji	Jone VaveAirports General Manager Air Traffic Management Airports Fiji Limited Tel: (679) 6725777 EXT 4514 Fax: (679) 6725 161 Email: jonet@afl.com.fj	New format	Yes	Yes	Yes	Yes, by Civil Aviation Authority of the Fiji Islands	Yes	Yes

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
France (French Polynesia)	Charles Peretti Chief AviationTahiti-FAA's Airport Manager Tahiti Civil Aviation Tel: +689 86 10 20 Fax: +689 86 10 29 Email: sna-pf@seac.ph	New format	Yes	Yes	Yes	Yes	Yes	Yes
(New Caledonia)								
India								
Indonesia	Dinni Noerdiani Assistant Director for AIS Tel/Fax: (42) (21) 3507603 (F/T) 3516960 (T) 3516961 (T) 3507569 (T/F)Email: ais_indonesia@indo.net.id	New format	Yes	Yes	Yes	Yes	Yes	Yes
Japan	Masanori Kojima Special Assistant to the Director JCAB Tel: 81-3-5253-8111 ex51244 Fax: 81-3-5253-1664 Email: kojima-m2q2@mlit.go.jp	New format	Yes	Yes	Yes	Yes	Yes	Yes
Kiribati								
Lao PDR								

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
Malaysia	Tan Kim Sin Asst. Director Dept. of Civil Aviation Malaysia Tel:603-8871 4284 Fax: 603-8881 0530 Email: tanks@dca.gov.my	Yes	Yes	Yes	No, due to local administrative coordination.	Yes	Yes	Yes
Maldives	Fathmath Ramiza Assitant Director Civil Aviation Department Tel: (960) 3324983 Fax: (960) 3323039 Email: ramiza@aviainfor.gov.mv		Yes	Yes	Yes	Yes	Yes	Yes
Marshal Islands								
Micronesia, Federated States of								
Mongolia								
Myanmar								
Nauru								
Nepal		New format	AIRAC procedure introduced but not maintained properly.	No	AIRAC procedure introduced but not maintained properly.	Yes	Yes	Yes

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
New Zealand	Mr. Mark Hingston Manager Aeronautical Services Civil Aviation Authority of New Zealand Tel: +64 4 560 9429 Fax: +64 4 569 2024 Email: HingstonM@caa.govt.nz	New format	Yes	Yes, if applicable.	Yes	Yes	Yes	Yes
Pakistan	M. Akhtar Zaidi General Manager ATS Civil Aviation Authority Tel: 9221-9248756 Fax: 9221-9248758 Email: gmats@cybernet.pk	New format	No. AIP AMDT is issued as required.	No	Yes	Yes	Yes	Yes
Palau								
Papua New Guinea								
Philippines	Mr. Necias I. Dayap Chief, Aeronautical Information Services Air Transportation Office Tel: +632 8799288/+632 8799159 Fax: +632 8799288 Email: ais@ato.gov.ph	New format	Yes	Yes	Yes	Yes	Yes	Yes

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
Republic of Korea	Shin, Dong Ho Assistant Director of Air Traffic Management Division Civil Aviation Safety Authority (KCASA) Tel: 82-2-2669-6431 Fax: 82-2-6342-7289 Email: aipshin@moct.go.kr	New format	Yes	Yes	Yes	Yes	Yes	Yes
Samoa								
Singapore	Wong Laiang Fen Chief, Aeronautical Infromation Services Civil Aviation Authority of Sinagpore Tel:65-6541 2426 Fax: 65-6543 1826 Email: wong_liang_fen@caas.gov.sg	New format since 25 April 1996	Yes	Yes	Yes	Yes	Yes	Yes
Solomon Islands								
Sri Lanka	Vineetha Senanayake Senior Aeronautical Information Service Officer Civil Aviation Authority Tel: 00 94 11 2440231 Fax: 00 94 11 2440231 Email: comcaa@silnet.lk	New format	Yes	Yes	Yes	Yes	Yes	Yes

State/Territory	Focal Point	Status of Implementation of the AIRAC System						
		Status of AIP Format	AIP Amendment in accordance with AIRAC procedures?	AIP Amendment NIL issued when amendment is not published?	AIP Supplement in accordance with AIRAC procedures?	AIC published as required?	Trigger NOTAM issued as required?	Checklist of NOTAM issued as required?
Thailand	Mr. Preecha Meeboonya Acting, Chief AIS Department of Civil Aviation Tel: 02 2860922 Fax: 02 2874060 Email: aisthai@aviation.go.th Mr. Manas Lomsap Director Aeronautical Information Service Center Aeronautical Radio of Thailand Ltd Tel: 662-2859836 Fax: 662-2859848 Email: mlomsan@hotmail.com	New format	Yes. Department of Civil Aviation	Yes. Department of Civil Aviation	Yes. Department of Civil Aviation	Yes. Department of Civil Aviation	Yes. AEROTHAI	Yes. AEROTHAI
Tonga								
U.S.A.								
Vanuatu								
Viet Nam								

Note: Blank indicates that no information has been provided.

(as of 30 January 2007)

State/Territory	Implemented the Guidance Material for AIS in the Asia/Pacific Region (First Edition - 2002)?	Daynamic Data Automation					
		Established Dymaic Data Automation? If no, do you have plan?	Information stored in the database accessible by and/or exhcnageable with other users?	Geographical coverage area of this database.	NOTAM production process automatically use this database?	NOTAM reception process automatically use this database?	Dynamic data opened to the Internet? If yes, what kind of form? If no, do you have plan?
Australia	Fully. (this does however require a review)	Yes	Yes	Melbourn + Brisbane FIRs, Partial international	Yes	Yes	Yes. HTML
Bangladesh							
Bhutan							
Brunei Darussalam							
Cambodia	Fully. Eight Edition - 1995 - Sixth Edition	No. No plan.	No		No	No	No plan.
China	Partially. We plan to finish within three years.	Yes	Yes	All FIR	Yes	Yes	No
Hong Kong,China	Partially - ISO 9001 not yet implemented. November 2007	Yes	Yes	Asia Pacific area and selected European and North American airports	Partially	Partially	No
Macau, China							
Cook Islands							

State/Territory	Implemented the Guidance Material for AIS in the Asia/Pacific Region (First Edition - 2002)?	Daynamic Data Automation					
		Established Dymaic Data Automation? If no, do you have plan?	Information stored in the database accessible by and/or exhcnageable with other users?	Geographical coverage area of this database.	NOTAM production process automatically use this database?	NOTAM reception process automatically use this database?	Dynamic data opened to the Internet? If yes, what kind of form? If no, do you have plan?
DPR Korea	In accordance with ICAO guidance manual (Doc 8126). Have no guidance manual issed in Asia/Pacific region (First Edition - 2002).	No. It is in progress. As of 2007, it shall be completed.	No	Phongyang FIR	No	No	No. Being discussed.
Fiji	Partially	Yes. However, initial inpurt is manual.	Yes. However, a specific request format must be used for other users, including other States AIS with compatible systems.	Asia/Pacific and Wetsrn USA. The database is capable of storing dynamic data on a global basis.	Yes	Yes	No. To be decided soon pending a security evaluation.
France (French Polynesia)	Partially. First semester 2007.	Yes	Yes	Tahiti FIR	Yes	Yes	No. After 2010.
(New Caledonia)							
India	Partially	Yes	Yes	Indonesia FIR and inernational partially	Yes	Yes	No. Being proposed.
Indonesia							

State/Territory	Implemented the Guidance Material for AIS in the Asia/Pacific Region (First Edition - 2002)?	Daynamic Data Automation					
		Established Dymaic Data Automation? If no, do you have plan?	Information stored in the database accessible by and/or exhcnageable with other users?	Geographical coverage area of this database.	NOTAM production process automatically use this database?	NOTAM reception process automatically use this database?	Dynamic data opened to the Internet? If yes, what kind of form? If no, do you have plan?
Japan	(Almost) fully. The style of description in the item 'D' differs from the Guidance Manual.	Yes	Yes	Refer to Note 2.	Yes	Yes	Yes. HTML
Kiribati							
Lao PDR							
Malaysia	Fully	No. 2008	No	Kuala Lumpur and Kota Kinabalu FIRs	Yes	No	No. in 2008.
Maldives	No. By the end of 2008.	No. Late 2009.	No. After implementaion of new system, data will be exchanged.	Not designated yet.	No	No	No. Within the next two years.
Marshal Islands							
Micronesia, Federated States of							
Mongolia							
Myanmar							
Nauru							
Nepal	No, planning to prepare the manual by 2007.	No, planning by 2009.	No	Not established	No	No	No, planning to establish by 2010.

State/Territory	Implemented the Guidance Material for AIS in the Asia/Pacific Region (First Edition - 2002)?	Daynamic Data Automation					
		Established Dymaic Data Automation? If no, do you have plan?	Information stored in the database accessible by and/or exhcnageable with other users?	Geographical coverage area of this database.	NOTAM production process automatically use this database?	NOTAM reception process automatically use this database?	Dynamic data opened to the Internet? If yes, what kind of form? If no, do you have plan?
New Zealand	Required under Civil Aviation Rules Part 175 Aeronautical Information Service Organizations - Certification.	Yes	Yes	New Zeland FIR. Auckland Oceanic FIR escluding Cook, Samoa, Tonga, McMurdo Sectors and Norfolk Island. Exchange NOTAM with over 50 International NOF including Europe, Asia/Pacific, North/South America, Middle East.	Yes	Yes	Yes. PDF and HTML
Pakistan	Partially. Full implementation of Guidance Manual will be done after introduction of new autmated system.	Yes, but not fully functional. In process of replacing the system totally with full aumtomation facility.	No, same as left.	As per Doc 7383 and additional requirements of location.	Yes	Yes	Yes. HTML
Palau							
Papua New Guinea							
Philippines	No	No	No	No	No	No	No. PDF

State/Territory	Implemented the Guidance Material for AIS in the Asia/Pacific Region (First Edition - 2002)?	Daynamic Data Automation					
		Established Dymaic Data Automation? If no, do you have plan?	Information stored in the database accessible by and/or exhcnageable with other users?	Geographical coverage area of this database.	NOTAM production process automatically use this database?	NOTAM reception process automatically use this database?	Dynamic data opened to the Internet? If yes, what kind of form? If no, do you have plan?
Republic of Korea	No, by the end of year 2007.	Yes	Yes	In the Incheon FIR	Yes	Yes	Yes. HTML
Samoa							
Singapore	Fully. Adapted to local requirements.	Yes	Yes	Asia, Australia, Europe, Middle East, South Africa	Yes	Yes	Yes. PDF
Solomon Islands							
Sri Lanka	No. 2008	No	No		No	No	No. 2008
Thailand	Partially	Yes. AEROTHAI	Yes. AEROTHAI		No	Yes. AEROTHAI	Yes. PDF, HTML. AEROTHAI
Tonga							
U.S.A.							
Vanuatu							
Viet Nam							

Note 1: Blank indicates that no information has been provided.

Note 2: Detail Provided by Japan;
[Asia] 20 countries (plus three regions)
[Oceania] six countries (plus two regions)
[Middle East] 10 countries
[Europe] 27 countries
[North America] two countries
[south America] two countries
Japan collects NOTAM from the 69 countries (plus five regions)

(as of 30 January 2007)

State/Territory	Static Data Automation							
	Established Static Data Automation?	Information stored in the database accessible by and/or exchange with other users?	Geographical coverage area of this database	Production process of AIP automated? If yes, what kind of information? What kind of form?	Static data open to the Internet? What kind of form?	AIP with paper also published?	Static data provided by CD? If no, have plans?	Electronic automatic exchange of Static Data carried out?
Australia	Yes	No	Melbourne + Brisbane FIRs. Partial international	Yes. AIP and AIP SUP. PDF	Yes	Yes	No. Have plans.	No. AIXM is proposed by 2009.
Bangladesh								
Bhutan								
Brunei Darussalam								
Cambodia	No. No plan.	No		No	No	Yes	No. No plan.	No. No plan.
China	Yes	No	All FIRs	Partially automated.	Yes. PDF	Yes	Yes	No. Doing research .
Hong Kong,China	No. 2010	No	Asia Pacific area and selected European and North American airports	Patially automated.	Yes. AIP, AIP AMDT, AIP SUP, AIC. PDF	Yes	No. No plan.	No. 2010
Macau, China								
Cook Islands								
DPR Korea	No. In progress. By 2010, it shall be completed.	No	Phongyang FIR	No	No. Being discussed.	Yes	No. It shall be provided by CD from 2010.	No. Being discussed.

State/Territory	Static Data Automation							
	Established Static Data Automation?	Information stored in the database accessible by and/or exchange with other users?	Geographical coverage area of this database	Production process of AIP automated? If yes, what kind of information? What kind of form?	Static data open to the Internet? What kind of form?	AIP with paper also published?	Static data provided by CD? If no, have plans?	Electronic automatic exchange of Static Data carried out?
Fiji	No. To be discussed in due course.	No	Limited to within the Nadi FIR. Data on Island states located within the Nadi FIR are also published in the Fuji AIP.	No	No. To be discuseed in due course.	Yes	No, To be discussed in due course.	No. To be discussed in due course.
France (French Polynesia)	Yes	Yes	FIR	Partially automated.	No. Have plans.	Yes	Yes	No. No plan.
(New Caledonia)								
India								
Indonesia	No, being proposed.	No	No	No	No	Yes, AIP printed.	No	No
Japan	No. It is planned to be completed in 2008.	No		No	No. AIP/AIP AMDT/AIP SUP/ AIC are planned to be open in 2008.	Yes	No. AIP/AIP AMDT/AIP SUP/AIC shall be offered in 2008.	No. Aeronautical Information exchange by AIXM shall be in operation in 2008.
Kiribati								
Lao PDR								
Malaysia	No. 2008	No	Kula Lumpur and Kota Kinabalu FIRs	Partially automated.	No. 2008. AIXM/AICM	Yes	No.Have plans in January 2007.	No. 2008.
Maldives	No. After the implementation of new system.	No		No	Yes, but NOTAMs not avaialble on net.	Yes	No. By 2009	No. Late 2009.

State/Territory	Static Data Automation							
	Established Static Data Automation?	Information stored in the database accessible by and/or exchange with other users?	Geographical coverage area of this database	Production process of AIP automated? If yes, what kind of information? What kind of form?	Static data open to the Internet? What kind of form?	AIP with paper also published?	Static data provided by CD? If no, have plans?	Electronic automatic exchange of Static Data carried out?
Marshal Islands								
Micronesia, Federated States of								
Mongolia								
Myanmar								
Nauru								
Nepal	No. Planning to establish by 2009.	No	No	No	No. Not determined.	Yes. Paper form of AIP only is published.	No. Planning to provide by CD by 2008.	No. No plan.
New Zealand	Yes	Yes	New Zealand FIR. Auckland Oceanic FIR excluding Cook, Samoa, Tonga, Mcmurdo Sectors and Norfolk Island.	No	Yes	Yes	Yes	No. Study looking at AIXM.
Pakistan	No. Have plan and will be implemented in due course of time.	No. Have plan and will be implemented in due course of time.	N/A	No	Yes. AIP SUP/NOTAM. PDF.	Yes	No	No. Have plan and will be implemented in due course of time.
Palau								
Papua New Guinea								
Philippines	Yes	No	-	Partially automated.	No. PDF	Yes	No	No

State/Territory	Static Data Automation							
	Established Static Data Automation?	Information stored in the database accessible by and/or exchange with other users?	Geographical coverage area of this database	Production process of AIP automated? If yes, what kind of information? What kind of form?	Static data open to the Internet? What kind of form?	AIP with paper also published?	Static data provided by CD? If no, have plans?	Electronic automatic exchange of Static Data carried out?
Republic of Korea	No	No	In the Incheon FIR	No	Yes. AIP, AIP AMDT, AIP SUP, AIC. PDF	Yes	Yes. AIP, AIP AMDT, AIP SUP, AIC. PDF	No
Samoa								
Singapore	Yes	No	Asia, Asutralia, Europe, Middle East, South Africa	No	Yes. AIP, AIP AMDT, AIP SUP, AIC. PDF	Yes	No. No plan to provide static data by CD.	No. No plan for electronic atumatic exchange of static data yet.
Solomon Islands								
Sri Lanka	No. 2008		-	No	No. 2008	Yes	No	No. 2008
Thailand	No. A year or so.	No	-	No	No. A year or so.	Yes	No. A year or so.	No. A year or so.
Tonga								
U.S.A.								
Vanuatu								
Viet Nam								

Note: Blank indicates that no information has been provided.

State/Territory	Charting system	Electronic Terrain and Obstale Data			What other information might be helpful for Regional AIS Automation Plan?
	Introduced a computerised charting system? If yes, what kind of system? If no, do you have plans to do so and when?	Changing the definition of the obstacle in AIP? If no, do you have plans? If yes, are you pusblishing the obtacle data in which area?	Development of the electronic Terrain database according to Amendment 33 to Annex 15? If no, do you have plans? Difficulty?	Development of the electronic Obstacle database according to Amendment 33 to Annex 15? Difficulty?	
Australia	Yes. CAD	No. Sometime in the next four years.	Yes, but early stage only. Anticipate this will be difficult.	Yes, but as left.	-
Bangladesh					
Bhutan					
Brunei Darussalam					
Cambodia	Yes. VISO	No. 2007	No. Staff need to be trained.	No. Staff need to be trained.	
China	Yes. CAD	No	No	No	
Hong Kong,China	Yes. Two-dimentionalCAD	No. December 2006	No. By 2008. Lack of ICAO SARP on common global standard (e.g. AICM/AIXM)	No. By 2010. Lack fo ICAO SARP on common global standard (e.g. AICM/AIXM)	
Macau, China					
Cook Islands					
DPR Korea	Yes	No. Being discussed.	No. Have a plan and is being discussed. Great difficulty.	No. Have a plan and is being discussed. Great difficulty.	The information needed are as follows: - The detailed guidance materials for automation program and automation process in AIS. - Guidance Manual for aeronautical information services in the Asia/Pacific Region (First Edition - 2002).

State/Territory	Charting system	Electronic Terrain and Obstale Data			What other information might be helpful for Regional AIS Automation Plan?
	Introduced a computerised charting system? If yes, what kind of system? If no, do you have plans to do so and when?	Changing the definition of the obstacle in AIP? If no, do you have plans? If yes, are you pusblishing the obtacle data in which area?	Development of the electronic Terrain database according to Amendment 33 to Annex 15? If no, do you have plans? Difficulty?	Development of the electronic Obstacle database according to Amendment 33 to Annex 15? Difficulty?	
Fiji	No. CAD, 2008.	Yes. Areas 1 & 2 - Aeronautical Chart. Fiji Islands. 1:500 000 15 April 2004 Area 3 ICAO Type A chart	No. Have a plan. Request ICAO assistance.	No. Have a plan. Request ICAO assistance.	Is there any ICAO funded program available to assist States in achieving full AIS functionality?
France (French Polynesia)	No	No	No	No. No plan.	-
(New Caledonia)					
India					
Indonesia	Yes, CAD	No	No	No	Information sharing between Contracting States
Japan	No. The computerized charting system shall be in use in 2011.	No. Under consideration.	No. Have technological and finacial problems to overcome.	No. Have financial difficulties.	
Kiribati					
Lao PDR					
Malaysia	No. 2008	No. 2008	No. Have a plan. No difficulty.	No. Have a plan. No difficulty.	Anything on the latest development of AIS and The States that have practised it.
Maldives	No. Late 2009.	Yes. Area 3	N/A	No. Have a plan.	
Marshal Islands					
Micronesia, Federated States of					
Mongolia					

State/Territory	Charting system	Electronic Terrain and Obstale Data			What other information might be helpful for Regional AIS Automation Plan?
	Introduced a computerised charting system? If yes, what kind of system? If no, do you have plans to do so and when?	Changing the definition of the obstacle in AIP? If no, do you have plans? If yes, are you pusblishing the obtacle data in which area?	Development of the electronic Terrain database according to Amendment 33 to Annex 15? If no, do you have plans? Difficulty?	Development of the electronic Obstacle database according to Amendment 33 to Annex 15? Difficulty?	
Myanmar					
Nauru					
Nepal	No. Planning to introduce computerized charting system by 2007.	No. Under consideration.	No. Exploring.	No. Exploring.	No commnent.
New Zealand	Yes. GIS - ESRI Map Info Micro Station	No	Yes	Yes	Note 2 below
Pakistan	No. Have plan and will be implemented in due course of time.	No. Have plan and will be implemented in due course of time.	No. Have plan and will be implemented in due course of time.	No. Have plan and will be implemented in due course of time.	ICAO may assist in low cost software for AIS automation and training for AIS automantion plan.
Palau					
Papua New Guinea					
Philippines	Yes. CAD	No	No	No	None
Republic of Korea	Yes. CAD	No. By the end of year 2008.	No, but planning to develop the database. Due to the lack of the detailed reference and guidance material for the introduction of the electronic Obstacle database, it is diffucult to introduce the database concerned.	No, but planning to develop the database. Due to the lack of the detailed reference and guidance material for the introduction of the electronic Terrain database, it is diffucult to introduce the database concerned.	AIXM shall be endorsed officially as an exchange model as soon as possible.
Samoa					

State/Territory	Charting system	Electronic Terrain and Obstale Data			What other information might be helpful for Regional AIS Automation Plan?
	Introduced a computerised charting system? If yes, what kind of system? If no, do you have plans to do so and when?	Changing the definition of the obstacle in AIP? If no, do you have plans? If yes, are you pusblishing the obtacle data in which area?	Development of the electronic Terrain database according to Amendment 33 to Annex 15? If no, do you have plans? Difficulty?	Development of the electronic Obstacle database according to Amendment 33 to Annex 15? Difficulty?	
Singapore	Yes. CAD	No. Target to do so in year 2007.	Yes. Have approached prospective contractors to request for information of the procurement of electronic terrain data. Cost for developing and maintaining the electronic Terrain database is prohibitive. Also, ICAO Annex 15 did not specify the format for the database, whether it should be in the form of table or map.	Yes. Have approached prospective contractors to request for information of the procurement of electronic terrain data. Cost for developing and maintaining the electronic Obstacle database is prohibitive. Also, ICAO Annex 15 did not specify the format for the database, whether it should be in the form of table or map.	-
Solomon Islands					
Sri Lanka	No. 2008	No. 2008	No. 2008. No difficulty.	No. 2008. No difficulty.	-
Thailand	No	No. Within two years.	No. Within two year. No difficulty.	No. Within two year. No difficulty.	DCA, with the support from ICAO, is in the process of updating AIS System in accordance with ICAO SARPs. By set-up group for study of AIS regional automation, plan to use in Asia/Pacific.
Tonga					
U.S.A.					
Vanuatu					
Viet Nam					

State/Territory	Charting system	Electronic Terrain and Obstale Data			What other information might be helpful for Regional AIS Automation Plan?
	Introduced a computerised charting system? If yes, what kind of system? If no, do you have plans to do so and when?	Changing the definition of the obstacle in AIP? If no, do you have plans? If yes, are you pusblishing the obtacle data in which area?	Development of the electronic Terrain database according to Amendment 33 to Annex 15? If no, do you have plans? Difficulty?	Development of the electronic Obstacle database according to Amendment 33 to Annex 15? Difficulty?	

Note 1: Blank indicates that no information has been provided.

Note 2: Comment by New Zealand; Regional Guidance Material and the AIS Manual (Doc 8168)

Europe (Eurocontrol) and the Asia/Pacific Regiona have published guidance material for operating procedrues for AIS Dynamic Data containg detailed infromation for the creaion and processing of NOTAM far in excess of what is provided in Doc 8068. The defacto "worldwide" standards for AIS Dyanmic Data are bing set by Eurocontrol in advance of possible futrure ICAO Stantdards and guidance material. For example, the Common AIS query procedures for self-briefing by end users, Doc 8168 Appendix B to Chapter 9, have been overtaken by Eurocontrol's Intergrated Briefing (iPIB) Project and the query formats publishedin doc 8168 Appendix C to Chapter 9 are not in common use and should be replaced which is current industry standards.

In the interests of global harmonization there should be no regional differences with regard to operating procedures thus obviating the need for such "regional" manuals.

Feature relationship. Relationship that links instances of one feature type with instances of the same or a different feature type (ISO 19101*).

Feature type. Class of real world phenomena with common properties (ISO 19110*).

Note.— In a feature catalogue, the basic level of classification is the feature type.

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19108*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

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

Metadata. Data about data (ISO 19115*).

Note.— Data that describes and documents data.

Movement area. That part of an aerodrome/heliport to be used for take-off, landing and taxiing of aircraft including apron(s).

Obstacle. All fixed and mobile, permanent or temporary, objects that are located on an area intended for the surface movement of aircraft or that extend above defined obstacle assessment surfaces.

Note.— Obstacle assessment surfaces are described in Appendix 8.

Portrayal. Presentation of information to humans (ISO 19117*).

Post spacing. Angular or linear distance between two adjacent elevation points.

Relief. The inequalities in elevation of the surface of the earth represented on aeronautical charts by contours, hypsometric tints, shading or spot elevations.

Significant obstacle. Any natural terrain feature or obstacle which has vertical significance in relation to adjacent and surrounding features and which is considered a potential hazard to the safe passage of aircraft in the type of operation for which terrain and obstacle data are used.

Terrain. Surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, excluding obstacles.

Note.— In practical terms depending on the method of data collection, terrain represents the continuous surface that exists between the bare Earth and the top of the canopy (or something in between also known as "first reflective surface").

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* ISO Standard 19101, *Geographic information — Reference model*
* ISO Standard 19104, *Geographic information — Terminology*
* ISO Standard 19108, *Geographic information — Temporal schema*
* ISO Standard 19109, *Geographic information — Rules for application schema*

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* ISO Standard 19110, *Geographic information — Feature cataloguing schema*
* ISO Standard 19115, *Geographic information — Metadata*
* ISO Standard 19117, *Geographic information — Portrayal*
* ISO Standard 19131, *Geographic information — Data product specification*

Editorial Note.— End of new definitions.

CHAPTER 3. GENERAL

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3.6 General specifications

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Editorial Note.— Paragraph 3.6.4 *amended* and *transferred* to 3.7.
Renumber the subsequent paragraphs.

~~3.6.4 World Geodetic System — 1984 (WGS-84)~~

~~3.6.4.1 As of 1 January 1998, published geographical coordinates indicating latitude and longitude shall be expressed in terms of the World Geodetic System — 1984 (WGS-84) geodetic reference datum.~~

~~3.6.4.2 As of 5 November 1998, in addition to the elevation (referenced to mean sea level) for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1, shall also be published.~~

~~3.6.4.3 Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2 and Annex 14, Volume I and II, Chapter 2, shall be identified by an asterisk.~~

~~3.6.4.4 The order of resolution of geographical coordinates and geoid undulations shall be that as specified in Appendices 1 and 7.~~

~~*Note.— Specifications governing the determination and reporting of WGS-84 coordinates are given in Annex 11, Chapter 2, and Annex 14, Volumes I and II, Chapter 2.*~~

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3.7 Common reference systems for air navigation

3.7.1 Horizontal reference system

~~3.6.4.1~~3.7.1.1 ~~As of 1 January 1998,~~World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system for international air navigation. Consequently, published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the ~~World Geodetic System — 1984 (~~WGS-84~~)~~ geodetic reference datum.

Note 1.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674).*

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of WGS-84 related to aeronautical coordinates for geographical positions established by air traffic services are given in Annex 11, Chapter 2, and Appendix 5, Table 1 and, for aerodrome/heliport related positions, in Annex 14, Volumes I and II, Chapter 2 and Table 1 in Appendices 5 and 1, respectively.

Editorial Note.— Paragraph 3.6.4.2 *amended* and *transferred* to 3.7.2.

3.7.1.2 **Recommendation.—** *In precise geodetic and some air navigation applications, temporal changes in the tectonic plate motion and tidal effects on the crust of the Earth should be modelled and estimated. To reflect the temporal effect, an epoch should be included with any set of absolute station coordinates.*

Note 1.— The epoch of the WGS-84 (G873) reference frame is 1997.0 while the epoch of the latest updated WGS-84 (G1150) reference frame which includes plate motion model, is 2001.0. (G indicates that coordinates were obtained through Global Positioning System (GPS) techniques and the number following G indicates the GPS week number when these coordinates were implemented in the National Imagery and Mapping Agency's (NIMA's) precise ephemeris estimation process).

Note 2.— The set of geodetic coordinates of globally distributed permanent GPS tracking stations for the most recent realisation of WGS-84 reference frame (WGS-84 (G1150)), is provided in the WGS-84 Manual *(Doc 9674). For each permanent GPS tracking station, the accuracy of individually estimated position in WGS-84 (G1150) has been on the order of 1 cm (1 σ).*

Note 3.— Another precise worldwide terrestrial coordinate system is the International Earth Rotation Service (IERS) Terrestrial Reference System (ITRS) and the realisation of ITRS is the IERS Terrestrial Reference Frame (ITRF). Guidance material regarding the ITRS is provided in Appendix C of the WGS-84 Manual *(Doc 9674). The most current realisation of the WGS-84 (G1150) is referenced to ITRF 2000 epoch. The WGS-84 (G1150) is consistent with the ITRF 2000 and in practical realisation differences between these two systems are in one to two centimetre range worldwide, meaning WGS-84 (G1150) and ETRF 2000 are essentially identical.*

~~3.6.4.3~~3.7.1.3 Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex 11, Chapter 2 and Annex 14, Volume I and II, Chapter 2, shall be identified by an asterisk.

~~3.6.4.4~~3.7.1.4 The order of publication resolution of geographical coordinates ~~and geoid undulations~~ shall be that as specified in ~~Appendices~~Appendix 1 and Table A7-1 of Appendix 7 while the order of charting resolution of geographical coordinates shall be that as specified in Annex 4, Appendix 6, Table 1.

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3.7.2 Vertical reference system

3.7.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related heights (elevations) to a surface known as the geoid, shall be used as the vertical reference system for international air navigation.

Note 1.— The geoid globally most closely approximates the mean sea level. By its definition it is the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2.— Gravity-related heights (elevations) are also referred to as orthometric heights while distances of a point above the ellipsoid are referred to as ellipsoidal heights.

3.7.2.2 The Earth Gravitational Model — 1996 (EGM-96) containing long wavelengths gravity field data to degree and order 360, shall be used by international air navigation as the global gravity model.

Note.— Guidance material concerning the EGM-96 is contained in the WGS-84 Manual *(Doc 9674).*

3.7.2.3 At those geographical positions where the accuracy of the EGM-96 does not meet the accuracy requirements for elevations and geoid undulations specified in Annex 14, Volumes I and II, on the basis of the EGM-96 data, regional or local geoid models containing high resolution (short wavelengths) gravity field data, shall be developed and used.

Note. — Specifications governing determination and reporting (accuracy of the field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes are given in Annex 14, Volumes I and II, Chapter 2 and in Table 2 of Appendices 5 and 1, respectively.

~~3.6.4.2~~3.7.2.4 ~~As of 5 November 1998, i~~In addition to the elevations ~~(~~referenced to the ~~mean sea level~~ MSL (geoid), for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions specified in Appendix 1, shall also be published.

3.7.2.5 The order of publication resolution of elevations and geoid undulations shall be that as specified in Appendix 1 and in Table A7-2 of Appendix 7 while the order of charting resolution of elevations and geoid undulations shall be that as specified in Annex 4, Appendix 6, Table 2.

3.7.3 Temporal reference system

3.7.3.1 For international civil aviation, the Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

Note 1.— A value in the time domain is a temporal position measured relative to a temporal reference system.

Note 2.— Coordinated Universal Time (UTC) is a time scale maintained by the Bureau International de L'Heure (BIH) and the International Earth Rotation Service (IERS) and forms the basis of a coordinated dissemination of standard frequencies and time signals.

Note 3.— See Attachment D of Annex 5 — Units of Measurement to be Used in Air and Ground Operations *for guidance material relating to UTC.*

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Note 4.— International Organization for Standardization (ISO) 8601 international standard specifies the use of Gregorian calendar and 24 hour local or UTC for information interchange while ISO 19108 international standard prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information.

3.7.3.2 When a different temporal reference system is used for some applications, the feature catalogue, or the metadata associated with an application schema or a dataset, as appropriate, shall include either a description of that system or a citation for a document that describes that temporal reference system.

Note.— ISO 19108 international standard, Annex D describes some aspects of calendars that may have to be considered in such a description.

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Editorial Note.— Insert new chapter as follows:

CHAPTER 10. ELECTRONIC TERRAIN AND OBSTACLE DATA

10.1 Function

10.1.1 Sets of electronic terrain and obstacle data used in combination with aeronautical data, as appropriate, shall satisfy user requirements necessary to support the following air navigation applications:

a) enhanced ground proximity warning system (EGPWS) and minimum safe altitude warning (MSAW) system;

b) determination of contingency procedures for use in the event of an emergency during a missed approach or take-off;

c) aircraft operating limitations analysis;

d) instrument procedure design (including circling procedure);

e) determination of en-route "drift-down" procedure and en-route emergency landing location;

f) advanced surface movement guidance and control system (A-SMGCS);

g) aeronautical chart production and on-board databases;

h) flight simulator; and

i) synthetic vision.

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10.2 Coverage and terrain and obstacle data numerical requirements

10.2.1 To satisfy requirements necessary to accommodate air navigation systems or functions specified in 10.1.1, sets of electronic terrain and obstacle data shall be recorded in databases and provided in accordance with the following coverage areas:

Area 1: entire territory of a State;
Area 2: terminal control area;
Area 3: aerodrome/heliport area; and
Area 4: CAT II or III operations area.

Note.— See Appendix 8 for graphical illustrations of the defined coverage areas.

10.2.2 Area 1 shall cover the entire territory of a State, including aerodromes/heliports. Area 2 shall be the terminal control area as published in a State's aeronautical information publication (AIP), limited to a 45 km radius from the aerodrome or heliport reference point. At aerodromes/heliports where a terminal control area has not been established, Area 2 shall be the area within the 45 km radius from the aerodrome/heliport reference point.

10.2.3 Area 3 shall cover the area which is within 50 meters from the edges of defined aerodrome or heliport surface movement area.

10.2.4 Area 4 shall be restricted only to those runways where precision approach Category II or III operations have been established and where detailed terrain information is required by operators in order to enable them to assess the effect of terrain on decision height determination by use of radio altimeters. Width of the area shall be 60 m on either side of the extended runway centre line while length shall be 900 m from the runway threshold measured along the extended runway centre line.

10.2.5 According to the air navigation applications listed in 10.1.1 and areas of coverage, sets of electronic terrain data shall satisfy numerical requirements specified in Appendix 8, Table A8-1 while obstacle data shall satisfy numerical requirements specified in Appendix 8, Table A8-2.

Note 1. — Numerical terrain and obstacle data requirements for Area 2 provided in Appendix 8, Table A8-1 and Table A8-2, respectively, are defined on the basis of the most stringent application requirement (application listed under 10.1.1 b)).

Note 2.— It is recognized that some applications listed in 10.1.1 could be adequately accommodated with terrain and obstacle datasets that are of lower requirements than those specified in Appendix 8, Table 8A-1 and Table A8-2, respectively. Consequently, careful evaluation by data users of available datasets is necessary in order to determine if the products are fit for their intended use.

10.3 Terrain database content and structure

10.3.1 A terrain database shall contain digital sets of data representing terrain surface in the form of continuous elevation values at all intersections (points) of a defined grid, referenced to common datum. A terrain grid shall be angular or linear and shall be of regular or irregular shape.

Note.— In regions of higher latitudes, latitude grid spacing may be adjusted to maintain a constant linear density of measurement points.

10.3.2 Sets of electronic terrain data shall include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, etc; excluding obstacles. In practical terms, depending on the acquisition method used, this shall represent the continuous surface that exists at the bare earth, the top of canopy or something in between, also known as "first reflective surface".

10.3.3 Terrain data shall be collected according to the areas specified in 10.2, terrain assessment surfaces and criteria specified in Appendix 8, Figure A8-1 and, in accordance with terrain data numerical requirements provided in Table A8-1 of Appendix 8. In terrain databases, only one feature type, i.e. terrain shall be recorded. Feature attributes describing terrain shall be those listed in Appendix 8, Table A8-3. The terrain feature attributes listed in Table A8-3 represent the minimum set of terrain attributes and, those annotated as mandatory, must be recorded in the terrain database.

10.4 Obstacle database content and structure

10.4.1 One obstacle database shall contain a digital set of obstacle data and shall include those features having vertical significance in relation to adjacent and surrounding features which are considered hazardous to air navigation. Obstacle data shall comprise the digital representation of the vertical and horizontal extent of man-made and natural features. Obstacles shall not be included in terrain databases. Obstacle data elements are features which shall be represented in the database by points, lines or polygons.

10.4.2 Obstacles, which in accordance with the definition, could be fixed or mobile, permanent or temporary, shall be identified within the areas defined in 10.2, on the basis of obstacle assessment surfaces and criteria specified in Appendix 8, Figure A8-2 and collected in accordance with obstacle data numerical requirements provided in Table A8-2 of Appendix 8. In an obstacle database, all defined obstacle feature types shall be recorded and each of them shall be described according to the list of mandatory attributes provided in Table A8-4 of Appendix 8.

Note.— Specific attributes associated with mobile (feature operations) and temporary types of obstacles are annotated in Appendix 8, Table A8-4 as optional attributes. If these type of obstacles are to be recorded in the database, appropriate attributes describing such obstacles are required.

10.5 Terrain and obstacle data product specification

10.5.1 To allow and support interchange and use of sets of electronic terrain and obstacle data among different data providers and data users, the ISO 19100 series of international standards for geographic information shall be used as a general data modelling framework.

10.5.2 A comprehensive statement of available electronic terrain and obstacle datasets shall be provided in the form of terrain data product specification as well as of obstacle data product specification on which basis air navigation users will be able to evaluate the products and determine whether they fulfil the requirements for their intended use (application).

Note.— ISO 19131 international standard specifies the requirements and outline of a data product specification for geographic information.

10.5.3 Each terrain data product specification shall include an overview, specification scopes, data product identification, data content and structure, reference system, data quality, data capture, data maintenance, portrayal, data product delivery, additional information and metadata.

10.5.4 The overview of terrain data product specification or obstacle data product specification shall provide an informal description of the product and shall contain the general information about the data product. Specification of terrain data may not be homogenous across the whole data product but may vary for different parts of the datasets. For each such sub-set of data, specification scope shall be identified. Identification information concerning both terrain and obstacle data products shall each include title of the product, brief narrative summary of the content, purpose, spatial resolution if appropriate (a general statement about the density of spatial data), geographic area covered by the data product and supplemental information.

10.5.5 Content information of feature-based terrain datasets or of feature-based obstacle datasets shall each be described in terms of an application schema and a feature catalogue. Application schema shall provide the formal description of data structure and content of datasets while the feature catalogue shall provide the semantics of all feature types together with their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints. A coverage is considered as a sub-type of a feature and can be derived from a collection of features that have common attributes. Both terrain and obstacle data product specifications shall identify clearly coverage and/or imagery they include and shall provide a narrative description of each of them.

Note 1. — ISO 19109 international standard contains rules for application schema while ISO 19110 international standard describes feature cataloguing methodology for geographic information.

Note 2.— ISO 19123 international standard contains schema for coverage geometry and functions.

10.5.6 Both terrain data product specification and obstacle data product specification shall include information that identifies the reference system used in the data product. This shall include the spatial reference system and temporal reference system. Additionally, both data product specifications shall identify the data quality requirements for each data product. This shall include a statement on acceptable conformance quality levels and corresponding data quality measures. This statement shall cover all the data quality elements and data quality sub-elements, even if to state that a specific data quality element or sub-element is not applicable.

Note.— ISO 19113 international standard contains quality principles for geographic information while ISO 19114 international standard covers quality evaluation procedures.

10.5.7 Terrain data product specification shall include a data capture statement which shall be the general description of sources and processes applied for the capture of terrain data. The principles and criteria applied in the maintenance of terrain datasets and obstacle datasets shall also be provided with the data specifications. This shall include update frequency with which changes and additions are made to the data products. Of particular importance shall be the maintenance information of obstacle datasets and indication of the principles, method and criteria applied for obstacle data maintenance.

10.5.8 Terrain data product specification shall contain information on how data held with datasets is presented, as a graphic output, as a plot or as an image. The product specifications for both terrain and obstacles shall also contain the data products delivery information which shall include delivery formats and delivery medium information.

Note.— ISO 19117 international standard contains a definition of the schema describing the portrayal of geographic information including methodology for describing symbols and mapping of the schema to an application schema.

10.5.9 The core terrain and obstacle metadata elements shall be included in the data products specifications. Any additional metadata items required to be supplied shall be stated in each product specification together with the format and encoding of the metadata.

Note.— ISO 19115 international standard specifies requirements for geographic information metadata.

10.6 Availability

States shall ensure that electronic terrain and obstacle data related to their entire territory are made available in the manner specified in 10.2, 10.3 and 10.4 for use by international civil aviation.

Editorial Note.— End of new chapter.

APPENDIX 1. CONTENTS OF AERONAUTICAL INFORMATION PUBLICATION (AIP)
(see Chapter 4)

PART 1 — GENERAL (GEN)

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GEN 2. TABLES AND CODES

GEN 2.1 Measuring system, aircraft markings, holidays

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GEN 2.1.2 ~~Time system~~Temporal reference system

Description of ~~time~~temporal reference system (calendar and time system) employed, together with an indication of whether or not daylight saving hours are employed and how the ~~time~~temporal reference system is presented throughout the AIP.

GEN 2.1.3 ~~Geodetic~~Horizontal reference ~~datum~~system

Brief description of the horizontal (geodetic) reference ~~datum~~system used, including:

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1) name/designation of ~~datum(s)~~reference system;

2) identification of the projection;

3) identification of the ellipsoid used;

4) identification of the datum used;

~~2~~5) area(s) of application; and

~~3~~6) explanation, if applicable, of asterisk used to identify those coordinates which do not meet Annexes ~~4~~11 and ~~15~~14 accuracy requirements.

GEN 2.1.4 Vertical reference system

Brief description of the vertical reference system used, including:

1) name/designation of the reference system;

2) description of the geoid model used; and

3) explanation, if applicable, of asterisk used to identify those elevations/geoid undulations which do not meet Annex 14 accuracy requirements.

Editorial Note.— Renumber the subsequent paragraphs.

GEN 3. SERVICES

GEN 3.1 Aeronautical information services

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Editorial Note.— Insert new paragraph as follows:

GEN 3.1.6 Electronic terrain and obstacle data

Details of how electronic terrain and obstacle data may be obtained, containing:

1) name of the responsible individual, service or organization;

2) physical and email address of the responsible individual, service or organization;

3) telefax number of the responsible individual, service or organization;

4) contact telephone number of the responsible individual, service or organization;

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5) hours of service (time period including time zone when contact can be made);

6) on-line information that can be used to contact the individual, service or organization; and

7) supplemental information, if necessary, on how and when to contact individual, service or organization.

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PART 2 — EN-ROUTE (ENR)

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ENR 5. NAVIGATION WARNINGS

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ENR 5.4 Air navigation obstacles ~~— en-route~~

~~Brief description of the criteria used for the determination of air navigation obstacles, supplemented by a~~The list of ~~significant en-route~~ obstacles affecting air navigation in the entire State territory (Area 1), including:

1) obstacle identification or designation;

2) type of obstacle;

3) obstacle position represented by geographical coordinates in degrees, minutes and seconds;

4) obstacle elevation and height to the nearest metre or foot; ~~and~~

5) type and colour of obstacle lighting (if any); and

6) indication if obstacles are available in electronic form and reference to GEN 3.1.6.

Note 1.— An obstacle whose height above ground is 100 metres and higher is considered an obstacle for Area 1.

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of positions (latitude and longitude) and elevations/heights for obstacles in an entire State territory (Area 1) are given in Annex 11, Appendix 5, Tables 1 and 2, respectively.

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PART 3 — AERODROMES (AD)

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AD 2. AERODROMES

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****** AD 2.10 Aerodrome obstacles**

. ~~Detailed description of significant~~The list of obstacles~~, including:~~ identified in Area 2 which epresents the established terminal control area, limited to a 45 km radius from the aerodrome reference point (ARP). At aerodromes where a terminal control area is not established, Area 2 shall be the area within the 45 km radius from the ARP. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacles shall be recorded with Area 1 numerical requirements specified in Appendix 8, Table A8-2. The list shall include:

~~1) obstacles in the approach and take-off areas, including:~~

a) ~~runway~~obstacle identification or designation ~~and area affected~~;

b) type of obstacle~~, elevation to the nearest metre or foot, marking and lighting (if any)~~;

c) obstacle position represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds; ~~and~~

d) obstacle elevation and height to the nearest metre or foot;

e) obstacle marking and type and color of obstacle lighting (if any);

f) indication if obstacles are available in electronic form and reference to GEN 3.1.6.; and

~~d~~g) NIL indication, if appropriate.

Note 1.— See Appendix 8, Figure A8-2 for a graphical illustration of obstacle assessment surfaces and criteria used to identify obstacles in Area 2.

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in a terminal control area (Area 2) are given in Annex 11, Appendix 5, Tables 1 and 2 and in Annex 14, Appendix 5, Tables 1 and 2, respectively.

2. A list of obstacles ~~in the circling area and~~ at the aerodrome which covers the area within 50 m from the edges of a defined aerodrome movement area (Area 3), including:

a) obstacle identification or designation;

~~a~~b) type of obstacle~~, elevation to the nearest metre or foot, marking and lighting (if any)~~;

~~b~~c) obstacle position represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds; ~~and~~

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d) obstacle elevation and height to the nearest metre or foot;

e) obstacle marking and type and colour of obstacle lighting (if any);

f) indication if obstacles are available in electronic form and reference to GEN 3.1.6; and

~~c~~g) NIL indication, if appropriate.

~~*Note.— Annex 4, 3.2.2 and 5.2.1 b) specify that an indication be given where no significant obstacles exist in the take-off flight path area, circling area and at the aerodrome.*~~

Note 1.— See Appendix 8, Figure A8-3 for graphical illustration of obstacle assessment surfaces and criteria used to identify obstacles in Area 3.

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of positions (latitude and longitude) and elevations for obstacles at the aerodrome (Area 3) are given in Annex 14, Volume I, Appendix 5, Tables 1 and 2, respectively.

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AD 3. HELIPORTS

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****** AD 3.10 Heliport obstacles**

1. ~~Detailed description~~ The list of ~~significant~~ obstacles ~~on and in the vicinity of the heliport, including:~~ identified in Area 2 which represents the established terminal control area at the heliport, limited to a 45 km radius from the heliport reference point. At heliports where a terminal control area is not established, Area 2 shall be the area within the 45 km radius from the heliport reference point. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacles shall be recorded with Area 1 numerical requirements specified in Appendix 8, Table A8-2. The list shall include:

~~1) obstacles in the final approach and take-off areas and at the heliport;~~

~~2) type of obstacle, elevation to the nearest metre or foot, marking and lighting (if any);~~

~~3) geographical coordinates in degrees, minutes, seconds and tenths of seconds; and~~

~~4) NIL indication, if appropriate.~~

a) obstacle identification or designation;

b) type of obstacle;

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c) obstacle position represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

d) obstacle elevation and height to the nearest metre or foot;

e) obstacle marking and type and color of obstacle lighting (if any);

f) indication if obstacles are available in electronic form and reference to GEN 3.1.6; and

g) NIL indication, if appropriate.

Note 1.— See Appendix 8, Figure A8-2 for graphical illustration of obstacle assessment surfaces and criteria used to identify obstacles in Area 2.

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of positions (latitude and longitude) and elevations for obstacles in a terminal control area (Area 2) are given in Annex 11, Appendix 5, Tables 1 and 2 and in Annex 14, Volume II, Appendix 1, Tables 1 and 2, respectively.

2. A list of obstacles at the heliport which covers the area within 50 m from the edges of a defined heliport movement area (Area 3), including:

a) obstacle identification or designation;

b) type of obstacle:

c) obstacle position represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;

d) obstacle elevation and height to the nearest metre or foot;

e) obstacle marking and type and colour of obstacle lighting (if any);

f) indication if obstacles are available in electronic form and reference to GEN 3.1.6; and

g) NIL indication, if appropriate.

Note 1.— See Appendix 8 , Figure A8-3 for graphical illustration of obstacle assessment surfaces and criteria used to identify obstacles in Area 3.

Note 2.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of positions (latitude and longitude) and elevations for obstacles at the heliport (Area 3) are given in Annex 14, Volume II, Appendix 1, Tables 1 and 2, respectively.

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APPENDIX 7. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table A7-1. Latitude and longitude

Latitude and longitude	Publication resolution	Integrity Classification
Flight information region boundary points	1 min	1×10^{-3} routine
P, R, D areas boundary points (outside CTA/CTZ boundaries)	1 min	1×10^{-3} routine
P, R, D areas boundary points (inside CTA/CTZ boundary)	1 sec	1×10^{-5} essential
CTA/CTZ boundary points	1 sec	1×10^{-5} essential
En-route NAVAIDS and fixes, holding, STAR/SID points	1 sec	1×10^{-5} essential
Obstacles ~~en-route~~in the entire State territory (Area 1)	1 sec	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
NAVAIDS located at the aerodrome/heliport	1/10 sec	1×10^{-5} essential
Obstacles ~~in the circling area and~~ at the aerodrome/heliport (Area 3)	1/10 sec	1×10^{-5} essential
~~Significant~~ Oobstacles in the ~~approach and take-off area~~ terminal control area (Area 2)	1/10 sec	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising instrument approach procedure	1/10 sec	1×10^{-5} essential
Runway threshold	1/100 sec	1×10^{-8} critical
Runway end (flight path alignment point)	1/100 sec	1×10^{-8} critical
Runway holding position	1/100 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-5} essential
Taxiway intersection marking line	1/100 sec	1×10^{-5} essential
Exit guidance line	1/100 sec	1×10^{-5} essential
Aircraft stand points/INS checkpoints	1/100 sec	1×10^{-3} routine
Geometric centre of TLOF or FATO thresholds, heliports	1/100 sec	1×10^{-8} critical
Apron boundaries (polygon)	1/10 sec	1×10^{-3} routine
De-/Anti-icing facility polygon	1/10 sec	1×10^{-3} routine

Note.— See Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

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Table A7-2. Elevation/altitude/height

Elevation/altitude/height	Publication resolution	Integrity Classification
Aerodrome/heliport elevation	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, precision approaches	0.~~5~~1 m or 0.1 ft	1×10^{-8} critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.~~5~~1 m or 0.1 ft	1×10^{-8} critical
Threshold crossing height, precision approaches	0.~~5~~1 m or 0.1 ft	1×10^{-8} critical
Obstacles in the ~~approach and take-off areas~~ terminal control area (Area 2)	1 m or 1 ft	1×10^{-5} essential
Obstacles ~~in the circling area and~~ at the aerodrome/heliport (Area 3)	0.1 m or 0.1 ft	1×10^{-5} essential
Obstacles ~~en-route~~ in the entire State territory (Area 1)	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-3} routine
Distance measuring equipment/precision (DME/P)	3 m (10 ft)	1×10^{-5} essential
Distance measuring equipment (DME)	30 m (100 ft)	1×10^{-5} essential
Minimum altitudes	50 m or 100 ft	1×10^{-3} routine

Note.— See Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

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Table A7-3. Declination and magnetic variation

Declination/variation	Publication resolution	Integrity Classification
VHF NAVAID station declination used for technical line-up	1 degree	1×10^{-5} essential
NDB NAVAID magnetic variation	1 degree	1×10^{-3} routine
Aerodrome/heliport magnetic variation	1/10 degree	1×10^{-5} essential
ILS localizer antenna magnetic variation	1 degree	1×10^{-5} essential
MLS azimuth antenna magnetic variation	1 degree	1×10^{-5} essential

Table A7-4. Bearing

Bearing	Publication resolution	Integrity Classification
Airway segments	1 degree	1×10^{-3} routine
En-route and terminal fix formations	1/10 degree	1×10^{-3} routine
Terminal arrival/departure route segments	1 degree	1×10^{-3} routine
Instrument approach procedure fix formations	1/100 degree	1×10^{-5} essential
ILS localizer alignment (true)	1/100 degree ~~True~~	1×10^{-5} essential
MLS zero azimuth alignment (true)	1/100 degree ~~True~~	1×10^{-5} essential
Runway and FATO bearing (true)	1/100 degree ~~True~~	1×10^{-3} routine
Runway and FATO bearing (magnetic)	1/10 degree	1×10^{-3} routine

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Table A7-5. Length/distance/dimension

Length/distance/dimension	Publication resolution	Integrity Classification
Airway segments length	1/10 km or 1/10 NM	1×10^{-3} routine
En-route fix formations distance	1/10 km or 1/10 NM	1×10^{-3} routine
Terminal arrival/departure route segments length	1/100 km or 1/100 NM	1×10^{-5} essential
Terminal and instrument approach procedure fix formations distance	1/100 km or 1/100 NM	1×10^{-5} essential
Runway and FATO length, TLOF dimensions	1 m or 1 ft	1×10^{-8} critical
Runway width	1 m or 1 ft	1×10^{-5} essential
Displaced threshold distance	1 m or 1 ft	1×10^{-3} routine
Clearway length and width	1 m or 1 ft	1×10^{-5} essential
Stopway length and width	1 m or 1 ft	1×10^{-8} critical
Landing distance available	1 m or 1 ft	1×10^{-8} critical
Take-off run available	1 m or 1 ft	1×10^{-8} critical
Take-off distance available	1 m or 1 ft	1×10^{-8} critical
Accelerate-stop distance available	1 m or 1 ft	1×10^{-8} critical
Runway shoulder width	1 m or 1 ft	1×10^{-3} routine
Taxiway width	1 m or 1 ft	1×10^{-5} essential
Taxiway shoulder width	1 m or 1 ft	1×10^{-3} routine
ILS localizer antenna-runway end, distance	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-3} routine
ILS markers-threshold distance	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	~~3~~ 1 m ~~(10 ft)~~ or 1 ft	1×10^{-5} essential

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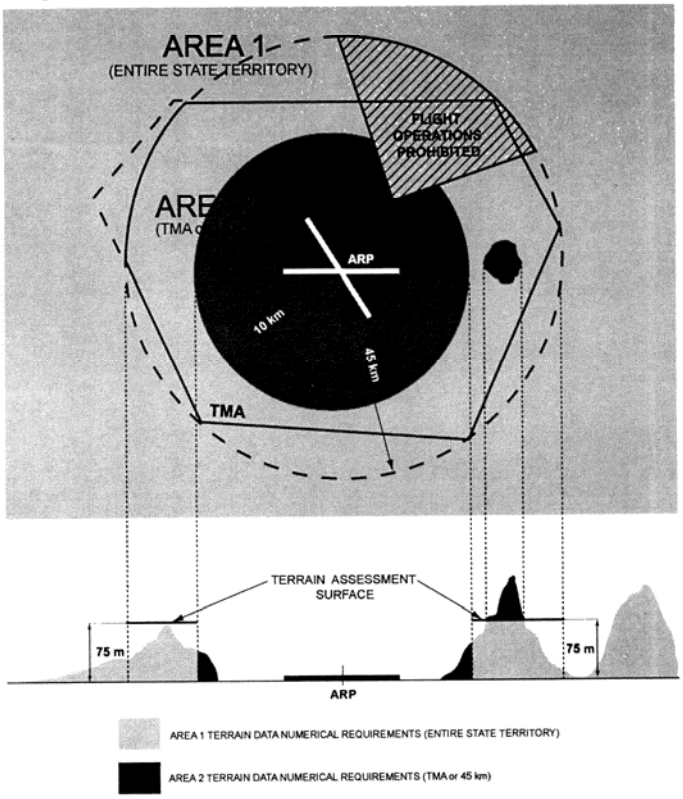
Editorial Note.— Insert new Appendix as follows:

APPENDIX 8. TERRAIN AND OBSTACLE DATA REQUIREMENTS
(see Chapter 10)

Figure A8.1 Terrain assessment surfaces —Terminal Control Area (Area 2)



1. Within the area covered by a 10 km radius from the ARP, terrain data shall be recorded with Area 2 numerical requirements.

2. In the area between 10 km and the TMA boundary or 45 km radius, (whichever is smaller), terrain that penetrates the horizontal plane 75 m above the lowest runway elevation, shall be recorded with Area 2 numerical requirements.

3. In the area between 10 km and the TMA boundary or 45 km radius, (whichever is smaller), terrain that does not penetrate the horizontal plane 75 m above the lowest runway elevation, shall be recorded with Area 1 numerical requirements.

4. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, terrain shall only be recorded with Area 1 numerical requirements.

Note. — Terrain data numerical requirements for Areas 1 and 2 are specified in Table A8-1.

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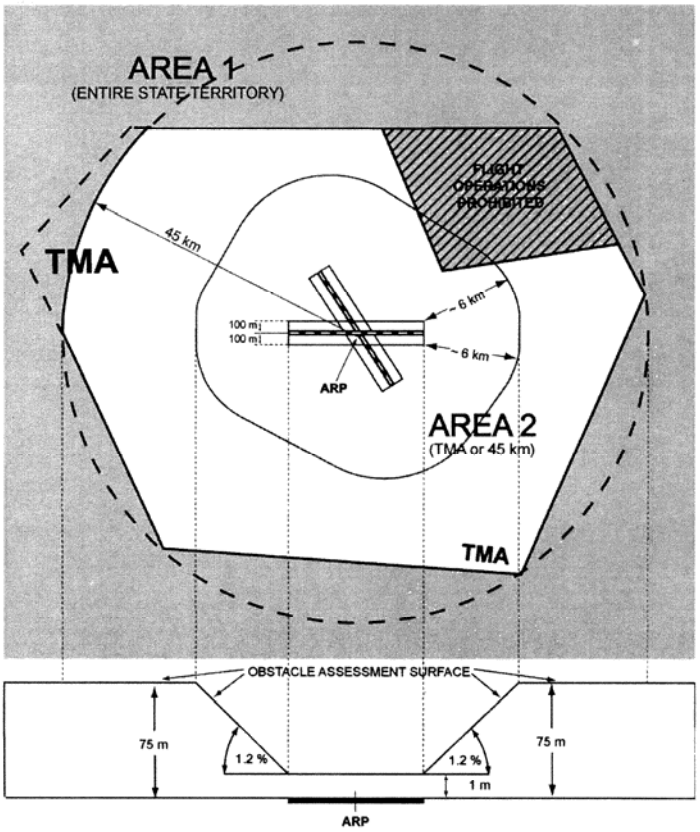
Figure A8.2 Obstacle assessment surfaces —Terminal Control Area (Area 2)



Obstacles shall be recorded in accordance with Area 2 numerical requirements specified in Table A8-2:

1. Within a 200 m wide rectangular area, centred on the runway(s) centre line, and whose length coincides with the length of the runway(s) (including clearway if it exists), any obstacle whose height above the ground is 1 m or higher;

2. Any obstacle that penetrates: the conical surface whose origin is at the edges of the above defined rectangular area and at 1 m above the nearest runway elevation measured along the runway centreline, extending at 1.2% slope until it reaches 75 m above the lowest runway elevation of all operational runways at the aerodrome (1.2% slope reaches 75 m at approximately 6 km); in the remainder of Area 2 (between 6 km and TMA boundary or 45 km radius, whichever is smaller), the horizontal surface 75 m above the lowest runway elevation; and

3. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacles shall be identified and recorded in accordance with Area 1 requirements.

(Every obstacle within Area 1 whose height above the ground is 100 m or higher, shall be recorded in the database in accordance with Area 1 numerical requirements specified in Table A8-2.)

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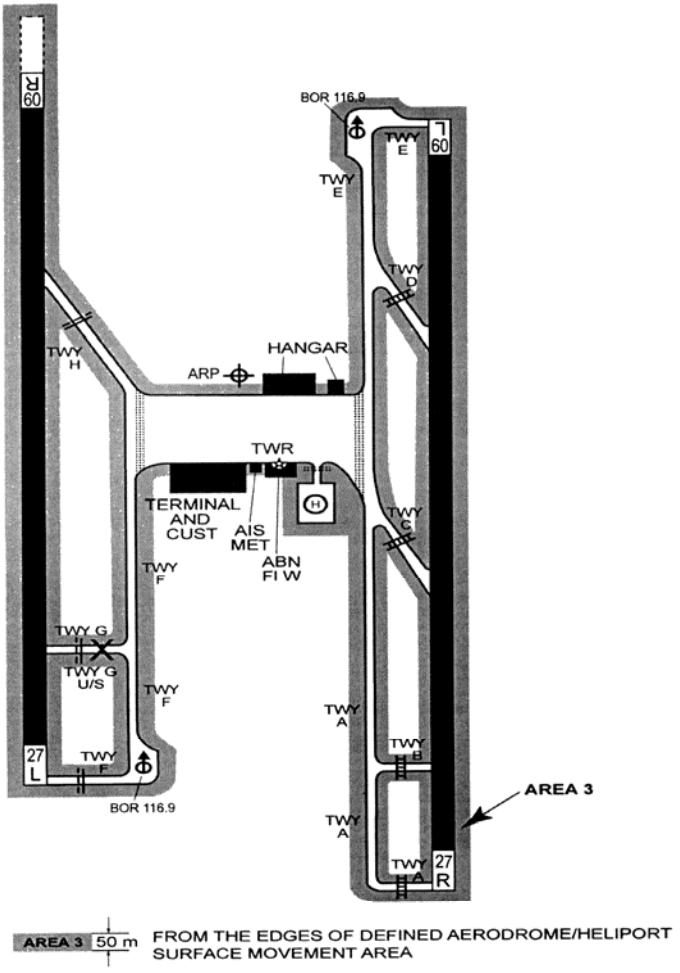
Figure A8.3 Terrain and obstacle assessment surface — at aerodrome/heliport (Area 3)



Terrain and obstacle data in Area 3 shall be recorded in accordance with numerical requirements specified in Table A8-1 and Table A8-2, respectively.

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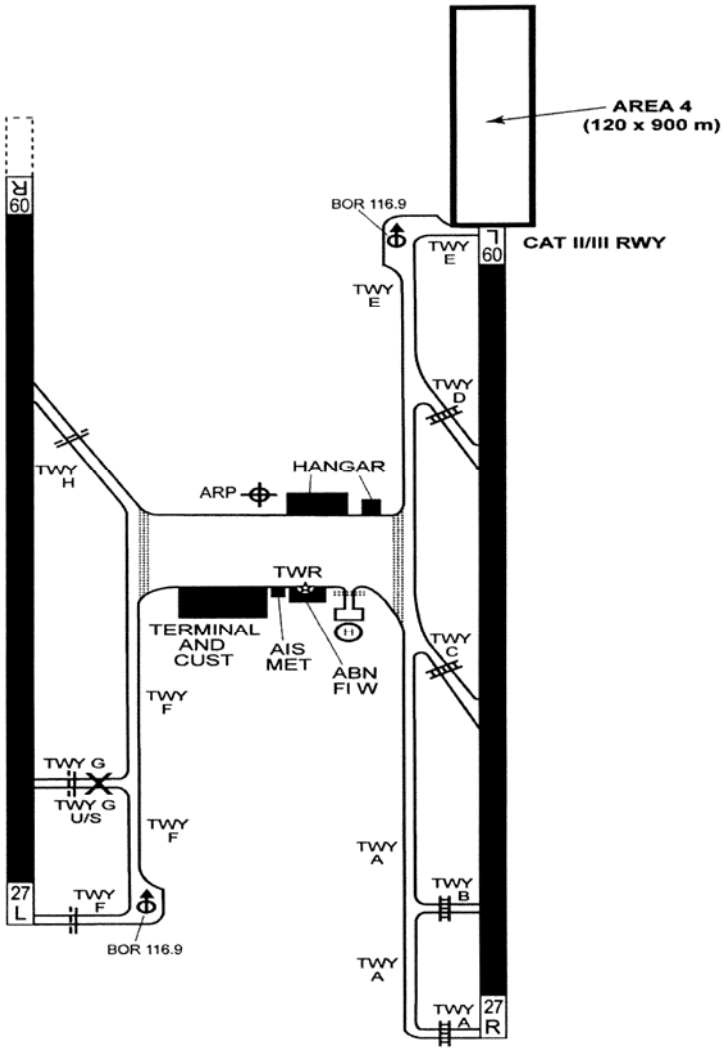
Figure A8.4 Terrain assessment surface —CAT II and III operations (Area 4)



Only terrain data shall be recorded in Area 4 in accordance with the numerical requirements specified in Table A8-1

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Table A8-1. Terrain data nnmerical requirements

	Area 1	Area 2	Area 3	Area 4
Post spacing	3 arc seconds (approx. 90 m)	1 arc seconds (approx. 30 m)	0.6 arc seconds (approx. 20 m)	0.3 arc seconds (approx. 9 m)
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level (1σ)	90%	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required	as required

Table A8-2. Obstacle data numerical requirements

	Area 1	Area 2	Area 3
Vertical accuracy	30 m	3 m	0.5 m
Vertical resolution	1 m	0.1 m	0.01 m
Horizontal accuracy	50 m	5 m	0.5 m
Confidence level (1σ)	90%	90%	90%
Data classification Integrity level	routine 1×10^{-3}	essential 1×10^{-5}	essential 1×10^{-5}
Maintenance period	as required	as required	as required

Table A8-3. Terrain attributes

Terrain attributes	**Mandatory/Optional**
Area of coverage	Mandatory
Data originator identifier	Mandatory
Acquisition method	Mandatory
Post spacing	Mandatory
Horizontal reference system	Mandatory
Horizontal resolution	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Elevation	Mandatory
Elevation reference	Mandatory
Vertical reference system	Mandatory
Vertical resolution	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Surface type	Mandatory
Recorded surface	Mandatory
Penetration level	Optional
Known variations	Optional
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory

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Table A8-4. Obstacle attributes

Obstacle attributes	Mandatory/Optional
Area of coverage	Mandatory
Data originator identifier	Mandatory
Obstacle identifier	Mandatory
Horizontal accuracy	Mandatory
Horizontal confidence level	Mandatory
Horizontal position	Mandatory
Horizontal resolution	Mandatory
Horizontal extent	Mandatory
Horizontal reference system	Mandatory
Elevation	Mandatory
Vertical accuracy	Mandatory
Vertical confidence level	Mandatory
Elevation reference	Mandatory
Vertical resolution	Mandatory
Vertical reference system	Mandatory
Obstacle type	Mandatory
Geometry type	Mandatory
Integrity	Mandatory
Date and time stamp	Mandatory
Unit of measurement used	Mandatory
Operations	Optional
Effectivity	Optional

Obstacle. All fixed and mobile, permanent or temporary, objects that are located on an area intended for the surface movement of aircraft or that extend above defined obstacle assessment surfaces.

Note.— Obstacle assessment surfaces are described in Annex 15, Appendix 8.

Relief. The inequalities in elevation of the surface of the earth represented on ~~the~~ aeronautical charts by contours, hypsometric tints, shading or spot elevations.

Significant obstacle. Any natural terrain feature or ~~man-made fixed object, permanent or temporary~~, obstacle which has vertical significance in relation to adjacent and surrounding features and which is considered a potential hazard to the safe passage of aircraft in the type of operation for which the individual chart series is designed.

Note.— The term "significant obstacle" is used in this Annex solely for the purpose of specifying the objects to be included on individual charts series. Significant obstacles are specified in other terms in Annex 14, Volumes I and II, for the purpose of clearing and marking.

Terrain. Surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, excluding obstacles.

Note.— In practical terms depending on the method of data collection, terrain represents the continuous surface that exists between the bare Earth and the top of the canopy (or something in between also known as "first reflective surface").

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* ISO Standard 19104, *Geographic information — Terminology*

CHAPTER 2. GENERAL SPECIFICATIONS

Note.— The Standards and Recommended Practices contained in this chapter are applicable to all ICAO aeronautical charts unless otherwise stated in the specifications of the chart concerned.

. . .

2.18 ~~World Geodetic System — 1984 (WGS-84)~~ Common reference systems

2.18.1 Horizontal reference system

2.18.1.1 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Published aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the ~~World Geodetic System — 1984 (~~WGS-84~~)~~ geodetic reference datum.

Note.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674).*

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Editorial Note.— Paragraph 2.18.2 *amended* and *transferred* to 2.18.2.2.

~~2.18.2 In addition to the elevation (referenced to mean sea level) for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions shall also be published as specified for a particular chart.~~

2.18.~~3~~1.2 Geographical coordinates which have been transformed into WGS-84 coordinates but whose accuracy of original field work does not meet the requirements in Annex11, Chapter 2 and Annex 14, Volumes I and II, Chapter 2, shall be identified by an asterisk.

2.18.~~4~~1.3 The order of charting resolution of geographical coordinates ~~and geoid undulations~~ shall be that as specified for a particular chart and in Appendix 6, Table 1.

Note.— Specifications governing the determination and reporting (accuracy of the field work and data integrity) of WGS-84 related aeronautical coordinates for geographic positions established by air traffic services are given in Annex 11, Chapter 2 and Appendix 5, Table 1 and, for aerodrome/heliport related positions, in Annex 14, Volumes I and II, Chapter 2 and Table 1 in Appendices 5 and 1, respectively.

2.18.2 Vertical reference system

2.18.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related heights (elevations) to a surface known as the geoid, shall be used as the vertical reference system.

Note 1.— The geoid globally most closely approximates the mean sea level. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2.— Gravity-related heights (elevations) are also referred to as orthometric heights while distances of a point above the ellipsoid are referred to as ellipsoidal heights.

2.18.2.2 In addition to the elevations ~~(~~referenced to ~~mean sea level)~~ MSL, for the specific surveyed ground positions, geoid undulation (referenced to the WGS-84 ellipsoid) for those positions shall also be published as specified for a particular chart.

Note. — Specifications governing the determination and reporting (accuracy of the field work and data integrity) of elevation and geoid undulation at specific positions at aerodromes are given in Annex 14, Volumes I and II, Chapter 2 and in Table 2 of Appendices 5 and 1, respectively.

2.18.2.3 The order of charting resolution of elevations and geoid undulations shall be that as specified for a particular chart series and in Appendix 6, Table 2.

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2.18.3 Temporal reference system

2.18.3.1 The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

2.18.3.2 When a different temporal reference system is used for charting, this shall be indicated in GEN 2.1.2 of Aeronautical Information Publication (AIP).

CHAPTER 13. AERODROME/HELIPORT CHART — ICAO

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13.6 Aerodrome/heliport data

. . .

13.6.1 This chart shall show:

. . .

b) aerodrome/heliport elevations, ~~to the nearest metre or foot of the aerodrome/heliport~~, elevations and geoid undulation of thresholds and geometric centre of touchdown and lift-off area of non-precision approach runways ~~thresholds~~ and elevation of apron (altimeter checkpoint locations) where applicable, to the nearest metre or foot;

c) elevations and geoid undulations ~~to the nearest half metre or foot~~ of runway thresholds, geometric centre of touchdown and lift-off area and the highest elevation of the touchdown zone of a precision approach runway, to the nearest half metre or foot;

. . .

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APPENDIX 6. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table 1. Latitude and longitude

Latitude and longitude	Chart Resolution	Integrity Classification
Flight information region boundary points	as plotted	1×10^{-3} routine
P, R, D areas boundary points (outside CTA/CTZ boundaries)	as plotted	1×10^{-3} routine
P, R, D areas boundary points (inside CTA/CTZ boundary)	as plotted	1×10^{-5} essential
CTA/CTZ boundary points	as plotted	1×10^{-5} essential
En-route navaids and fixes, holding, STAR/SID points	1 sec	1×10^{-5} essential
Obstacles ~~en-route~~ in the entire State territory (Area 1)	as plotted	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
Navaids located at the aerodrome/heliport	as plotted	1×10^{-5} essential
Obstacles ~~in the circling area and at the~~ aerodrome/heliport (Area 3)	1/10 sec ~~(AOC Type C)~~	1×10^{-5} essential
~~Significant~~ obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	1/10 sec ~~(AOC Type C)~~	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising instrument approach procedure	1 sec	1×10^{-5} essential
Runway thresholds	1 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-5} essential
Runway end (flight path alignment point)	1 sec	1×10^{-8} critical
Runway holding position	1 sec	1×10^{-5} essential
Taxiway intersection marking line	1 sec	1×10^{-5} essential
Exit guidance line	1 sec	1×10^{-5} essential
Apron boundaries (polygon)	1 sec	1×10^{-3} routine
De-/Anti-icing facility polygon	1 sec	1×10^{-3} routine
Aircraft stand points/INS checkpoints	1/100 sec	1×10^{-3} routine
Geometric centre of TLOF or FATO thresholds, heliports	1 sec	1×10^{-8} critical

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

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Table 2. Elevation/altitude/height

Elevation/altitude/height	Chart Resolution	Integrity Classification
Aerodrome/heliport elevation	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1×10^{-5} essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, nonprecision approaches	1 m or 1 ft	1×10^{-5} essential
Runway or FATO threshold, precision approaches	0.5 m or 1 ft	1×10^{-8} critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.5 m or 1 ft	1×10^{-8} critical
Threshold crossing height, precision approaches	0.5 m or 1 ft	1×10^{-8} critical
Obstacle Clearance Altitude/Height (OCA/H)	as specified in PANS-OPS (Doc 8168)	1×10^{-5} essential
Obstacles ~~en-route~~ in the entire State territory (Area 1)	3 m (10 ft)	1×10^{-3} routine
Obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	1 m or 1 ft	1×10^{-5} essential
Obstacles ~~in the circling areas and~~ at ~~the~~ aerodrome/heliport (Area 3)	1 m or 1 ft	1×10^{-5} essential
Distance measuring equipment (DME)	30 m (100 ft)	1×10^{-5} essential
Instrument approach procedures altitude	as specified in PANS-OPS (Doc 8168)	1×10^{-5} essential
Minimum altitudes	50 m or 100 ft	1×10^{-3} routine

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

Table 3. Magnetic variation

Magnetic variation	Chart Resolution	Integrity Classification
Aerodrome/heliport magnetic variation	1/10 degree	1×10^{-5} essential

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Table 5. Length/distance/dimension

Length/distance/dimension	Chart Resolution	Integrity Classification
Airway segments length	1 km or 1 NM	1×10^{-3} routine
En-route fix formations distance	2/10 km (1/10 NM)	1×10^{-3} routine
Terminal arrival/departure route segments length	1 km or 1 NM	1×10^{-5} essential
Terminal and instrument approach procedure fix formations distance	2/10 km (1/10 NM)	1×10^{-5} essential
Runway and FATO length, TLOF dimensions	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-8} critical
Runway width	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-5} essential
Stopway length and width	0.5 m (AOC chart)	1×10^{-8} critical
Landing distance available	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-8} critical
Take-off run available	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-8} critical
Take-off distance available	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-8} critical
Accelerate-stop distance available	1 m (AD chart) 0.5 m (AOC chart)	1×10^{-8} critical
ILS localizer antenna-runway end, distance	as plotted	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	as plotted	1×10^{-3} routine
ILS markers-threshold distance	2/10 km (1/10 NM)	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	as plotted	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	as plotted	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	as plotted	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	as plotted	1×10^{-5} essential

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**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERODROMES

**ANNEX 14
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**VOLUME I
AERODROME DESIGN AND OPERATIONS**

CHAPTER 1. GENERAL

1.1 Definitions

Editorial Note.— Insert new definitions in alphabetical order and amend existing.

Calendar. Discrete temporal reference system that provides basis for defining temporal position to a resolution of one day (ISO 19104*).

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19104*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Obstacle. All fixed and mobile, ~~(whether~~ temporary or permanent~~) and mobile~~ objects~~, or parts thereof,~~ that are located on an area intended for the surface movement of aircraft or that extend above defined ~~surface intended to protect aircraft in flight~~ obstacle assessment surfaces.

Note.— Obstacle assessment surfaces are described in Annex 15, Appendix 8.

Significant obstacle. Any natural terrain feature or obstacle which has vertical significance in relation to adjacent and surrounding features and which is considered a potential hazard to the safe passage of aircraft and for which the clearing and marking is required.

Note.— Clearing and marking of significant obstacles is done in accordance with obstacle limitation surfaces defined in Chapter 4.

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* ISO Standard 19104, *Geographic information — Terminology*

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1.4 Common reference systems

1.4.1 Horizontal reference system

1.4.1.1 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

Note.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674)*.

1.4.2 Vertical reference system

1.4.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related heights (elevations) to a surface known as the geoid, shall be used as the vertical reference system.

Note 1.— The geoid globally most closely approximates the mean sea level. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2.— Gravity-related heights (elevations) are also referred to as orthometric heights while distances of a point above the ellipsoid are referred to as ellipsoidal heights.

1.4.3 Temporal reference system

1.4.3.1 The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

1.4.3.2 When a different temporal reference system is used, this shall be indicated in GEN 2.1.2 of the Aeronautical Information Publication (AIP).

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CHAPTER 2. AERODROME DATA

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2.5 Aerodrome dimensions and related information

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2.5.5 The geographical coordinates of ~~significant~~ obstacles in the ~~approach and take-off areas, in the circling area and in the vicinity of an~~ terminal control area (Area 2) and at the aerodrome (Area 3) shall be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation ~~rounded up to the nearest metre or foot~~, type, marking and lighting (if any) of the ~~significant~~ obstacles shall be reported to the aeronautical information services authority. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacles shall be recorded with Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A8-2.

~~*Note.— This information may best be shown in the form of charts such as those required for the preparation of aeronautical publications as specified in Annexes 4 and 15.*~~

Note 1.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note 2.— Appendix 5 provides requirements for obstacle data determination in Areas 2 and 3.

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APPENDIX 5. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table 1. Latitude and longitude

Latitude and longitude	Accuracy Data type	Integrity Classification
Aerodrome reference point	30 m surveyed/calculated	1×10^{-3} routine
Navaids located at the aerodrome	3 m surveyed	1×10^{-5} essential
Obstacles ~~in the circling area and~~ at the aerodrome (Area 3)	~~30~~.5 m surveyed	1×10^{-5} essential
~~Significant~~ obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	~~3~~ 5 m surveyed	1×10^{-5} essential
Runway thresholds	1 m surveyed	1×10^{-8} critical
Runway end (flight path alignment point)	1 m surveyed	1×10^{-8} critical
Runway centre line points	1 m surveyed	1×10^{-8} critical
Runway holding position	0.5 m surveyed	1×10^{-8} critical
Taxiway centre line/parking guidance line points	0.5 m surveyed	1×10^{-5} essential
Taxiway intersection marking line	0.5 m surveyed	1×10^{-5} essential
Exit guidance line	0.5 m surveyed	1×10^{-3} routine
Apron boundaries (polygon)	1 m surveyed	1×10^{-3} routine
De-/Anti-icing facility polygon	1 m surveyed	1×10^{-3} routine
Aircraft stand points/INS checkpoints	0.5 m surveyed	1×10^{-3} routine

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

Table 2. Elevation/altitude/height

Elevation/altitude/height	Accuracy Data type	Integrity Classification
Aerodrome elevation	0.5 m or 1 ft surveyed	1×10^{-5} essential
WGS-84 geoid undulation at aerodrome elevation position	0.5 m or 1 ft surveyed	1×10^{-5} essential
Runway threshold, non-precision approaches	0.5 m or 1 ft surveyed	1×10^{-5} essential
WGS-84 geoid undulation at runway threshold, nonprecision approaches	0.5 m or 1 ft surveyed	1×10^{-5} essential

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Runway threshold, precision approaches	0.25 m or 1 ft surveyed	1×10^{-8} critical
WGS-84 geoid undulation at runway threshold, precision approaches	0.25 m or 1 ft surveyed	1×10^{-8} critical
Runway centre line points	0.25 m or 1 ft surveyed	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1 m or 1 ft surveyed	1×10^{-5} essential
Obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	+ 3m ~~or~~ (10 ft) surveyed	1×10^{-5} essential
Obstacles ~~in the circling areas and~~ at the aerodrome (Area 3)	+ 0.5 m or 1 ft surveyed	1×10^{-5} essential
Distance measuring equipment/precision (DME/P)	3 m (10 ft) surveyed	1×10^{-5} essential

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

Table 3. Declination and magnetic variation

Declination/variation	Accuracy Data type	Classification Integrity
Aerodrome magnetic variation	1/10 degree surveyed	essential 1×10^{-5}
ILS localizer antenna magnetic variation	1 degree surveyed	essential 1×10^{-5}
MLS azimuth antenna magnetic variation	1 degree surveyed	essential 1×10^{-5}

Table 4. Bearing

Bearing	Accuracy Data type	Classification Integrity
ILS localizer alignment	1/100 degree surveyed	essential 1×10^{-5}
MLS zero azimuth alignment	1/100 degree surveyed	essential 1×10^{-5}
Runway bearing (true)	1/100 degree surveyed	routine 1×10^{-3}
Runway bearing (magnetic)	1/100 degree surveyed	routine 1×10^{-3}

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Table 5. Length/Distance/Dimension

Length/distance/dimension	Accuracy Data type	Classification Integrity
Runway length	1 m or 1 ft surveyed	critical 1×10^{-8}
Runway width	1 m or 1 ft surveyed	routine 1×10^{-3}
Displaced threshold distance	1 m or 1 ft surveyed	routine 1×10^{-3}
Stopway length and width	1 m or 1 ft surveyed	critical 1×10^{-8}
Clearway length and width	1 m or 1 ft surveyed	routine 1×10^{-3}
Landing distance available	1 m or 1 ft surveyed	critical 1×10^{-8}
Take-off run available	1 m or 1 ft surveyed	critical 1×10^{-8}
Take-off distance available	1 m or 1 ft surveyed	critical 1×10^{-8}
Accelerate-stop distance available	1 m or 1 ft surveyed	critical 1×10^{-8}
Runway shoulder width	1 m or 1 ft surveyed	routine 1×10^{-3}
Taxiway width	1 m or 1 ft surveyed	routine 1×10^{-3}
Taxiway shoulder width	1 m or 1 ft surveyed	essential 1×10^{-5}
ILS localizer antenna-runway end, distance	3 m (10 ft) calculated	routine 1×10^{-3}
ILS glide slope antenna-threshold, distance along centre line	3 m (10 ft) calculated	routine 1×10^{-3}
ILS markers-threshold distance	3 m (10 ft) calculated	essential 1×10^{-5}
ILS DME antenna-threshold, distance along centre line	3 m (10 ft) calculated	essential 1×10^{-5}
MLS azimuth antenna-runway end, distance	3 m (10 ft) calculated	routine 1×10^{-3}
MLS elevation antenna-threshold, distance along centre line	3 m (10 ft) calculated	routine 1×10^{-3}
MLS DME/P antenna-threshold, distance along centre line	3 m (10 ft) calculated	essential 1×10^{-5}

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E-2

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERODROMES

**ANNEX 14
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**VOLUME II
HELIPORTS**

CHAPTER 1. GENERAL

. . .

1.1 Definitions

Editorial Note.— Insert new definitions in alphabetical order.

Calendar. Discrete temporal reference system that provides the basis for defining temporal position to a resolution of one day (ISO 19104*).

Datum. Any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities (ISO 19104*).

Gregorian calendar. Calendar in general use; first introduced in 1582 to define a year that more closely approximates the tropical year than the Julian calendar (ISO 19104*).

Note.— In the Gregorian calendar, common years have 365 days and leap years 366 days divided into twelve sequential months.

Obstacle. All fixed and mobile, permanent or temporary objects that are located on an area intended for the surface movement of aircraft or that extend above defined obstacle assessment surfaces.

Note.— Obstacle assessment surfaces are described in Annex 15, Appendix 8.

Significant obstacle. Any natural terrain feature or obstacle which has vertical significance in relation to adjacent and surrounding features and which is considered a potential hazard to the safe passage of aircraft and for which the clearing and marking is required.

Note.— Clearing and marking of significant obstacles is done in accordance with obstacle limitation surfaces defined in Chapter 4.

* ISO Standard 19104, *Geographic information — Terminology*

Editorial Note.— End of new definitions.

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1.3 Common reference systems

1.3.1 Horizontal reference system

1.3.1.1 World Geodetic System — 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum.

Note.— Comprehensive guidance material concerning WGS-84 is contained in the World Geodetic System — 1984 (WGS-84) Manual *(Doc 9674).*

1.3.2 Vertical reference system

1.3.2.1 Mean sea level (MSL) datum, which gives the relationship of gravity-related heights (elevations) to a surface known as the geoid, shall be used as the vertical reference system.

Note 1.— The geoid globally most closely approximates the mean sea level. It is defined as the equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

Note 2.— Gravity-related heights (elevations) are also referred to as orthometric heights while distances of a point above the ellipsoid are referred to as ellipsoidal heights.

1.3.3 Temporal reference system

1.3.3.1 The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporal reference system.

1.3.3.2 When a different temporal reference system is used, this shall be indicated in GEN 2.1.2 of the Aeronautical Information Publication (AIP).

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CHAPTER 2. HELIPORT DATA

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2.4 Heliport dimensions and related information

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2.4.5 The geographical coordinates of ~~significant~~ obstacles on and in the ~~vicinity of a~~ terminal control area (Area 2) and at the heliport (Area 3) shall be measured and reported to the aeronautical information services authority in degrees, minutes, seconds and tenths of seconds. In addition, the top elevation ~~rounded up to the nearest metre or foot~~, type, marking and lighting (if any) of the ~~significant~~ obstacles shall be reported to the aeronautical information services authority. In those portions of Area 2 where flight operations are prohibited due to very high terrain or other local restrictions and/or regulations, obstacles shall be recorded with Area 1 numerical requirements specified in Annex 15, Appendix 8, Table A8-2.

Note 1.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note 2.— Appendix 5 provides requirements for obstacle data determination in Areas 2 and 3.

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APPENDIX 1. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table 1. Latitude and longitude

Latitude and longitude	Accuracy Data type	Integrity Classification
Heliport reference point	30 m surveyed/calculated	1×10^{-3} routine
Navaids located at the heliport	3 m surveyed	1×10^{-5} essential
Obstacles ~~in the circling area and~~ at the heliport (Area 3)	~~30.5~~ m surveyed	1×10^{-5} essential
~~Significant~~ obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	~~3~~ 5 m surveyed	1×10^{-5} essential
Geometric centre of TLOF or FATO thresholds	1 m surveyed	1×10^{-8} critical
Ground taxiway centre line points, air taxiway and transit route points	0.5 m surveyed/calculated	1×10^{-5} essential
Ground taxiway intersection marking line	0.5 m surveyed	1×10^{-5} essential
Ground exit guidance line	0.5 m surveyed	1×10^{-3} routine
Apron boundaries (polygon)	1 m surveyed	1×10^{-3} routine
De-/Anti-icing facility polygon	1 m surveyed	1×10^{-3} routine
Helicopter stand points/INS checkpoints	0.5 m surveyed	1×10^{-3} routine

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

Table 2. Elevation/altitude/height

Elevation/altitude/height	Accuracy Data type	Integrity Classification
Heliport elevation	0.5 m or 1 ft surveyed	1×10^{-5} essential
WGS-84 geoid undulation at heliport elevation position	0.5 m or 1 ft surveyed	1×10^{-5} essential
FATO threshold, non-precision approaches	0.5 m or 1 ft surveyed	1×10^{-5} essential
WGS-84 geoid undulation at FATO threshold, TLOF geometric centre, nonprecision approaches	0.5 m or 1 ft surveyed	1×10^{-5} essential
FATO threshold, precision approaches	0.25 m or 1 ft surveyed	1×10^{-8} critical
WGS-84 geoid undulation at FATO threshold, TLOF geometric centre, precision approaches	0.25 m or 1 ft surveyed	1×10^{-8} critical
Ground taxiway centre line points, air taxiway and transit route points	1 m or 1 ft surveyed	1×10^{-5} essential

Obstacles in the ~~approach and take-off area~~terminal control area (Area 2)	+ 3m ~~or~~ (10 ft) surveyed	1 x 10^{-5} essential
Obstacles ~~in the circling areas and~~ at the heliport (Area 3)	+ 0.5 m or 1 ft surveyed	1 x 10^{-5} essential
Distance measuring equipment/precision (DME/P)	3 m (10 ft) surveyed	1 x 10^{-5} essential

Note.— See Annex 15, Appendix 8 for graphical illustrations of obstacle assessment surfaces and criteria used to identify obstacles in the defined areas.

Table 3. Declination and magnetic variation

Declination/variation	Accuracy Data type	Classification Integrity
Heliport magnetic variation	1/10 degree surveyed	essential 1 x 10^{-5}
ILS localizer antenna magnetic variation	1 degree surveyed	essential 1 x 10^{-5}
MLS azimuth antenna magnetic variation	1 degree surveyed	essential 1 x 10^{-5}

Table 4. Bearing

Bearing	Accuracy Data type	Classification Integrity
ILS localizer alignment	1/100 degree surveyed	essential 1 x 10^{-5}
MLS zero azimuth alignment	1/100 degree surveyed	essential 1 x 10^{-5}
FATO bearing (true)	1/100 degree surveyed	routine 1 x 10^{-3}
FATO bearing (magnetic)	1/100 degree surveyed	routine 1 x 10^{-3}

Table 5. Length/Distance/Dimension

Length/distance/dimension	Accuracy Data type	Classification Integrity
FATO length,TLOF dimensions	1 m or 1 ft surveyed	critical 1 x 10^{-8}
Clearway length and width	1 m or 1 ft surveyed	routine 1 x 10^{-3}
Landing distance available	1 m or 1 ft surveyed	critical 1 x 10^{-8}

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Take-off distance available	1 m or 1 ft surveyed	critical 1×10^{-8}
Rejected take-off distance available	1 m or 1 ft surveyed	critical 1×10^{-8}
Taxiway width	1 m or 1 ft surveyed	routine 1×10^{-3}
ILS localizer antenna-FATO end, distance	3 m (10 ft) calculated	routine 1×10^{-3}
ILS glide slope antenna-threshold, distance along centre line	3 m (10 ft) calculated	routine 1×10^{-3}
ILS markers-threshold distance	3 m (10 ft) calculated	essential 1×10^{-5}
ILS DME antenna-threshold, distance along centre line	3 m (10 ft) calculated	essential 1×10^{-5}
MLS azimuth antenna-FATO end, distance	3 m (10 ft) calculated	routine 1×10^{-3}
MLS elevation antenna-threshold, distance along centre line	3 m (10 ft) calculated	routine 1×10^{-3}
MLS DME/P antenna-threshold, distance along centre line	3 m (10 ft) calculated	essential 1×10^{-5}

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BACKGROUND INFOI MATION ON PROPOSED AMENDMENTS TO ANNEX 15 AND CONSEQUENTIAL AMENDMENTS TO ANNEXES 4, 11 AND 14, VOLISMES I AND II

1. On 28 May 1998, the Air Navigation Commission (148-7), when concluding its review of the recommendations of the Aeronautical Information Services/Aeronautical Charts (AIS/MAP) Divisional Meeting (1998) other than for the amendment of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) which required early consideration, approved, inter alia, Recommendation Z3/1 and requested the Secretary General to present a proposal to amend Annex 4 -Aeronautical Charts concerning electronic terrain data, in due course.

2. On 29 October 1998, the Commission (149-4) approved the draft executive summary for a new ANC Task No. AJS-9802: Electronic terrain data, for inclusion in the Technical Work Programme (TWP) of the Organization in the Air Navigation Field. The new task envisaged that two amendments to Annex 4 would be required as a result, i.e. an initial amendment concerning new provisions for electronic terrain data followed by another amendment concerning the terrain data format and data exchange.

3. On 4 May 2000, the Commission (154-3) concluded a preliminary review of proposals developed by the Secretariat for the amendment of Annex 4 -Aeronautical Charts and consequential amendments to Annex 6 -- Operation of Aircraft, Part I -- International Commercial Air Transport -- Aeroplanes and Part III -- lnternational Operations -- Helicopters, Annex 11 -- Air Traffic Services, Annex 14 -- Aerodromes, Volume I -- Aerodrome Design and Operations and Volume II -- Heliports, and Annex 15 -- Aeronautical Information Services concerning new provisions for electronic terrain and obstacle data.

4. The Commission agreed that the foregoing proposed amendments be consolidated with the other parts of the proposed amendment to Annex 4 and transmitted to States and concerned international organizations for comments. Accordingly, State letter AN 9/1-00/48, dated 19 May 2000, containing the proposed amendments to Annex 4 and consequential amendments to Annexes 6 (Parts I and III), 11, 14 (Volumes I and II), and 15, was sent to States and international organizations for comment.

5. On 21 November 2000, the Commission (155-8) made its final review of the proposed consolidated amendments to Annex 4 and consequential amendments to other relevant Annexes, on the basis of replies received from States and international organizations. When it considered the proposed new specifications concerning electronic terrain and obstacle data, the Commission agreed that the proposed amendment to Annex 4, as well as the proposed consequential amendments to Annexes 6 (Parts I and

III), Annex 11, Annex 14 (Volumes I and II) and Annex 15 be withdrawn in toto, as a number of States and a few international organizations had disagreed with the proposal. It also agreed that a new proposal for amendment to Annex 4 concerning electronic terrain data, and other relevant Annexes as a consequence, be developed and presented to the Commission for preliminary review as soon as possible.

6. The Commission (155-8) also agreed that a proposal for one standard vertical datum for international civil aviation should be developed by the Secretariat and that such a proposal should be presented to the Commission for a preliminary review. Finally, the Commission agreed that the new amendment proposal should take into account the additional available information and the comments received from States and international organizations on State letter AN 9/1-00/48 regarding electronic terrain data.

7. In developing a new proposal for electronic terrain data, in light of instructions given by the Air Navigation Commission (155-8), user requirements for terrain and obstacle data, as contained in RTCA DO-276 and EUROCAE ED-98 documents, were used.

8. As indicated above, in accordance with the ANC Task No. AIS-9802, amendments to Annex 4 were initially planned. However, Australia, in their reply to State letter AN 9/1-00/48 concerning the proposed inclusion of electronic terrain data specifications in Annex 4, made the suggestion that, since "specifications relating to the provision of obstacles, cultural and vegetation data are already contained in Annex 15, the proposed material seems more appropriately placed into Annex 15, particularly when considering that Annex 15, Appendix 7 already deals with aeronautical data quality requirements". It was also suggested that the proposed electronic terrain data quality requirements could easily be incorporated into Appendix 7 of Annex 15 while Annex 4 should continue to deal only with charting specifications, which are quite separate issues.

9. The Commission considered the above proposal vis-a-vis the suitability and implications of placing new electronic terrain data specifications in Annex 15, instead of Annex 4 as initially planned, and concluded that the proposed grouping together and placing of obstacle and aeronautical data with terrain data specifications into Annex 15 had merit. Additionally, it is envisioned that the conceptual modelling and interchange of both aeronautical and terrain data will be based on a common modelling language, while to achieve networked interoperability of file transfer model, standards aimed at an Extensible Mark-up Language (XML) should be implemented. For this reason, it is felt that placing both aeronautical and terrain data into one document would facilitate future amendments related to data interchange standards. Finally, the proposed

grouping is expected to improve understanding of the interrelationship and use of the two types of data which would, in turn, facilitate implementation of new SARPs by States.

Amendment to Annex 15

Common reference system for air navigation

10. With the introduction of area navigation (I 2q AV) and satellite-based navigation, the requirement for a common geodetic, geocentric system, on which to reference aeronautical geographical coordinates, was identified. To accommodate this requirement, in February 1994, the Council (141/9) adopted the World Geodetic System 1984 (WGS-84) as the common geodetic reference datum for international civil aviation. Consequently, as of 1 January 1998, all published aeronautical coordinates indicating latitude and longitude, shall be expressed in terms of the WGS-84 reference datum (Annex 15, 3,6 4.1 refers), In March 1997, the Council (150/17) adopted new specifications dealing with the vertical component of WGS-84 by specifying, inter alia, that in addition to elevations (referenced to mean sea level), for specific surveyed ground positions as specified in Annex 15, Appendix 1, geoid undulation (referenced to the WGS-84 ellipsoid) shall also be published.

11. In aviation, elevations of positions on the ground (aerodrome elevation, runway threshold elevation, antenna elevation, terrain elevation, etc.) are all measured from one vertical datum, i.e. mean sea level (MSL). In accordance with the definition, MSL datum gives the relationship of gravity-related heights (elevations also known as orthometric heights), to a surface known as the geoid. In geodesy, three primary reference surfaces are used: the Earth's topographic surface; the geometric surface representing an ellipsoid; and the geoid. The Earth's surface includes highly irregular landmass topography which is recorded in databases by a regular or irregular network (grid) of elevation points. These elevation points are referenced to one common datum, MSL. While an ellipsoid is presented by a geometric surface (relatively easy to define by mathematical calculations), the geoid is a complex, equipotential surface in the gravity field of the Earth which coincides with the undisturbed MSL extended continuously through the continents.

12. Review of the Annexes indicated that, although MSL has been in use by international civil aviation when referencing elevations for a very long time, there are no specifications that clearly define this datum as a vertical datum for civil aviation. In this respect, the established WGS-84 geodetic datum should continue to be used as a horizontal datum on which latitude and longitude are referenced while MSL (geoid) should be defined as the vertical datum for international civil aviation. These two

datums accommodate the need for 3-dimensional, spatial representation of points used in civil aviation, Today's air navigation operations and many applications that are used in aviation are 4-dimensional, having in addition to horizontal and vertical components, a temporal component. This temporal component should be measured relative to a temporal reference system. Although Annex 2 --Rules □the Air and Annex 11 both specify that Universal Coordinated Time (UTC) shall be used as time in air traffic services, this is only relevant for the 24-hour period and there are no provisions in Annexes that clearly indicate the use of a specific calendar together with the specific time.

13. In respect of the above, it should be noted that the International Organization for Standardization (ISO) 8601 international standard specifies the use of the Gregorian calendar and 24-hour local time or UTC for information interchange and ISO 19108 international standard prescribes the Gregorian calendar and UTC as the primary temporal reference system for use with geographic information and information interchange. To make the requirements of international civil aviation for common reference systems complete while taking into account the existing standards, it is recommended that the Gregorian calendar and UTC as the temporal reference system be adopted, as presented in Attachment A.

14. In respect of the gravity model to be used for determination of the geoid, the most commonly used model today is the Earth Gravitational Model -- 1996 (EGM-96) which contains the long wavelength gravity data complete through degree and order 360 and is comprised of 130 317 coefficients. The model, developed jointly by the National Imagery and Mapping Agency (NIMA) and the National Aeronautics and Space Administration (NASA) of the United States, was based on collected gravity and satellite tracking data. The EGM-96 was refined in 1997 resulting in improved accuracy of the gravity data which is in the range of ±0.5 to± 1.0 metre worldwide (1 sigma). In those areas of the world where accuracy of the EGM-96 does not meet the accuracy requirements for elevations and geoid undulations specified in Annex 14, Volumes I and If, it is proposed that, on the basis of the EGM-96 data, regional or local geoid models containing high resolution (short wavelengths) gravity field data be developed and used instead.

15. This amendment is an opportunity to update the specifications related to WGS-84 in accordance with the latest available material on this subject. The most significant update of WGS-84 is related to the temporal changes in the tectonic plate motions and tidal effects on the Earth's crust. As only high precision applications would require taking into account the temporal aspect of WGS-84, this new provision is proposed to be

included in Annex 15 in the form of a recommended practice, as reflected in Attachment A.

16. As Annex 15 has been the custodian of the WGS-84-related provisions including the vertical component of the system, it is suggested that this Annex should continue to be the document where comprehensive provisions concerning common reference systems used by international civil aviation should be placed, as presented in Attachment A. As a consequence to the proposed amendment to Annex 15, amendments to Annexes 4, 11 and 14, Volumes I and II are proposed as presented in Attachments B, C, D and E, respectively.

Electronic" terrain and obstacle data

17. Significant safety benefits for international civil aviation can be provided by in-flight and ground- based applications that rely on quality electronic terrain and obstacle data. The performance of these applications, which often make use of multiple data sources, may be degraded by' data with inconsistent or inappropriate specifications for quality'. The increasing worldwide equipage of aircraft and air traffic control units with systems that make use of electronic terrain data requires standardization in the provision of supporting data. Furthermore, as terrain information is increasingly finding its primary usage in the cockpit, many other personnel involved with operations will also benefit from the use of quality terrain and obstacle data.

18. The proposal to amend Annex ! 5 on the subject of electronic terrain and obstacle data, given in Attachment A, presents the results of the work done by the Secretariat on the basis of available material from RTCA SC t93 and EUROCAE WG 44 and comments received on State letter AN 2/2-00/48. In generate the proposal consists of the addition of a new Chapter 10 in Annex 15 entitled "Electronic Terrain and Obstacle Data" and inclusion of one new appendix. The new Chapter 10 contains provisions for the electronic terrain and obstacle data function, coverage, terrain and obstacle numerical requirements, content and structure of terrain and obstacle databases, data product specifications for terrain and obstacle data and availability. In that respect, applications listed in the proposed paragraph 10.1 of Annex 15 (Attachment A refers), are identified as those for which quality terrain and obstacle data, used in conjunction with aeronautical data, will be required.

19. To satisfy identified user requirements for electronic terrain data, while taking into account cost-effectiveness, acquisition methods and data availability, it is proposed that electronic terrain and obstacle data be provided according to four basic coverage areas, as indicated in paragraphs 10.2.1 to 10.2.4 of Annex 15. Proposed Area 1 has a coverage over the whole territory of a State, including aerodromes/heliports. Proposed

Area 2 covers the established terminal control areas, not exceeding a 45 km radius from the aerodrome reference point (ARP), to coincide with the existing specification for the provision of topographical information on the Aerodrome Obstacle Chart -- ICAO Type C (Annex 4, paragraph 5.3.1 c) refers). Proposed Area 3 covers the area which is within 50 m from the edges of a defined aerodrome or heliport surface movement area while the proposed Area 4 should be restricted only to those runways where precision approach Category II or |II operations have been established.

20. For each of the four areas, numerical requirements for terrain and obstacle data have been defined and are presented in Annex 15, Appendix 8, Tables AS- 1 and A8-2, respectively (Attachment A refers). As indicated in the notes to 10.2.5 of Annex 15, numerical terrain and obstacle data requirements for Area 2 are defined on the basis of the most stringent application requirement, i.e. determination of contingency procedures for use in the event of an emergency during a missed approach or take-off. It is recognized, however, that some applications listed in 10.1.1 of Annex 15 could be adequately accommodated with terrain and obstacle datasets that are of lower requirements than those specified in Appendix 8 and which are readily available from States or other authorized data producers today. Consequently, careful evaluation by' data users of available datasets will be necessary in order to determine if the products will fit their intended use .

21. In the proposed 10.3 and t0.4 of Annex 15, terrain and obstacle databases contents and structures have been provided, respectively. It should be noted that they are clearly defined as two separate databases. There are several reasons for this division which include, different acquisition methods and maintenance periods of data. For both terrain and obstacle data, feature types together with their attributes have been identified and are presented in Annex 15, Appendix 8, Table A8-3 and Table A8-4, respectively (Attachment A refers). It is recognized that depending on the acquisition method, the description of the terrain contained in the database could be the bare earth, the top of vegetation (canopy) or something in between. To clearly highlight this, several definitions regarding terrain have been proposed for inclusion in Chapter 2 and in 10.3 of Annex 15. Regarding obstacle definition, the one that is presently provided in Annex 14, Volume I is considered suitable for Annex 15 and with some minor modiifications is presented in Attachment A.

22. The electronic terrain data task includes, among other elements, development of the provisions that would allow and support interchange of datasets between different users. It may be recalled that item d) of Recommendation 2.3/1 of the AIS/MAP Divisional Meeting (1998) requested ICAO, when dealing with the electronic terrain

data task, to investigate cooperation with the International Organization for Standardization(ISO),TechnicalCommittee(TC)-211--Geogrphic ,□ Information/Geomati cs . This cooperation was established and ICAO because the liaison member of the committee whose main task was to provide standardization in the field of digital geographic information by developing the 19100 series of ISO standards. This standardization includes development of geographic information standards that specify the methods, tools and services for data management (including definitions and descriptions), and the acquiring, processing, analysing, accessing, presenting and transferring of such data in electronic form between different users, systems and locations. Details on the ISO TC 211 mandate and the scope of the 19100 series of standards, can be found at http://wwwoisotc211 .org/scope.htm.

23. The ISO 19100 series of standards were also adopted by RTCA SC 193/EUROCAE WG 44 and as a result, significant progress was achieved by the joint committees in the development of the interchange standard for electronic terrain, obstacle and airport mapping data. It may also be noted that a large number of States through their national geodetic administrations and a very large number of industry representatives are actively participating in the work of lSO TC 211. It is felt that the ISO 19100 series of standards would de facto become worldwide standards for geographic information, and many data providers and users would eventually conform to them. The Commission believes that civil aviation should be among the very large and still growing number of providers and users which have adopted the ISO 19100 series of standards or are planning to do so. ISO standards related to geographic information should, as was the case for those related to quality assurance (ISO 9000 standards), be adopted by ICAO and included in a relevant Annex. Consequently, the Commission suggests that ISO 19100 series of standards be adopted as the general data modelling frame network for electronic terrain and obstacle data, as reflected in paragraph 10.5. I of Annex 15

(Attachment A refers).

24. In line with the above, paragraph 10.5.2 of Annex 15 contains details regarding the provision of terrain and obstacle data product specifications on the basis of the ISO 19131 standard. Terrain and obstacle data product specifications are comprehensive statements regarding available electronic and obstacle datasets on which basis air navigation users will be able to evaluate the products and determine if any of them satisfy the requirements for their intended use in a particular application□ Data product specification is intended to support information interchange between interested

parties by providing feature types, feature attributes, geometry and attribute encoding rules, maintenance, quality requirements and metadata.

25. Successful interchange of datasets implies delivery, receipt and interpretation of dam among the communicating parties and this interchange could be achieved through dataset transfer. One interchange process is based upon a common application schema known to both suppliers and users of data. Datasets are transformed into the common transfer format based upon an encoding process that is defined by mapping between an application schema of a supplier and the common application schema. In a similar manner, decoding by the user of a common transfer dataset format would generate data for the user. The above represents the fundamental principle for data interchange that would be applied to terrain and obstacle data interchange and onward use of data for different applications. On the basis of this principle, more complex and fully automated data interchange mechanisms may' be built using a network to communicate messages requesting data on which basis corresponding deliver?, of requested data will be made. This type of interaction-based process represents an extension of the fundamental interchange principle and would lead to a dynamic (real-time) interchange of terrain and obstacle data. Therefore, the proposed Standards in Annex 15 for terrain and obstacle data interchange represent a conceptual step towards networked interoperability aimed at an XML-based implementation of the dataset transfer model.

26. In addition to ISO 19131, other relevant ISO geographic information standards have been referred to in the proposed paragraph 10 5 of Annex 15 such as t 9109 -- Rules.fi)r application schema, 19110 – Methodology for feature cataloguing 19113 – Quality principles, 19114-- Quality evaluation procedures, 19115 --□ Metadata, 19117 Portrayal and 19123 □ -- Schema for coverage geometry and functions. Those standards have already become ISO international standards or have been issued as final draft international standards; by the time of the adoption of this proposed amendment, all of the referred standards would have become international standards. Finally, to enhance the importance of the availability of terrain and obstacle data, paragraph 10.6 of Annex 15 invites States to ensure that appropriate electronic terrain and obstacle data are made available for use by international civil aviation.

27. The proposed amendments to Appendix 1 of Annex 15 reflect both the introduction of the common reference systems □ for international civil aviation and the necessary changes to the en-route and aerodrome/heliport parts of the Aeronautical Information Publication (AIP) related to proposed new areas □ for obstacle collection and obstacle representation. To ensure that information regarding the availability of electronic terrain and obstacle data is provided in a State's AIP, it is proposed that a

new sub-paragraph GEN 3.1.6, containing details as to how electronic terrain and obstacle data could be obtained, be included in Appendix 1 of Annex 15, as presented in Attachment A . Additionally, tables in Appendix 7 to Annex 15 are also proposed for amendment to reflect primarily the introduced changes related to obstacles. The opportunity was taken to update those tables with additional data that were unintentionally omitted at the time of their introduction or are now required to support the emerging provision of aerodrome/heliport layouts in electronic form. Finally, publication resolutions in those tables have been amended to indicate clearly how many decimal points published data values should have or how to round them up.

Consequential amendments to Annexes 4, 11 and 14, Volumes I and II

28. As a result of the proposed amendment to Annex 15, several Annexes have been reviewed identifying those which should be proposed for consequential amendment. Amendments are required to Annexes 4, 11 and 14, Volumes I and II and proposals are presented in Attachments B, C, D and E, respectively.

29. The proposed introduction into Annex 15 of the common reference systems for air navigation affects the four identified Annexes above and new paragraphs addressing this subject are introduced in Chapter 2 of Annexes 4 and 11 and Chapter I of Annex 14, Volumes I and II. New definitions regarding calendar, datum and Gregorian Calendar are proposed for introduction into the definitions chapter of all four Annexes, as presented in Attachments B, C, D and E.

30. Consequential to the proposed introduction of electronic terrain and obstacle data specifications into Annex 15, the existing provisions in Annexes 4, 11 and 14, Volumes I and II for obstacle data contained in Appendices titled "Aeronautical data quality requirements" in each of them, were updated in order to align them with the proposed new Annex 15 specifications. In Annex 4, new definitions concerning terrain and obstacle are proposed for inclusion while the definition for significant obstacle was amended. Chapter 13 of Annex 4 is proposed for amendment to include missing specifications for elevations and geoid undulations at thresholds of non-precision runways.

31. As reflected in Attachment C, accuracy and integrity requirements for obstacles in the terminal control area (Area 2) are proposed for addition into Annex 11, Appendix 5, Tables 1 and 2. In practice, provision of obstacles in Area 2 should be, not only under the responsibility of an air traffic control authority, but also under the responsibility of an aerodrome authority for those parts of an aerodrome under its administrative boundary. To reflect this practice, the same requirements for Area 2 obstacles are

included in Annex 14, Volumes I and Ⅱ, Tables 1 and 2, as presented in Attachments D and E, respectively.

32. In respect of Annex 14, Volumes I and It, in addition to the proposed changes related to obstacles in Tables 1 and 2 of Appendices 6 and l, respectively, the opportunity was used to update the tables with some additional data which were unintentionally omitted at the time of their introduction or, which are now required to support the emerging provision of aerodrome,/heliport layouts in electronic form.

DIFFERENCES BETWEEN EUROCONTROL OPADD EDITION2．0 AND EDITION2．1

The paragraph number	ver2．0	ver2．1
2.3.6.2	—	Note that if ICAO introduces new NOTAM Code subjects in Doc 8400 (Ref. [3]) (e.g. ‘GA’ and ‘GW’ for GNSS) before amending Doc 8126 (Ref. [2]), the allocation of qualifiers ‘Traffic’, ‘Purpose’ and ‘Scope’ shall be based on operational experience and orientated to similar subjects contained in the existing Doc 8126 NSC.
2.3.6.7	If, exceptionally, neither the Subject nor the Condition is listed: the code ‘QXXXX’ may be used. When the NOTAM code 'QXXXX' is used, free association of the qualifiers ‘Traffic’, ‘Purpose’ and ‘Scope’ is possible.	If the Condition is not listed: use 'XX' as the 4th and 5th letters of NOTAM Code with the exception of trigger NOTAM where ‘TT’ is always used (Ref. 2.7.2.6). Example 1: QFAXX When 'XX' is used as the 4th and 5th letter combination, free association is possible with the qualifiers ‘Traffic’ and ‘Purpose’. The ‘Traffic’ and ‘Purpose’ entries shall be selected with due regard to the qualifying NOTAM content and, by analogy, with the prevailing association of qualifiers to the respective subject (2nd and 3rd letters) in the NSC. Association with ‘Scope’ is fixed by the NOTAM subject 2nd and 3rd letter combination taking into account the specificities mentioned Para 2.3.9.4.

The paragraph number	ver2. 0	ver2. 1
2.3.8.4	—	where the order in the list reflects the grading in terms of operational significance from the lowest to the highest.
2.3.23.3	Items F) and G) shall contain an altitude (Above Mean Sea Level – AMSL) or a height (Above Ground or Sea or Surface Level – AGL or SFC) expressed in meters or feet, or a Flight Level (always expressed in 3 digits). In addition, SFC (surface) and GND (ground) may be used in Item F) as well as UNL (unlimited) in Item G).	Items F) and G) shall contain an altitude (Above Mean Sea Level – AMSL) or a height (Above Ground or Sea or Surface Level – AGL or SFC) expressed in meters or feet, or a Flight Level (always expressed in 3 digits). In addition, SFC (surface) and GND (ground) may be used in Item F) as well as UNL (unlimited) in Item G). For designation of height, AGL and GND are used when no water is part of the ground portion and SFC is used in all other portions (sea, small or big lake, etc.)
2.7.5.4	Notification of an Earlier end date/time: Exceptionally, the original end date specified in the AIP SUP may be changed to an earlier date by NOTAM. In this case, if the AIP SUP was the subject of an existing Trigger NOTAM, a Trigger NOTAMR is issued on the date of cancellation, and remains in force until the originally published end of validity of the Supplement or until the next AIP SUP checklist or printed plain-language list of valid NOTAM, if either of these is issued earlier. The Item C) date/time of such 'cancellation' Trigger NOTAMR shall contain the originally published end of validity of the Supplement or the date of the next AIP SUP checklist (whichever is earlier).	Notification of an Earlier end date/time: Exceptionally, the original end date specified in the AIP SUP may be changed to an earlier date by NOTAM. In this case, if the AIP SUP was the subject of an existing Trigger NOTAM, a NOTAMR is issued on the date of cancellation. The Item C) of this NOTAMR shall be equal to the date of the originally published end of validity of the Supplement or the date of publication of the next AIP SUP checklist or of the printed plainlanguage list of valid NOTAM, if either of these is issued earlier.

The paragraph number	ver2. 0	ver2. 1
3.13.2.1	—	Trigger NOTAM in Series 'T' are created by the NOTAM Processing Unit to trigger specific printed AIS publications, for which no Trigger NOTAM is normally issued by the Publishing NOF.

Differences between
Common Operating Procedures Asia/Pacific and EUROCONTROL OPADD Ver2

2 NOTAM CREATION

The paragraph number	ASIA COP	The paragraph number	EURO OPADD(VER2)	A summary of difference
Introduction				
2.1	General	2.1.2	The different types of NOTAM are identified by suffix letters 'N' (New), 'R' (Replacement) and 'C' (Cancellation) and the resulting identifier appears after the reference number as follows:	minor difference
		2.1.3	Unless otherwise specifically stated in the text, the procedures described in this chapter refer to NOTAMN (New NOTAM); most of them also apply to NOTAMR and to NOTAMC.	
		2.1.4	However, there are some particulars specific to NOTAMR (Replacement NOTAM) and NOTAMC (Cancellation NOTAM) creation. These are described in this chapter, at paragraph 2.4.	
		2.1.5	Procedures for NOTAMR and NOTAMC creation (paragraph 2.4 refers) Procedures for Checklist production (paragraph 2.5 refers) Procedures for the publication of Permanent information (paragraph 2.6 refers) Procedures for Trigger NOTAM creation (paragraph 2.7 refers)	

Basic Rules for NOTAM Creation				
2.1.1 Basic Rules for NOTAM Creation	The following basic rules apply to the creation of NOTAM at NOF level: • A NOTAM shall deal only with one subject and one condition of that subject. • NOTAM are basically qualified according to the NOTAM Selection Criteria (NSC)1 , as published in ICAO Doc 8126 , Appendix C. • All published times shall be in UTC • For NOTAMC no anticipated date in Item B (start of validity) is permitted. • If Item C contains 'EST', the NOTAM requires the later issue of a NOTAMR or NOTAMC. • Item C shall contain 'PERM' solely for NOTAM information that will be incorporated in the AIP. These NOTAM are cancelled according to the rules described in paragraph 2.6 when the AIP is updated. • Item E should be composed by the Publishing NOF in such a way that it will serve for direct Pre-flight Information Bulletin entry without requiring additional processing by the receiving Unit. • No correct version NOTAM shall be issued. Erroneous NOTAM shall either be replaced, or cancelled and a new NOTAM issued. • A NOTAMR shall replace only one NOTAM. Both shall belong to the same NOTAM series. • A NOTAMC shall cancel only one NOTAM. Both shall belong to the same NOTAM series. • Publication of several NOTAM in the same AFTN message is not allowed. • Renumbering of existing NOTAM (containing identical information, but with a new number) is not allowed.	**2.2.1**	The ICAO NOTAM format shall be strictly adhered to and the only NOTAM types allowed are NOTAMN, NOTAMR and NOTAMC.	
		2.2.2	NOTAM intended for international distribution shall include English text for those parts expressed in plain language.	
		2.2.3	Each NOTAM shall be transmitted as a single telecommunication message.	
		2.2.4	A NOTAM shall deal only with one subject and one condition of that subject [Note exception for Trigger NOTAM – paragraphs 2.7.2.9, 2.7.2.10 and 2.7.2.11 refer].	exception for Trigger NOTAM
		2.2.5	Erroneous NOTAM shall be replaced; or they may be cancelled and a new NOTAM issued. No 'correct version' NOTAM shall be issued.	
		2.2.6	Renumbering of existing NOTAM (containing identical information, but with a new number) is not allowed. Renumbering at the beginning of each year is therefore also not permitted.	
		2.2.7	NOTAM are basically qualified according to the NOTAM Selection Criteria (NSC), as published in ICAO Doc 8126 (Ref. [2]) Chapter 6 Appendix B.	
		2.2.8	All published times shall be in UTC.	
		2.2.9	If Item C) contains 'EST', the NOTAM requires the later issue of a NOTAMR or NOTAMC.	
		2.2.12	A NOTAM shall be cancelled only by a NOTAMC and never by a Checklist.	
2.3 Detailed Procedures				
2.3.1 NOTAM Series Allocation				
2.2.1 NOTAM Series Allocation	‣ The use of a NOTAM Series identifier is always required, even for countries publishing only one single NOTAM Series. ‣ Letters A to Z (1 character) are allowed.	**2.3.1.2**	Letters A to Z (1 character) are allowed, except S and T.	
2.3.2 NOTAM Number				
2.2.2 NOTAM Number	‣ Consists of NOTAM number/year (4 digits/2 digits). For Multi-part NOTAM this number shall be followed by a sub-number (1 letter, 2 digits). ‣ Each series will start on January 1st of each year with number 0001. ‣ The NOTAM are issued in ascending and continuous sequence.	**2.3.2.1**	Consists of NOTAM number/year (4 digits/2 digits). For Multi-part NOTAM refer to procedures detailed in Chapter 6. 2.3.2.2 Each series will start on January 1st	only in EAD
		2.3.2.3	The NOTAM are issued in ascending and continuous sequence in each and every series.	

2.3.3 NOTAM Type				
2.2.3 NOTAM Type	‣ Letters 'N' (new), 'R' (replace) and 'C' (cancel) are allocated to the NOTAM according to its type. Example: A0123/97 NOTAMN ‣ The procedures described in this chapter refer to NOTAMN (new NOTAM), most of them apply also to NOTAMR and NOTAMC. However, there are some particulars specific to NOTAMR (Replacement NOTAM) and NOTAMC (Cancel NOTAM) creation. These are described in this Section, paragraphs 2.4.7 and 2.4.8.	**2.3.3.1**	Letters 'N' (new), 'R' (replace) and 'C' (cancel) are added as a suffix to the designator 'NOTAM' to indicate the NOTAM type or function.	
2.3.4 NOTAM Qualification Item Q) – General Rules				
2.3.1 General Rules	The NOTAM Selection Criteria (NSC) are the basis for NOTAM qualification. Guidance for their use is contained in ICAO Doc 8126, Appendix C. Publishing NOF shall basically use the NOTAM Codes and their respective allocated qualifiers provided in the NSC. Automated (computer assisted) systems will propose these specific criteria for inclusion in the Item Q of the proposed NOTAM. Use of the NOTAM Code and the corresponding 'Traffic', 'Purpose' and 'Scope' qualifiers is recommended. Deviation from the published qualifiers is only allowed when required by National regulations or imposed by operational needs. All fields of the Item Q shall be completed for each NOTAM type.	**2.3.4.2**	NSC are used for the following: a) the storage and retrieval of information; b) to associate a NOTAM to particular purposes; and c) to determine the relevance of a NOTAM for a given context (aerodrome, FIR, area, IFR or VFR flight, ⋯).	
		2.3.4.3	Publishing NOF shall normally apply the qualifiers associated with the NOTAM code combinations in accordance with the NSC. Deviation from the corresponding 'Traffic', 'Purpose' and 'Scope' qualifiers is only allowed in exceptional cases; e.g. when required by National regulations or imposed by operational needs (refer to paragraph 2.3.6.6 for guidance).	

2.3.5 Qualifier 'FIR'				
2.3.2 Qualifier 'FIR'	ICAO Location Indicator of the FIR concerned. A location indicator allocated exclusively to an overlying UIR shall not be used. Example: Q) EDXX/QARCH/I/OB/E/250/450/4916N01236E999 A) EDFF EDMM Note: that the information relates to Rhein UIR and that the indicator EDUU (=Rhein UIR) is not inserted in Item Q. If more than one FIR of the same country is concerned, the ICAO country indicator (e.g. ED) followed by 'XX' (or 'XXX') shall be inserted instead of a FIR. In the case of multiple FIR, the ICAO location indicators of all FIR concerned shall be listed in Item A. Example: Q) ZXXX/QWELW/. . . . . . A) ZGZU ZSHA ZBPE. . . . . . If multiple FIR of different countries are concerned (supra-national), the ICAO country indicator of the Publishing NOF followed by "XX" or "XXX" shall be inserted. The ICAO location indicator of all affected FIR shall also be listed in Item A. Example: Q) WMXX/QWELW/.. . . . . . A) WMFC VTBB	**2.3.5.1**	This Item shall normally contain the ICAO Location Indicator of the FIR within which the subject of the information is located geographically or, if the NOTAM is issued by a regional non-governmental agency, the location indicator allocated by ICAO to that agency. Example: Q) EDFF/QWELW/…. A) EDFF	FIR for non-govemental agency
		2.3.5.2	If more than one FIR of the same country are concerned, the ICAO nationality letters of that country (e.g. ED) shall be followed by 'XX' (paragraph 2.3.5.4 Example 1 refers).	
		2.3.5.3	If more than one FIR of different countries are concerned (supra-national), the ICAO nationality letters of the responsible State (e.g. LI) shall be followed by 'XX' (paragraph 2.3.5.4 Example 2 refers).	
		2.3.5.4	In the case of multiple FIR, the ICAO location indicators of all FIR concerned shall be listed in Item A) (paragraph 2.3.15.2 refers). Example 1: Q) EDXX/QWELW/…. A) EDLL EDMM EDWW …. Example 2: Q) LIXX/QWELW/…. A) LIRR LIBB LATI….	
		2.3.5.5	A location indicator allocated exclusively to an overlying UIR shall not be used. Example: If the information relates to Rhein UIR, the allocated indicator 'EDUU' is not to be used in Item Q): Q) EDXX/….. A) EDFF EDMM	
		2.3.5.6	When a subject aerodrome is situated within the overlying FIR of another State, Item Q) shall contain the code for that overlying FIR (paragraph 2.3.14.4 refers). Example: Q) LFRR/ …. A) EGJJ.	Item Q) shall contain the code for that overlying FIR
		2.3.5.7	Note that, in the absence of a clear and positive alternative, the insertion of location indicators such as LIXX in Item Q) (paragraph 2.3.5.4 Example 2 refers) enables identification of the Publishing NOF.	

2.3.6 Qualifier 'NOTAM CODE'				
2.3.3 Qualifier 'NOTAM Code'	This Item contains the NOTAM Code. The basis for the assignment of NOTAM Codes are the NOTAM Selection Criteria (NSC). NOF shall basically use the NOTAM Codes provided in the NOTAM Selection Criteria. The association criteria defined in the NSC provide a subject-related association of NOTAM with the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE'. If the NSC do not contain an appropriate NOTAM Code, the following procedures shall be applied: a) In the exceptional case where the information to be promulgated by NOTAM has no related SUBJECT (2nd and 3rd letters of NOTAM Code) contained in the NOTAM Code list, the following NOTAM Code shall be used in all cases: 'QXXXX' When QXXXX is inserted, free association of the qualifiers 'TRAFFIC', 'PURPOSE' and 'SCOPE' is possible. Example: Item Q = Q)EKDK/QXXXX/IV/M/E /000/999/5533N00940E999 NOTAM text = E) ACCORDING TO RESOLUTION 781 UNITED NATIONS HAS DECIDED TO ESTABLISH A BAN ON MIL FLIGHTS IN …. The 2nd and 3rd letter combination 'XX' shall only be used in combination with the 4th and 5th letter combination 'XX', except in the case of Amendments or Supplements containing information dealing with different subjects and locations, one Trigger NOTAM with NOTAM Code 'QXXTT' will be issued. b) Whenever the SUBJECT (2nd and 3rd letters) is contained in the NSC, but the CONDITION of the subject (4th and 5th letters of NOTAM Code) is not specified, the letters 'XX' shall be inserted as 4th and 5th letters. When "XX" is inserted as 4th and 5th letters, free association of the qualifiers (with the exception of 'SCOPE') is possible. The entries shall be made with regard to the NOTAM contents, and by analogy with the prevailing association of qualifiers to the respective subject (2nd and 3rd letters) in the NSC. Example: QMRXX (Runway) Prevailing qualifiers for '= TRAFFIC/PURPOSE/SCOPE are ' IV/NB/A/' Entry in Item Q accordingly: Q)WSJC/QMRXX/IV/NBO/A/000/999/0121N10358E005	2.3.6.1	This Item shall contain the ICAO Doc 8126 (Ref. [2]) rationalised versions of NOTAM Codes published in ICAO Doc 8400 (Ref. [3]). Note that if ICAO introduces new NOTAM Code subjects in Doc 8400 (Ref. [3]) (e.g. 'GA' and 'GW' for GNSS) before amending Doc 8126 (Ref. [2]), the allocation of qualifiers 'Traffic', 'Purpose' and 'Scope' shall be based on operational experience and orientated to similar subjects contained in the existing Doc 8126 NSC.	
		2.3.6.2	The NOTAM Selection Criteria (NSC) set out in ICAO Doc 8126 (Ref. [2]) Chapter 6 Appendix B provide a subject-related association of NOTAM Codes with the qualifiers 'Traffic', 'Purpose' and 'Scope'.	
		2.3.6.3	Publishing NOF shall ensure that the NOTAM Code selected from the NSC describes the most important information to be promulgated. Example: If required text reads: 'Apron closed due work in progress' Use QMKLC instead of QMKHW, i.e.: Q) EGKA/QMKLC/IV/BO/A/..... Instead of: Q) EGKA/QMKHW/IV/M/A/.....	
		2.3.6.4	If the NSC tables do not contain an appropriate 'Subject/Condition' combination for the information to be promulgated, the letters 'XX' shall be used. However, every effort shall be made to use 'Subjects' and 'Conditions' that are listed in the NSC before deciding to use 'XX' as detailed in the following paragraphs.	
		2.3.6.5	If the Subject is not listed: use 'XX' as the 2nd and 3rd letters of the NOTAM Code. However, an overall term (such as 'FA' or 'CA') or a best fitting code shall be preferred whenever possible instead of 'XX'. Example: QXXAK When 'XX' is used as the 2nd and 3rd letter combination, free association is possible with the qualifiers 'Traffic', 'Purpose' and 'Scope'. These entries shall be selected with due regard to the qualifying NOTAM text.	best fitting code shall be preferred whenever possible instead of 'XX'.
		2.3.6.6	If the Condition is not listed: use 'XX' as the 4th and 5th letters of NOTAM Code. Example 1: QFAXX When 'XX' is used as the 4th and 5th letter combination, free association is possible with the qualifiers 'Traffic' and 'Purpose' (but not with 'Scope' which is fixed by the NOTAM subject 2nd and 3rd letter combination). The 'Traffic' and 'Purpose' entries shall be selected with due regard to the qualifying NOTAM content and, by analogy, with the prevailing association of qualifiers to the respective subject (2nd and 3rd letters) in the NSC. If the NOTAM contents do not justify the insertion of the prevailing qualifiers associated with the subject in the NSC, NOTAM shall be assigned the appropriate qualifiers taking into account the operational needs, especially for PIB output/query. Example 2: If required text reads: 'Grass cutting in progress on aerodrome', the prevailing qualifiers ('Traffic'/'Purpose'/'Scope') for 'QFA' (AD) are 'IV/NBO/A/'. But, depending on the activity's expected impact on manoeuvring area operations, Item Q) could read: '…./QFAXX/IV/M/A/…..' Example 3: If required text reads: 'RWY18 ILS LLZ coverage reduced to 25 degrees either side of the front course along a radius 10NM from the antenna …..', the NOTAM Code and 'Traffic'/'Purpose'/'Scope' qualifiers in Item Q) may read: 'QILXX/I/BO/A/ …..'	

		2.3.6.7	If, exceptionally, neither the Subject nor the Condition is listed: the code 'QXXXX' may be used. When the NOTAM code 'QXXXX' is used, free association of the qualifiers 'Traffic', 'Purpose' and 'Scope' is possible.	
2.3.7 Qualifier 'TRAFFIC'				
2.3.4 Qualifier 'TRAFFIC'	Example: NOTAM code = QAPCI TRAFFIC = IV (DEPENDS ON SUBJECT (I AND/OR V) TEXT = VFR REPORTING POINT ID CHANGED ... Entry in Item Q: Q) YBBB/QAPCI/V/OB/E /000/200....	2.3.7.3	However, the NSC contain certain subjects (2nd and 3rd letters) where the NOTAM subject/text may demand a different choice of 'Traffic' qualifier (I, V or IV). In these cases, the correct 'Traffic' entry shall be determined by the Publishing NOF. Example: NOTAM code for 'VFR REPORTING POINT ID CHANGED' is 'QAPCI' The given NSC 'Traffic' Qualifier for 'QAPCI' is 'IV' But as the Reporting Point is for VFR use only; Entry in Item Q) may be: 'Q) LFFF/QAPCI/V/BO/E/000/200....'	
2.3.8 Qualifier 'PURPOSE'				
2.3.5 Qualifier 'PURPOSE'	This qualifier relates a NOTAM to certain purposes (intentions) and thus allows retrieval according to the user's requirements. The appropriate 'Purpose' qualifier(s) should be taken from the NSC.	2.3.8.2	The appropriate 'Purpose' qualifier(s) should be taken from the NSC.	
	N = NOTAM selected for the immediate attention of aircraft operators Due to their importance these NOTAM require immediate attention of aircraft operators. Aircraft Operators may request for specific delivery of such NOTAM or for inclusion into specific Pre-flight Information Bulletins. The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of extreme importance selected for immediate attention. NOTAM qualified OB, B or M will not appear, so only NOTAM qualified NB shall appear. O = Operationally significant NOTAM The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of operational significance. NOTAM qualified B or M will not appear, only NOTAM with OB or NB shall appear. B = NOTAM selected for PIB entry The NOTAM will appear in a Pre-flight Information Bulletin containing all NOTAM relevant to a general Pre-flight Information Bulletin query. NOTAM qualified B, OB or NB shall appear in the Pre-flight Information Bulletin. M = Miscellaneous The NOTAM is for a 'miscellaneous' purpose and will not appear in a Pre-flight Information Bulletin, unless specifically requested. K = The NOTAM is a checklist (see paragraph 2.7).	2.3.8.3	N = NOTAM selected for the immediate attention of aircraft operators Due to their importance these NOTAM require immediate attention of aircraft operators. Aircraft Operators may request specific delivery of such NOTAM or for their inclusion in specific Pre-flight Information Bulletins. The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects of extreme importance selected for immediate attention. NOTAM qualified BO, B or M will not appear, so only NOTAM qualified NB1 or NBO shall appear. B = NOTAM selected for PIB entry The NOTAM will appear in a Pre-flight Information Bulletin containing all NOTAM relevant to a general Pre-flight Information Bulletin query. NOTAM qualified B, BO, NB1 or NBO shall appear in the Pre-flight Information Bulletin. O = NOTAM Concerning flight operations The NOTAM will appear in a specific Pre-flight Information Bulletin containing only NOTAM related to subjects that concern flight operations. NOTAM qualified B, NB1 or M will not appear, only NOTAM with BO or NBO shall appear.	
	The following combinations of one to two letters are permissible (the order of the letters in the combinations has no significance): - NB, OB, B and M - K for a NOTAM Checklist.	2.3.8.4	The following combinations of one to three letters are permissible: B, BO, NB1, NBO and M For a NOTAM Checklist, only K shall be used	

2.3.9 Qualifier 'SCOPE'				
2.3.6 Qualifier 'SCOPE'	This qualifier relates the NOTAM subject (2nd and 3rd letters) to a specific scope. This qualifier is used to determine under which category a NOTAM is presented in a Pre-flight Information Bulletin, i.e. under 'Aerodrome', 'En-Route' or 'Navigational Warning'. The details about the processing of the various entries for the production of Pre-flight Information Bulletins are to be described. The following entries are permissible: A = Aerodrome relates the NOTAM to the scope of 'Aerodromes'. Entry of an aerodrome (e.g. RJAA) in Item A is compulsory. A geographical reference in the Item Q shall be given, in this case the aerodrome coordinates. E = Enroute relates the NOTAM to the scope of 'Enroute information'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM. W = Warning relates the NOTAM to the scope of 'Navigation Warnings'. Entry of one or more FIR in Item A is compulsory. A geographical reference in the Item Q shall be given according to the contents of the NOTAM. AE = Aerodrome/Enroute relates the NOTAM to scopes 'A' and 'E'. Entry of an aerodrome (e.g. VHHH) in Item A is compulsory, and the geographical reference in the Item Q shall be given according to the contents of the NOTAM. Scope 'AE' is employed where a Navigational Aid is used for both the Aerodrome and the Enroute procedures. The location indicator of the Aerodrome shall be included in Item A. Item Q shall contain the geographical co-ordinates and the radius of the Navigational Aid. Example: Q) VTBB/QNVAS/IV/BO/AE/000/999/1354N10036E005 A) VTBD E) VOR BKK FREQ 117.7MHZ U/S AW = Aerodrome/ Warning relates the NOTAM to both scopes 'A' and 'W'. Entry of an aerodrome in Item A is compulsory, and the geographical reference in the Item Q shall be given according to the contents of the NOTAM. Scope 'AW' is used when the Navigational Warning takes places on or in the near vicinity of an aerodrome, and it affects both the traffic flying enroute and at the aerodrome. Item A shall contain the aerodrome location indicator, and Item Q shall contain the geographical co-ordinates of the location where the activity takes place, followed by the radius. Example Q) WSJC/QWPLW/IV/M/W/000/100/0123N10342E010 A) WSJC B) 0204072300 C) 0204080100 E) PJE WILL TAKE PLACE WI 10NM RADIUS OF 012315N1034235E F) GND G) FL100) K = Checklist	2.3.9.2	Scope 'AE' is used whenever an aerodrome-related NOTAM (e.g. certain navigational aids) affects both aerodrome and en-route operations. For navigation warnings refer to 'AW'. Item A) shall contain the location indicator of the Aerodrome (e.g. EHAM). Example: Q) EHAA/QNMAS/IV/BO/AE/000/999/5216N00442E025 A) EHAM B) 0504170500 C) 0504170700 E) VOR/DME AMS FREQ 113.95MHZ/CH96Y OUT OF SERVICE In this example, Item Q) shall contain geographical co-ordinates and a radius centred on the Navigational Aid. When such a Navigational Aid is serving two or more aerodromes, only one NOTAM shall be published with scope 'AE'. NOTAM for other aerodromes concerned shall be published with scope 'A' only. AW = Aerodrome/Warning Relates the NOTAM to both scopes 'A' and 'W'. Although scope 'AW' is not explicitly listed in the ICAO NSC tables, it shall be used whenever both aerodrome and en-route traffic is affected by a Navigational Warning taking place on or in the near vicinity of an aerodrome. When a Navigational Warning affects two or more aerodromes, only one NOTAM shall be published with scope 'AW'. NOTAM for other aerodromes concerned shall be published with scope 'A' only.	When a Navigational Warning affects two or more aerodromes, only one NOTAM shall be published with scope 'AW'. NOTAM for other aerodromes concerned shall be published with scope 'A' only.
		2.3.9.4	However, the NSC contain certain subjects (2nd and 3rd letters) where the 'Scope' (A, E, W, AE or AW) depends on the NOTAM text. In these cases, the correct 'Scope' entry shall be determined by the publishing NOF according to NOTAM text. Examples: 'QOB . .' = Obstacle = 'AE' in NSC but could also be 'A' or 'E' only; 'QWA . .' = Air Display = 'W' in NSC but could also be 'AW'; 'QNV . .' = VOR = 'AE' in NSC but could also be 'E'. 'QOA . .' = AIS = 'A' in NSC but could also be 'AE' (e.g. if AIS is also responsible for other aerodromes in the FIR) or 'E' if the NOTAM refers to national NOF or information provision. 'QST . .' = TWR = 'A' in NSC but could also be 'AE' (e.g. if TWR also serves en-route traffic).	

2.3.10 Qualifiers 'LOWER/UPPER'				
2.3.7 Qualifiers 'LOWER/ UPPER'	These qualifiers relate a NOTAM influence to a vertical section of airspace specified by lower/upper limits. This allows to specify upper/lower limits in requests for pre-flight information, and by doing so to exclude from the retrieved Pre-flight Information Bulletin obtained, any NOTAM not relating to all or part of the requested vertical section. • The limits specified in these qualifiers are given as 'flight levels' only. Example: /090/330/ = flight level 090 ' to 330 'UPPER' • In the case of NAV-Warnings and Airspace Restrictions, the values specified in LOWER and UPPER shall correspond to the values specified in Items F and G and to those which are specified in the NOTAM text (see paragraph 2.4.5). • In the case of Airspace Organization, the values specified in LOWER and UPPER shall correspond to the vertical limits of the airspace concerned, (if the NOTAM introduces a change to the vertical limits of the airspace, Items F and G shall be present and correspond to the values in LOWER and UPPER). Example: F) 2000 FT AGL G) 7500 FT AMSL = LOWER/UPPER: 020/075. Note: Due to the possible differences between transition heights and levels (depending on the air pressure), the values entered in qualifiers LOWER and UPPER in the Item Q, only roughly correspond to the indicated data in Items F and G. The Publishing NOF should take into account that the values in the Item Q refer to Flight Levels, and that the conversion of the values from the Items F and G shall include the local ' elevation' or 'height', as well as an extralayer that includes pressure deviations from the ' Standard Atmosphere'. At Pre-flight Information Bulletin request, an operational margin should additionally be assured by entering height values that sufficiently cover the flight profile requirements. • Default values are LOWER = 000, UPPER = 999, for En-Route information (SCOPE 'E') as well as for Aerodrome information (SCOPE 'A'), if the NOTAM do not require certain specific height indications. Note: Most aerodrome related information refers to ground installations, and therefore insertion of an Upper Limit is not relevant (hence the default '999'). Whenever the aerodrome related information also affects the airspace above, the Lower/Upper Limits need to be specified, and the ' SCOPE' qualifier shall read 'AE' or 'AW'.	2.3.10.3	The 'Lower' limit shall be inferior or equal to the 'Upper' limit.	
		2.3.10.4	In the case of Navigation Warnings and Airspace Reservations, the	
		2.3.10.5	The addition of 'buffers' to these qualifiers, either manually or within system software, which increases the airspace to be considered for PIB purposes, shall be avoided.	
		2.3.10.6	When the values in F) and G) are expressed as 'flight levels' (FL), then the same FL values will be entered respectively as the 'Lower/Upper' values in Item Q).	
		2.3.10.7	When the values in F) and G) are expressed as an 'altitude' (AMSL), then the corresponding FL values (based on the standard atmosphere) will be entered as the 'Lower/Upper' values in Item Q).	
		2.3.10.8	When the values in F) and G) are expressed as a 'height' (AGL), and no corresponding flight levels can be defined (i.e. the terrain elevation of the affected area is unknown to the Publishing NOF despite all possible action having been taken to obtain the data), then, as an exception, the default values '000/999' should be entered for the 'Lower/Upper' values in Item Q). Example: F) 2000FT AGL G) 7500FT AGL = 'Lower/Upper': 000/999.	
		2.3.10.9	In the case of Airspace Organisation (NOTAM related to structure of ATS Routes, TMA, CTR, ATZ, etc.), the specified 'Lower/Upper' values shall correspond to the vertical limits of the airspace concerned. The use of default values 000/999 shall be avoided whenever possible. Example: Q) LFFF/QATCA/IV/NBO/AE/000/055/4929N00212E027 A) LFOB B) 0502010630 C) 0503262130 D) 0630-2130 E) BEAUVAIS CTR, TMA 1, TMA 2 AND TMA 3 ACTIVATED 0630-2130 WHEN CREIL S/CTR DEACTIVATED, TMA 4 ACTIVATED DURING SLOTS DESCRIBED ABOVE. The upper limit of the BEAUVAIS TMA is FL055 as correctly reflected in the Q-line qualifier 'Upper'.	
		2.3.10.10	In the case of en-route obstacles (e.g. TV masts) no Items F) and G) are included, but appropriate values shall be used in Item Q), based on local elevation. Use of default value '000/999' shall be avoided.	
		2.3.10.11	Most aerodrome-related information, 'Scope' 'A', refers to ground installations for which the insertion of an Upper Limit is not relevant. Therefore, if specific height indications are not required, these NOTAM shall include the default values '000/999'.	

		2.3.10.12	Whenever the aerodrome-related information also affects the overlying or surrounding airspace, the Lower/Upper Limits need to be specified; and the 'Scope' qualifier shall read 'AE' or 'AW'.	
		2.3.10.13	The values entered in the qualifier 'Lower' shall be rounded off to the nearest lower flight level and the values entered in the qualifier 'Upper' shall be rounded off to the nearest higher flight level. The indicated flight levels shall correspond to the semicircular table of cruising levels. Below FL200 increments of 500ft shall be used, above FL200 increments of 1000ft shall be used. Example: F) 2300FT AMSL G) 6200FT AMSL = 'Lower/Upper': 020/065.	
2.3.11 Qualifier 'GEOGRAPHICAL REFERENCE' – General Rules				
2.3.8 Qualifier 'GEOGRAPHICAL REFERENCE'	This qualifier allows the geographical association of a NOTAM to the location it refers to, and is composed of: • One set of co-ordinates given in 11 characters, i.e. latitude: NORTH/SOUTH in 5 characters, longitude: EAST/WEST in 6 characters, e.g.: 1045N10725E • Radius of influence in 3 figures rounded up to the next higher whole Nautical Mile encompassing the total area of influence; e.g. 4.2NM shall be indicated as 5. Example: Q)VVTS/QWMLW/IV/OB/W /000/175/1045N10725E005	**2.3.11.1**	This qualifier allows the geographical association of a NOTAM to a facility, service or area that corresponds to the aerodrome or FIR(s) given in Item A), and is composed of two elements.	
		2.3.11.2	The first element contains one set of co-ordinates comprising 11 characters rounded up or down to the nearest minute;	
2.3.12 Qualifier 'GEOGRAPHICAL REFERENCE' – Co-ordinates				
2.3.8 Qualifier 'GEOGRAPHICAL REFERENCE'	• For NOTAM with SCOPE A the co-ordinates of the Aerodrome Reference Point (ARP) shall be inserted • For NOTAM with SCOPE AE or AW the appropriate co-ordinates shall be inserted. These co-ordinates may be different from the ARP. e.g.: A VOR situated at an aerodrome will not necessarily have the same co-ordinates as the ARP. The same applies for a Navigation Warning at or in the close vicinity of an aerodrome, affecting the aerodrome traffic, and whose co-ordinates may also be different from the ARP. • For NOTAM with SCOPE E or W referring to a given/known point (Navigational Aid, Reporting point, City, etc.) these co-ordinates shall be inserted. • If a NOTAM with SCOPE E or W refers to an area (FIR, Country, Danger Area etc.), the co-ordinates represent the approximate centre of a circle whose radius encompasses the whole area of influence. • For NOTAM with SCOPE E or W containing information that cannot be allocated a specific geographical position (e.g. VOLMET, Entry requirements, Communication failure etc.) the co-ordinates represent the approximate centre of a circle whose radius encompasses the whole area of influence (this may be the centre of an FIR or multiple FIR, e.g. for an entire State)	**2.3.12.1**	For NOTAM with 'Scope' 'A' the Aerodrome Reference Point (ARP) co-ordinates shall be inserted.	
		2.3.12.2	For NOTAM with 'Scope' 'AE' or 'AW' the appropriate co-ordinates shall be inserted. These co-ordinates may be different from the ARP.	

2.3.13 Qualifier 'GEOGRAPHICAL REFERENCE' – Radius				
2.3.8 Qualifier 'GEOGRAPHICAL REFERENCE'	• Radius shall basically be used in a way that it encompasses the total area of influence of the NOTAM. • Whenever the complete FIR or all the FIR (e.g. for an entire State with more than one FIR) specified in Item A are entirely concerned, then ' 999' shall be filled in the radius. The use of the radius value ' 999' shall allow an automated system to retrieve such information only against the FIR(s) indicated in Item A. Adjacent FIR(s), even within the radius of influence, are never affected by this information. Example: (D0001/00 NOTAMN Q) EDXX/QXXXX/IV/OB/E /000/999/5120N01030E999 A) EDBB EDFF EDLL EDMM EDWW B) 0001010000 C) PERM E) FLIGHTS TO/FROM THE CONTRACTING STATES OF THE SCHENGEN REGIME MAY BE CONDUCTED TO/FROM ANY AERODROME WITHIN THE FEDERAL REPUBLIC OF GERMANY. THE OBLIGATION TO USE A DESIGNATED CUSTOMS AERODROME IS WITHDRAWN). • For certain specific NOTAM subjects, the radius shall be standardized for the sake of uniformity and simplicity. These NOTAM codes and their appropriate radius are listed in the following table.	**2.3.13.1**	Radius shall be used in a way that it encompasses the total area of influence of the NOTAM. The radius entered shall be as precise as possible. Use of an excessive radius indication (e.g. by entering the default '999' instead of the actual radius) causes unnecessary PIB coverage and shall be avoided.	
		2.3.13.2	Whenever a NOTAM relates to an entire FIR or FIR group (e.g. for a State with more than one FIR or for those FIRs encompassed by the indicator of an organisation responsible for the provision of ANS in more than one State), then '999' shall be entered as the radius.	
		2.3.13.3	For certain specific NOTAM subjects, the radius should be standardised for the sake of uniformity and simplicity. A list of default radius per NOTAM Code is given in the following table. Table of Default Radius Indicators for NOTAM Creation	
2.3.14 Item A) – Single Location (FIR or AD)				
2.4.1 Item A - Location 'FIR/AD'	ICAO location indicator of one aerodrome or FIR concerned. • In the case of one FIR, the entry must be identical to qualifier ' FIR' in the Item Q. • If the NOTAM contents relate to an overlying UIR, the FIR or the UIR location indicator shall be inserted in Item A with appropriate levels of the UIR in the Lower/Upper fields of the Item Q. The use of solely FIR indicators in Item A is advised, unless specifically required by the NOTAM contents. Note that in the case of Item Q, only an FIR indicator or the Country indicator followed by XX shall be inserted. • When an aerodrome indicator is given, it must be an aerodrome situated in the FIR inserted in the Item Q. This shall apply even when the aerodrome is situated within an overlying FIR of another State, e.g. NOTAM for EGJJ shall have LFRR in Item Q. • If no 4–letter ICAO location indicator for an aerodrome exists, Item A contains the 2–letter country indicator + XX (EDXX) or the single-letter country indicator + XXX (KXXX), with the full name of the aerodrome as first element in Item E. Note: States shall take urgent steps to ensure that: - all aerodromes which may be the location of international NOTAM have an ICAO location indicator; - the same location indicator is not used for an aerodrome and an FIR. Examples: A)EBBU (1 FIR, ICAO location indicator) A)LFPO (Aerodrome, ICAO location indicator) A)EDXX (no location indicator published by Germany) For the latter example, the full name of the aerodrome, e.g. GROSSENHEIN must be stated as first element in Item E.	**2.3.14.1**	In the case of a single FIR, the Item A) entry must be identical to the 'FIR' qualifier entered in Item Q).	
		2.3.14.2	The use of FIR (rather than UIR) indicators in Item A) is encouraged, unless specifically required by the NOTAM text.	
		2.3.14.4	Note that in the case of Item Q), only an FIR indicator or the ICAO nationality letters followed by XX (or XXX for countries with a single-letter indicator) shall be inserted.	
		2.3.14.6	If no 4–letter ICAO location indicator for an aerodrome exists, Item A) shall contain either the two ICAO nationality letters + XX (EDXX) or the single ICAO nationality letter + XXX (KXXX); with the full name of the aerodrome as the first element in Item E). Examples: A) EBBU (ICAO location indicator for a single FIR) A) LFPO (ICAO location indicator for an Aerodrome) A) EDXX (used for locations in Germany without an ICAO indicator - the full name of the aerodrome, e.g. SACHSENRINGHOHENSTEIN-ERNSTTAL must then be stated as the first element in Item E)	

2.3.15 Item A) – Multi-Location (FIR or AD)				
2.4.1.2 Multi-Location NOTAM	• No multi-location NOTAM is allowed in case of aerodrome information. • If more than one FIR is concerned: - all FIR location indicators affected by the information shall be entered in Item A;- the number of FIR in Item A is restricted to 7 by the current ICAO NOTAM format (length of an AFTN line). If more than 7 FIR are affected, additional NOTAM shall be published. - the FIR qualifier of the Item Q contains the ICAO country indicator letter(s) + XX (or XXX). For ' supra-national' information, i.e. more than 1 FIR belonging to several countries, the ICAO country indicator of the Publishing NOF (followed by XX or XXX) must be stated in ' FIR' of the Item Q. Example: Multiple FIR in one country : A) RJTG RORG Item Q 'FIR' = RJXX Multiple FIR in different countries: A) WMFC WSJC Item Q ' FIR' = WMFC if the NOTAM is originated by the Kuala Lumpur NOF	**2.3.15.1**	If more than one AD is involved, separate NOTAM shall be issued.	
		2.3.15.2	each separated by a space; (b) the number of FIR in Item A) is restricted to 7 by the current ICAO NOTAM format (length of an AFTN line). If more than 7 FIR are affected, the Publishing NOF or responsible non-governmental agency (paragraph 2.3.5 refers) may use a unique and unambiguous ICAO location indicator that serves the purpose of publication of NOTAM information related to more than 7 FIRs. If no such unique ICAO location indicator exists, additional NOTAM shall be published as required. Example: UUUU is the ICAO location indicator for the Moscow AFTN COM Centre. This indicator is also used to represent all FIRs in the Commonwealth of Independent States included in the AIP of the Russian Federation. This unique location indicator can be used by the Moscow NOF to publish information that relates to all FIR, such as NOTAM Checklists. In such cases both Item A) and Item Q) could read 'UUUU' (c) the FIR qualifier of the Item Q) contains the ICAO nationality letter(s) + XX (or XXX). For 'supra-national' information, i.e. more than 1 FIR belonging to several countries, the ICAO nationality letter of the Publishing NOF (followed by XX or XXX) must be entered as the 'FIR' qualifier in Item Q). Example 1: Multiple FIRs in one country: Item A) LFFF LFBB LFRR Item Q) LFXX	If more than 7 FIR are affected, the Publishing NOF or responsible non-governmental agency (paragraph 2.3.5 refers) may use a unique and unambiguous ICAO location indicator
		2.3.15.3	If referring to a navigation aid serving more than one AD: issue separate NOTAM for each AD. Note that NOTAM 'Scope' for navigation aid serving both AD and ENR shall be 'AE' for the primary AD location and 'A' for any other AD.	
		2.3.15.4	If referring to GNSS, insert the appropriate ICAO location indicator allocated for a GNSS element or the common location indicator allocated for all elements of GNSS (except GBAS). Note that in the case of GNSS, the location indicator KNMH is being used by USA NOF to notify a GNSS element outage.	allocated for a GNSS element or the common location indicator allocated for all elements of GNSS

2.3.16 Item B) – Start of Activity				
2.4.2 Item B - Start of Validity	Ten-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM comes into force. Remark: A NOTAM is ' valid' from the moment it is published, whereas it only comes ' in force' at the date-time group specified in Item B. Example: B) 0007011200 (1st of July 2000, 12:00 UTC) • The start of a day shall be indicated by 0000. • For NOTAMC, Item B time shall correspond to the issuing time of the NOTAM. No start of validity projected into the future shall be given. Note: 'WIE' or 'WEF' are not permitted.	**2.3.16.3**	The start of a UTC day shall be indicated by '0000' (i.e. do not use '0001').	
		2.3.16.5	The Item B) date/time group should be equal to or later than the actual date/time of creation of the NOTAM.	
		2.3.16.6	However, for NOTAMR and NOTAMC, the Item B) time shall correspond to the actual date/time of creation of that NOTAMR or NOTAMC. No future coming into force is permitted (paragraph 2.4.1.5 refers).	
		2.3.16.7	Note that the date/time of creation may precede the date/time of transmission by a few minutes, due to the time required for the full completion and review of the NOTAM data;	
		2.3.16.8	Refer to paragraph 2.3.18.17 for NOTAM advising changes to previously published operating or activity hours.	
2.3.17 Item C) – End of Validity				
2.4.3 Item C End of Validity	Ten-figure date-time group, giving year, month, day, hour and minute at which the NOTAM expires. • The end of a day shall be indicated by 2359 (do not use 2400). • For NOTAM of uncertain duration of validity, the date-time group shall be followed by ' EST' (estimate). Note: 'APRX DUR' or 'UFN' are not permitted • Any NOTAM which includes an 'EST' shall be replaced by NOTAMR or cancelled by NOTAMC before the ' estimated' end date specified in Item C. • For NOTAM containing information of permanent validity, the abbreviation 'PERM' is used. Examples: C) 0007022030 C) 0007031230EST C) PERM • The Item C shall not be included in NOTAMC. • In cases where the activity promulgated by a NOTAM takes place -or noton (an) alternative date(s), the Publishing NOF shall take the necessary action to ensure that the NOTAM is cancelled or replaced with updated information at the appropriate time.	**2.3.17.1**	For NOTAM of a known duration of validity, a ten-figure date-time group giving year, month, day, hour and minute at which the NOTAM ceases to be in force and becomes invalid. This date and time shall be later than that given in Item B). Example: C) 0507022030	
		2.3.17.2	The end of a UTC day shall be indicated by '2359' (i.e. do not use '2400').	
		2.3.17.3	For NOTAM of uncertain duration of validity, the date-time group shall be followed by 'EST' (estimate). Example: C) 0507031230EST Note that any NOTAM which includes an 'EST' shall be cancelled or replaced before the date-time specified in Item C).	
		2.3.17.5	For NOTAM containing information of permanent validity that will be incorporated in the AIP, the abbreviation 'PERM' is used instead of a date-time group. Example: C) PERM	
		2.3.17.7	In cases where the activity promulgated by a NOTAM does or does not take place on a given alternative date (or dates), the	
		2.3.17.8	Refer to paragraph 2.3.18.17 for NOTAM advising changes to previously published operating or activity hours.	

2.3.18 Item D) – Day/Time Schedule – General Rules			
This Item needs only to be inserted when the information contained in a NOTAM is not relevant for users at certain periods inside the stated period of validity, i.e. between the Items B and C times. • Periods of activity stated in Item D fall between the Items B and C times and the start of the first activity in Item D always coincides with the Item B time, and the end of the last activity with the Item C time. • This information is destined for Pre-flight Information Bulletin entry and retrieval. • Item D shall not exceed 200 characters, if this would be the case additional NOTAM shall be published. • The maximum time period between 2 consecutive activity periods shall not exceed 7 days. If the time gap between consecutive activity periods is 8 days or more, an additional NOTAM shall be issued. 2.4.4.1 General Item D shall be structured according to the following rules. These provide clear and unambiguous standard expressions allowing automated processing for Pre-flight Information Bulletin production, while maintaining a good and clear readability in manual environments. Automated processing (and to a certain extent manual processing) thus allows, whenever times or dates inside Items B and C are not concerned by the activity, that the NOTAM will not be in the content of a PIB.	**2.3.18.1**	This Item needs to be inserted only when the information contained in a NOTAM is not relevant for users at certain periods within the overall 'in force' period, i.e. between the dates and times given in Items B) and C). In these cases, Item D) will detail the actual periods of activation.	
	2.3.18.2	The start of the first activity in Item D) shall always correspond with the Item B) date and time. This period shall always appear as the first entry in Item D) – see paragraph 2.3.21 Examples.	**Note that if the NOTAM is issued during an activity period that is defined by days of the week and that will be repeated, then the first day given in Item D) may not equate literally to the date in Item B).**
	2.3.18.3	Note that if the NOTAM is issued during an activity period that is defined by days of the week and that will be repeated, then the first day given in Item D) may not equate literally to the date in Item B). Example: If D) = MON-FRI, the date in B) may be a WED (i.e. the first activity period starts on the WED and ends on the FRI, and subsequent periods run from MON to FRI)	
	2.3.18.4	The end of the latest activity period notified in Item D) shall always correspond with the end of the validity of the NOTAM given in Item C). Note that this period may not always be listed as the final entry in Item D) – see paragraph 2.3.21 Examples.	
	2.3.18.5	The following diagram illustrates the relationship between the time-related expressions used in the OPADD:	
	2.3.18.6	Automated processing (and to a certain extent manual processing) thus allows exclusion of a NOTAM from PIB whenever it is inactive between the dates and times given in Items B) and C).	
	2.3.18.8	A time indication shall be inserted for each period of activity. When the activity covers a full day, H24 shall be inserted after the date(s).	**When the activity covers a full day, H24 shall be inserted after the date(s).**
	2.3.18.9	When the activity covers more than 24 hours, the following syntax is recommended: (start date) (start time)-(end date) (end time)	
	2.3.18.10	When the activity covers less than 24 hours, the following syntax is recommended: (date) (start time)-(end time)	
	2.3.18.11	When the activity is a succession of identical periods of less than 24 hours on consecutive days, the following syntax is recommended: (start date)-(end date) (start time)-(end time)	

		2.3.18.12	When entering a succession of activities that span midnight UTC, the following syntax is recommended: (start date) (start time)-(end time) Note that the end date is omitted from Item D) but that it will appear in Item C). Example 1: a period 05 2200-0500 would mean from the 5th at 2200 until the 6th at 0500 (i.e. B) 05052200 C) 05060500). Example 2: a period WED 2200-0500 would mean from WED at 2200 until THU at 0500.	
		2.3.18.13	When the activity spans midnight UTC on successive days, the following syntax is recommended: (start date)-(start date of last period) (start time)-(end time) Note that the period end dates are omitted from Item D) but that the last one will appear in Item C). Example 1: a period 05-07 2200-0500 would mean from the 5th at 2200 until the 6th at 0500 and from the 6th at 2200 until the 7th at 0500 and from the 7th at 2200 until the 8th at 0500 (i.e. B) 05052200 C) 05080500). Example 2: a period WED-FRI 2200-0500 would mean from WED at 2200 until THU at 0500 and from THU at 2200 until FRI at 0500 and from FRI at 2200 until SAT at 0500.	**the activity spans midnight UTC on successive days**
		2.3.18.14	If all periods of activity start in the same month, it is not necessary to include the name of the month in Item D) – see paragraph 2.3.21 Example 6.	
		2.3.18.15	If Item D) exceeds 200 characters, additional NOTAM shall be issued.	
		2.3.18.17	When a NOTAM is issued to notify a change to previously published operating or activity hours, the time range indicated by Items B) and C) shall, if necessary, combine the new and previous periods to encompass the widest time period. The new schedule shall be presented in Item E) and not in Item D). Example 1: Operating	**When a NOTAM is issued to notify a change to previously published operating or activity hours, the time range indicated by Items B) and C) shall, if necessary, combine the new and previous periods to encompass the widest time period.**

2.3.19 Item D) – Day/Time Schedule – Abbreviations and Symbols Used			
	2.4.4.2 Abbreviations and Symbols Used Year: The year shall not be inserted in Item D, as it is stated in Items B and C. When the planned time schedule goes from one year into another, the displayed data shall remain in chronological order i.e. December of this year shall precede January of next year. Month: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC Month day: 01 02 03 .... 30 31 Day: MON TUE WED THU FRI SAT SUN Times:Written in 4 digits (e.g.: 1030) Text: EXC: for 'except' DAILY: is optional for a 'daily' schedule EVERY: for a schedule on fixed days HJ: for the period from Sunrise till Sunset (=SR-SS) HN: for the period from Sunset till Sunrise (=SS-SR) H24: for the whole day/dates concerned. Not be used as a single entry. SR and/or SS: if appropriate to indicate Sunrise or Sunset AND: shall be included in front of the last date or the last time period specified in Item D, to increase readability in a manual environment. Signs: ' , ' (comma) for schedule element or group separation ' - ' (hyphen) means ' TO' or ' FROM-TO' ' (blank) is read as ' AND' . Blanks shall not be used in front of the last date or time period. ' / ' (oblique) shall not be used in Item D. Examples: D) APR 04 06 08 AND 11 D) MAR 04 0600-0800 AND 1000-1200.	**2.3.19.1**	Standardised abbreviations and punctuation shall be used in Item D) as described in the following paragraphs.
		2.3.19.2	Abbreviations for Dates and Times:
		2.3.19.3	Abbreviations for Time Periods and associated text: 'AND' if used, shall be included in front of the last date or the last group or time period specified in Item D).
		2.3.19.4	Punctuation: ' , ' (comma) for separation of the schedule elements; or groups of dates or days to which the same time periods apply; or groups of time periods that all apply to the preceding and qualifying dates or days (refer to paragraph 2.3.21 Example 5 last sample for clarification). ' - ' (hyphen) means 'TO' or 'FROM-TO' ' ' (blank) is read as 'AND'. If appropriate, the last date or time period shall be preceded by the word 'AND' instead of a blank.

2.3.20 Item D) – Day/Time Schedule – Special Cases				
2.4.4.3 Special Cases	Sunrise and Sunset: SR (Sunrise) and SS (Sunset) can be used. The keywords for expressing begin and end of twilight, are ' SR MINUS30' and ' SS PLUS30' (note that there shall be a blank space after SR and SS). If the active time of a NOTAM corresponds to sunrise or sunset, the actual times of sunrise on the first day of validity and of sunset on the last day of validity, respectively, shall be inserted in Items B and C. Examples: B) 0005110413 C) 0005211701 D) SR MINUS30-SS PLUS30 B) 0005150446 C) 0005201633 D) HJ B) 0005151920 C) 0005200437 D) SS-SR Due to their daily variation, these special time formats may not be treated automatically for NOTAM output. If this is the case, the NOTAM will be displayed in the PIB for the whole day concerned. Legal holiday: The date must be stated explicitly due to differences existing between States. Long or complicated schedules: Should not be given in a structured Item D. Such cases should be 'split' into different NOTAM.	**2.3.20.1**	Sunrise (SR) and Sunset (SS): If the active time of a NOTAM corresponds to sunrise or sunset, the actual times of sunrise on the first day of validity and of sunset on the last day of validity should be inserted in Items B) and C) respectively. Examples: B) 0505150446 C) 0505201633 D) HJ B) 0505151920 C) 0505200437 D) SS-SR	
		2.3.20.2	Twilight Periods: The keywords for expressing the beginning and end of twilight periods, are 'SR MINUS**' and 'SS PLUS**' (** = number of minutes up to a maximum of 99). Note that there shall be a blank space after 'SR' and 'SS' and that the number of minutes shall be inserted immediately after 'MINUS' or 'PLUS'. Example: B) 0505110413 C) 0505211701 D) SR MINUS30-SS PLUS30	
		2.3.20.3	Processing of SR and SS Formats: Due to the daily variation of SR and SS times, it may not be possible to automatically interpret the special formats as actual times for PIB output. If this is the case, the NOTAM will be displayed in the PIB for the whole day concerned.	
2.3.21 Item D) – Day/Time Schedule – Examples				
2.4.4.4 Examples	Remark: The examples given pre-suppose a correct calendar and the application of the rule that the start of the first activity in Item D coincides with the Item B time, and the end of the last activity with Item C. Therefore, Items B and C, (i.e. the defined time periods), are not shown in the examples. Example 1: Repetitive event active every day: D) 0700-1000 or D) DAILY 0700-1000	**2.3.21.1**	Example 6: Combination of whole day-periods (H24) with part day-periods: Activity H24 on WED and FRI, and from 0600 to 1700 on SUN: B) 0502130600 C) 0502252359 D) SUN 0600-1700, WED AND FRI H24 or D) 13 20 0600-1700, 16 18 23 AND 25 H24	

2.3.22 Item E) – NOTAM Text				
2.4.5 Item E - NOTAM Text	• Item E is free text in plain English language and does not contain NOTAM Code. The NOTAM Code is translated according to the text provided in the NOTAM Selection Criteria. • Item E content shall be related to one NOTAM subject only. (Except in case of a trigger NOTAM, paragraph 2.5.1 bullet 6 refers). • It may contain well known ICAO abbreviations (Doc 8400), and abbreviations used for directions and units of measurements (e.g. N, SE, FT, GND, AMSL, NM, etc.). Examples: E) RWY 25R ILS LLZ OUT OF SERVICE E) OBST ERECTED. CRANE 1.5 NM W THR RWY 07L 2500 FT S RCL 07L/25R HEIGHT 150 FT AGL/191 FT AMSL • As Item E content is the main information to be provided in a Pre-flight Information Bulletin, it should be composed in such a way that it allows direct Pre-flight Information Bulletin entry. • The essentials of the information (i.e. translated and amplified NOTAM subject) shall be given in the first line of Item E. • Unclear and/or incomplete NOTAM-Text as well as unnecessary AIP references shall be avoided. Example 1: Wrong: E) WARNING WITHDRAWN REF AIP ENR 4-2-7.3 PARA 6.5. Remark: Information is unclear/incomplete. Solution: Clearly describe the circumstances, in the above mentioned case: Correct: E) ULTRALIGHT AREA SAN TEADORA 5048N 09339E COMPLETELY WITHDRAWN. REF AIP ENR 4-2-7.3 PARA 6.5.) Note: Item C = PERM in the above example. Example 2: Wrong: E) TACAN "ALA" CH88 OUT OF SERVICE REF AIP ENR 2-1. Remark: AIP Reference not necessary (in this case, the information is of a temporary nature, and does not have a long duration). Correct: E) TACAN ALA CH88 OUT OF SERVICE.	2.3.22.1	Item E) is free text in plain language and does not contain NOTAM Code.	
		2.3.22.2	In NOTAM intended for international distribution the plain language text shall be in English. An English language translation of the NOTAM Code is provided by the NOTAM Selection Criteria.	
		2.3.22.3	Item E) text should be kept as short and concise as possible and so compiled that its meaning is clear without the need to refer to another document. Publishing NOF should endeavour not to exceed 300 characters; whilst ensuring that all essential information needed for the safe conduct of flight is included.	
		2.3.22.6	Item E) may contain ICAO abbreviations (Doc 8400, Ref [3]), and other abbreviations used for directions and units of measurements (e.g. N, SE, FT, GND,AMSL, NM, etc.). Non-common abbreviations (e.g. those abbreviations listed at GEN 2.2 in AIPs but marked as 'not included in Doc 8400') shall not be used. The NOTAM users' understanding shall always be considered (e.g. use of 'CW' and 'CCW' for 'clockwise' and 'counter-clockwise' is likely to result in user query).	
		2.3.22.7	As entries in Items F) and G) are only required for Navigational Warnings (QW) and Airspace Reservations (QR) and the 'Lower/Upper' indication in Item Q) is usually not visible in a PIB, inclusion of applicable vertical limits in Item E) shall be considered whenever appropriate, e.g. for Airspace Organisation (QA) subjects.	
		2.3.22.8	Until ICAO guidance is issued, when there is a need to include an e-mail address in the Item E) text, the @ symbol shall be represented by the word 'at' within brackets i.e. (AT).	
		2.3.22.9	Item E) should be composed by the Publishing NOF in such a way that it will serve for direct Pre-flight Information Bulletin entry without requiring additional processing by the receiving Unit.	
		2.3.22.10	Unclear and/or incomplete NOTAM Text shall be avoided. Example: Instead of: ….. C) PERM E) WARNING WITHDRAWN REF AIP ENR 4-2-7.3 PARA 6.5. Use: ….. C) PERM E) ULTRALIGHT AREA SAN TEADORA 5048N 09339E COMPLETELY WITHDRAWN. REF AIP ENR 4-2-7.3 PARA 6.5.	
		2.3.22.11	AIP references should be avoided (Paragraph 2.3.22.3 above also refers), especially whenever the information is of short duration. Example: Instead of:	

2.3.23 Items F) and G) – Lower and Upper Limit				
2.4.6 Items F and G - Lower and Upper Limit	• Lower and Upper limits should be inserted in Items F and G for Navigation Warnings and for Airspace Organization, whenever appropriate. • Whenever the Item G is present, also the Item F shall be filled. • Items F and G shall contain: an altitude or an height expressed in meters or feet, or a flight level (always expressed in 3 digits). In addition, SFC (surface) and GND (ground) may be used in Item F as well as UNL (unlimited) in Item G. Recapitulation of expressions/formats possibilities: Item F: Item G SFC UNL GND XXXXXFT AGL XXXXXFT AGL XXXXXFT AMSL XXXXXFT AMSL XXXXXM AGL XXXXXM AGL XXXXXM AMSL XXXXXM AMSL FLXXX FLXXX Notes: - Only a single entry is permitted in each Item, i.e. G)10000FT (3280M) AGL shall not be used. - Abbreviations FT or M shall be divided from AGL or AMSL by a blank character. No other character (e.g. "/", "-"...) shall be used. e.g. "3000 FT/AMSL" shall not be used. • . The values in qualifiers 'LOWER' and 'UPPER' of the Item Q must correspond to the flight levels or altitudes specified in Items F and G. If Items F and/or G are expressed in height, the values specified in the 'LOWER' or 'UPPER' qualifiers shall contain corresponding FL figures. Conversion shall take into account the ground elevation and possible deviations in barometric pressure from the 'Standard Atmosphere'. Example: F) FL250 ('LOWER' = 250) G) FL310 ('UPPER' = 310) Example: F) 1500FT AGL ('LOWER' = 030) G) 7500FT AMSL ('UPPER' = 095) in this case GND=MSL and a safety margin has been included for barometric pressure variation. • Where event is notified in a form such as "activity UP TO FL040 (after ATC approval up to FL080)", the higher value (e.g. FL080) shall be used in Item G and in the 'UPPER' qualifier.	2.3.23.1	Lower and Upper limits shall be inserted in Items F) and G) only for Navigation Warnings ('QW') and for Airspace Reservations ('QR').	
		2.3.23.2	If entries are required (by 2.3.23.1), then both Items F) and G) shall always be included.	
		2.3.23.3	Items F) and G) shall contain an altitude (Above Mean Sea Level – AMSL) or a height (Above Ground or Sea or Surface Level – AGL or SFC) expressed in meters or feet, or a Flight Level (always expressed in 3 digits). In addition, SFC (surface) and GND (ground) may be used in Item F) as well as UNL (unlimited) in Item G).	
		2.3.23.4	Reference datum (AGL or SFC or AMSL) and units of measurement (FT or M) shall be clearly indicated.	
		2.3.23.6	There shall not be a blank between the value and the unit of measurement. (i.e. '3000 FT AMSL' shall not be used)	
		2.3.23.7	Abbreviations FT or M shall be divided from AGL or SFC or AMSL by a blank character. No other character (e.g. "/", "-"...) shall be used. Correct annotation is '3000FT AMSL' (i.e. '3000FT/AMSL' shall not be used).	
		2.3.23.9	The Item Q) default FL values 000 and 999 shall not be used in Items F) and G). The abbreviations GND or SFC shall be used in Item F) and UNL in Item G) instead.	
		2.3.23.10	The values in qualifiers 'Lower' and 'Upper' of the Item Q) must correspond to the flight levels or altitudes specified in Items F) and G). If Items F) and/or G) are expressed as a height, the values specified in the 'Lower' or 'Upper' qualifiers in Item Q) shall indicate the equivalent FL and may therefore require calculation. For detailed conversion procedures see paragraph 2.3.10.	
		2.3.23.11	Where an event is notified in a form such as 'ACTIVITY UP TO FL040, AFTER ATC APPROVAL UP TO FL080', the higher value (FL80) shall be used in Item G) and the 'Upper' qualifier in Item Q) shall read '080'.	
		2.3.23.12	Similarly, where the lower limit of activity is variable, the lowest limit shall be used in Items Q) and F).	

2.4 Creation of NOTAMR and NOTAMC				
2.4.1 General Procedures Related to NOTAMR and NOTAMC Creation				
2.4.7 Procedures Related to NOTAM 'R' Creation **2.4.8 Procedures Related to NOTAM 'C' Creation**	2.4.7 Procedures Related to NOTAM 'R' Creation NOTAMR are replacement NOTAM. • NOTAMR are issued in the same series as the NOTAM to be replaced, • NOTAMR replace only one NOTAMN or R. Example: A0124/97 NOTAMR A0106/97 • NOTAMR deals with precisely the same subject as the NOTAM referred to. • NOTAMR has the same Item A contents as the NOTAM referred to. • NOTAMR is not permitted for the replacement of an individual part of a Multi-part NOTAM. 2.4.8 Procedures Related to NOTAM 'C' Creation NOTAMC are Cancel NOTAM. • NOTAMC are issued in the same series as the NOTAMN or R referred to. • NOTAMC cancel only one NOTAMN or R. Example: A0234/97 NOTAMC A0123/97 • NOTAMC has the same Item A contents as the NOTAM it cancels. • NOTAMC become valid at the time they are issued, and immediately cancel the NOTAMN or R referred to. • No future start of validity (cancellation) in Item B is permitted. • In case of cancellation of a Multi-part NOTAM, all parts are cancelled by the NOTAMC. Cancellation of individual parts is not permitted. • NOTAMC shall be published whenever NOTAM are incorporated in an AIP AMDT (see paragraph 2.6 and 2.8.3).	**2.4.1.1**	NOTAMR and NOTAMC are issued in the same series as the NOTAM to be replaced or cancelled.	
		2.4.1.2	NOTAMR and NOTAMC respectively replace and cancel only one NOTAMN or NOTAMR.	
		2.4.1.3	NOTAMR and NOTAMC deal with precisely the same subject as the NOTAM to be replaced or cancelled. Therefore the 2nd and 3rd letters of the NOTAM code in Item Q) shall be the same as those in the NOTAM to be replaced or cancelled.	
		2.4.1.4	NOTAMR and NOTAMC have the same Item A) contents as the NOTAM to be replaced or cancelled.	
		2.4.1.5	The date-time group in Item B) of a NOTAMR or NOTAMC shall be the actual date and time that this NOTAMR or NOTAMC is created. i.e. NOTAMR and NOTAMC shall take effect immediately and no future start of coming into force is permitted.	
		2.4.1.6	Note that replaced or cancelled NOTAM cease to be valid from the very moment their replacing NOTAMR or NOTAMC are issued (paragraph 2.4.1.5 refers) and that most automated systems are programmed to immediately withdraw replaced or cancelled NOTAM on receipt of a NOTAMR or NOTAMC.	
		2.4.1.7	Any NOTAM which includes an 'EST' shall be replaced by NOTAMR or cancelled by NOTAMC before the 'estimated' end date specified in Item C).	
		2.4.1.8	Refer also to the procedures for handling 'Multipart' NOTAM at Chapter 6.	
2.4.2 Specific Procedures Related to NOTAMR Creation				
		2.4.2.2	NOTAM which are to become invalid before their given End of Validity, or did not have a defined End of Validity (i.e. have 'EST' or 'PERM' in Item C) may be replaced but must be 'in force' at the time of replacement (paragraph 2.4.1.5 refers).	
		2.4.2.3	If the condition described in a NOTAM to be replaced is to remain valid for a periodbefore being changed, then a NOTAMR shall be issued for the period up to the intended date and time of the change (i.e. to immediately replace the existing NOTAM by notifying the same conditions but with a changed Item C) end of validity). A NOTAMN detailing the intended change in condition may then be issued with a future date and time in Item B).	

2.4.3 Specific Procedures Related to NOTAMC Creation				
		2.4.3.6	NOTAMC shall not contain Items C), D), F) and G).	
		2.4.3.9	Cancellation of NOTAM solely on the basis of a Checklist is not allowed (paragraph 2.2.12 refers).	
		2.4.3.10	Once the immediate cancellation has been effected, the cancelling NOTAMC ceases to have validity.	
2.5 Checklist Production				
2.7 Checklist Production	Checklists are issued as a NOTAM in the series they refer to. A separate Checklist shall be issued for each NOTAM Series. Checklists have the following particulars: • The Checklist is issued as NOTAMR with an estimated (EST) validity of not more than 1 month. • The next Checklist NOTAMR replaces the previous Checklist with immediate effect. Consequently Item B is the issuing time of the Checklist and supersedes the previous one immediately. • Checklists shall still contain the numbers of the NOTAM incorporated in a normal AIP AMDT or AIP SUP until the time that these NOTAM are cancelled by the publication of a NOTAMC. • Qualifier 'FIR' of the Item Q is either: - the FIR indicator, or - the country indicator letter(s) followed by an appropriate number of X (2 or 3) if there is more than one FIR in a country, or - the country indicator of the Publishing NOF followed by 'XX' or 'XXX' if publishing for FIR in different countries. • The NOTAM Code is a special dedicated NOTAM Code: 'QKKKK'. • Qualifiers TRAFFIC, PURPOSE and SCOPE will be given the artificial value 'K'. • LOWER/UPPER are default values 000/999. • Qualifiers 'QKKKK' (NOTAM code) and 'K' (TRAFFIC, PURPOSE, SCOPE) are used to allow selective retrieval of the Checklist. It also prevents the Checklist from appearing in a Pre-flight information Bulletin.	**2.5.1.3**	The first Checklist in a new NOTAM series shall be issued as a NOTAMN.	
		2.5.1.5	Item A) shall contain the FIR, or a list of all FIR, covered by the Checklist or the location indicator of the issuing non-governmental agency. Third and fourth letters 'XX' shall not be used.	
		2.5.1.6	Item C) shall contain the estimated (EST) end of validity, normally not more than one month after the Checklist is issued.	
		2.5.2.1	Qualifier 'FIR' shall be either: - the FIR indicator, or - the country or non-governmental agency nationality letters followed by 'XX' if there is more than one FIR concerned, or - the country or non-governmental agency nationality letters of the Publishing NOF followed by 'XX' if publishing for FIR in different countries.	
		2.5.2.2	Qualifier 'NOTAM Code' shall be the special dedicated code 'QKKKK'.	
		2.5.2.3	Qualifiers 'Traffic', 'Purpose' and 'Scope' shall be given the artificial value 'K'.	
		2.5.2.6	Qualifiers 'QKKKK' (NOTAM code) and 'K' ('Traffic', 'Purpose', 'Scope') are used to allow selective retrieval of the Checklist. This also prevents the Checklist from appearing in a Pre-flight Information Bulletin.	

	• Item A shall contain the FIR or a list of all the FIR concerned by the Checklist. • Item C is the estimated time of validity, normally indicating 1 month later than the issuing time, followed by 'EST' • Item E is divided in two sections: 1. First Section, identified by the keyword 'CHECKLIST' Contains the list of the valid NOTAM numbers which have been promulgated in the same series as the Checklist, in a format suitable for automatic and manual processing. Note that the list shall not contain the number of the replaced NOTAM checklist nor its own NOTAM checklist number. - The text in Item E shall start with the word "CHECKLIST" Note: Whenever the numbering of AIP AMDT takes place on a yearly basis, a reference to the year of publication will be added to the number. • When the publication of the Checklist contains an error, the following procedures will apply: -A valid NOTAM number was not inserted in the Checklist: A NOTAMR shall be published replacing the omitted NOTAM with the new number. This procedure will allow consistency of the data in the database of all recipients, whatever the method of processing of Checklists. -An invalid NOTAM number was erroneously inserted in the Checklist: A revised Checklist (NOTAMR replacing the erroneous Checklist) will be published without the invalid NOTAM number (no correct version).	**2.5.4.2**	Whenever a valid NOTAM number was omitted from the Checklist: a) if the omitted NOTAM is in force, a NOTAMR shall be issued replacing the omitted NOTAM with the new number; b) if the omitted NOTAM is not yet in force, a NOTAMC and NOTAMN shall be issued. This procedure will allow consistency of the data in the database of all recipients, whatever the method of processing of Checklists.	**b) if the omitted NOTAM is not yet in force, a NOTAMC and NOTAMN shall be issued. This procedure will allow consistency of the data in the database of all recipients, whatever the method of processing of Checklists.**
2.6 Publication of Information by NOTAM, AIP Amendment or AIP Supplements				
		2.6.2.3	Item B) of the NOTAM shall contain the effective date of the change.	
		2.6.2.4	Item C) of the NOTAM shall contain the term 'PERM' to indicate that the change itself is of a permanent nature. Note that Item C) shall never include the expected publication date or the effective date of the Amendment.	
2.6.3 Incorporation of NOTAM information in AIP Amendment				
		2.6.3.1	Permanent information should be incorporated in AIP within 3 months after NOTAM publication. As reissuing of NOTAM with the same contents is not permitted, the interim use of an AIP SUP should be considered. (ICAO Doc 8126 Ref. [2]) Paragraph 6.1.3 and Table 6-1 refer).	
		2.6.3.2	When permanent (PERM) information has been published in a NOTAM, the NOTAM will require cancellation after an appropriate AIP Amendment has been issued to formally amend the AIP (paragraph 2.4.3.3 refers). In this case, the NOF shall issue a NOTAMC which cancels the NOTAM 'PERM', 15 days after the effective date of the AIP Amendment that contains the 'PERM' information. Note 1: 'Effective date' in this instance can be equal to an AIP Amendment publication date. This broadens the Annex 15 use of this expression which relates currently to AIRAC AIP Amendments only.	

		2.6.3.5	The date on which NOTAMC will be issued to cancel NOTAM incorporated in the AIP Amendment shall be published on the cover page of the AIP Amendment. Example: 'NOTAM incorporated to this AMDT will be cancelled by NOTAMC on the 12th May 2005'.	**The date on which NOTAMC will be issued to cancel NOTAM incorporated in the AIP Amendment shall be published on the cover page of the AIP Amendment. Example: 'NOTAM incorporated to this AMDT will be cancelled by NOTAMC on the 12th May 2005'.**
2.6.4 Incorporation of NOTAM information in AIP Supplement				
		2.6.4.2	The previously published NOTAM containing the affected information shall be cancelled by a NOTAMC.	
2.7 Trigger NOTAM and Related Procedures				
2.7.1 Trigger NOTAM – Definition				
		2.7.1.1	NOTAM used to announce the existence and subject content of AIRAC AIP Amendments or AIP Supplements of operational significance are referred to as 'Trigger NOTAM'.	
		2.7.1.2	The text of Trigger NOTAM is included in Pre-flight Information Bulletins (PIB) to ensure that pilots and operators are advised or reminded that permanent changes of operational significance take effect from the given date or that details of temporary changes of operational significance are to be found in an AIP Supplement.	
2.7.2 Trigger NOTAM – General Rules				
		2.7.2.1	AIRAC AIP Amendments and AIRAC AIP Supplements shall always be triggered by a NOTAM. Note that information concerning any circumstances listed in Annex 15 (Ref. [1]), Appendix 4, Parts 1 and 2, shall be disseminated under the regulated 'AIRAC' system, either as an AIRAC AIP Amendment or as an AIRAC AIP Supplement.	
		2.7.2.2	Trigger NOTAM shall contain a brief description of the contents, the effective date and the reference number of the AIP Amendment or Supplement concerned.	
		2.7.2.3	Trigger NOTAM shall be issued on the publication date of the AIRAC AIP Amendment or the AIP Supplement (AIRAC or operationally significant Non-AIRAC) and must come into force on the effective date of that Amendment or Supplement.	
		2.7.2.5	Trigger NOTAM shall follow the normal NOTAM procedures (but see following paragraphs for exceptions).	
		2.7.2.6	The NOTAM Code for a Trigger NOTAM shall always contain 'TT' as 4th and 5th letters (= 'Condition'). This exclusive 'TT' 'Condition' indicator shall be used with all subjects of the NOTAM codes, even if not explicitly listed in the NSC tables.	
		2.7.2.7	The NOTAM Code 2nd and 3rd letters (= 'Subject') shall be selected from the NSC and shall never be 'XX'. If no suitable 2nd and 3rd letter combination exists then use 'FA' for Aerodrome or 'AF' for FIR.	

		2.7.2.9	Publishing NOF may group all the information that relates to one (or several) FIR - regardless of the subject - in order to reduce the amount of NOTAM to be published [Note exception to Basic Rule – paragraph 2.2.4 refers]. Example: Q) EFXX/QAETT/IV/BO/E/065/660/6425N02519E999 A) EFES EFPS B) 0511240000 C) 0512082359 E) TRIGGER NOTAM - PERM AIRAC AIP AMDT 91 WEF 24NOV 2005. CHANGES TO AIRSPACE CLASSIFICATION AND UPPER LIMIT OF CONTROLLED AIRSPACE.	
		2.7.2.10	In the case of Amendments or Supplements containing information dealing with different subjects and/or locations (except aerodromes), a single Trigger NOTAM for each location may be issued; each NOTAM dealing with the different subjects related to that location [Note exception to Basic Rule – paragraph 2.2.4 refers].	
		2.7.2.11	For Aerodromes, a separate Trigger NOTAM shall be issued for each aerodrome. Different subjects relating to the same aerodrome, may however be grouped in the same NOTAM [Note exception to Basic Rule – paragraph 2.2.4 refers]. Example: Q) EFES/QPATT/I/BO/A/000/999/6031N02216E005 A) EFTU B) 0511240000 C) 0512082359 E) TRIGGER NOTAM-PERM AIRAC AIP AMDT 91 WEF 24NOV 2005. CHANGES TO STAR.	
		2.7.2.12	When grouping different subjects it may happen that the subject of highest operational importance does not cover qualifiers 'Traffic' and 'Scope' for all the subjects. For example, the Q-lines for two AD subjects (ILS, VFR APCH PROC) read as following: …/QICTT/I/BO/A/… and …/QPKTT/V/BO/A…. Whichever is taken as highest, both traffic types (I and V) concerned are never covered. In this special case a deviation from NSC is permitted to guarantee necessary bulletin entries. Example: In the following case, the 'Traffic' qualifier 'IV' is a combination to cover both subjects (QICTT and QPKTT):	
2.7.3 Trigger NOTAM relative to AIRAC AIP AMDT				
		2.7.3.3	Period of validity: The validity of Trigger NOTAM relative to AIRAC AIP Amendments will be from the effective date until 15 days thereafter. Therefore, Trigger NOTAM relative to AIRAC AIP Amendments must contain in Item C) a date which is calculated by adding 14 days to the AIRAC effective date and a time equal to '2359'.	

2.7.4 Trigger NOTAM relative to AIP SUP (AIRAC and Non-AIRAC)				
		2.7.4.1	Whilst current ICAO SARPs do not specify a requirement for Non-AIRAC AIP Supplements to be triggered, Publishing NOF shall trigger all Operationally Significant AIP SUP to ensure that all relevant elements of the integrated aeronautical information package are available for inclusion in PIB.	**Non-AIRAC AIP Supplements to be triggered,**
		2.7.4.3	Triggering of AIRAC information in Non-AIRAC Supplements: Due to time constraints, AIP Supplements are sometimes published to promulgate information that should have been published as an AIRAC AIP Supplement. In such exceptional cases, the operational nature of the information shall prevail and a Trigger NOTAM shall be issued for this Non-AIRAC AIP Supplement. The 'Subject' and 'Condition' shall relate the information to at least the 'Purpose' 'BO', according to the NOTAM Selection Criteria.	
		2.7.4.4	Period of Validity: AIP Supplements normally contain information of a temporary nature, the duration of which is either 'known' or 'unknown' (i.e. until APRX ...).	
		2.7.4.5	Validity of a Known Duration: The NOTAM remains in force and in the PIB for the entire duration of the Supplement. I.e. Item B) contains the effective date, and Item C) contains the 'end date' of the Supplement.	
		2.7.4.6	Validity of an Unknown Duration: The validity of Trigger NOTAM relative to AIP Supplements of 'unknown' duration shall be described in Item C) by a 10-figure date/time group followed by 'EST' (Cancellation or Replacement required). If not possible to determine an estimated end DTG, add a default 'EST' period of 3 months.	

2.7.5 Notification of changes to AIP SUP				
		2.7.5.1	Changes: Any change to an AIP Supplement and its associated Trigger NOTAM, shall be published by the Publishing NOF in a way that the information itself is always clear and without any ambiguities. No detailed procedures for such cases will be given here because of the great variety and the complexity of the different circumstances possible. However, special care should be taken that the Item B) 'start date' and the Item C) 'end date' sufficiently cover the operational needs imposed for the display of the information in Pre-flight Information Bulletins.	
		2.7.5.2	The Supplements of 'unknown' duration could be replaced in due time by another Supplement and, in this case, its corresponding Trigger NOTAM shall be replaced.	
		2.7.5.3	Notification of a Later end date/time: If an existing Trigger NOTAM is 'in force', it shall be replaced by a Trigger NOTAMR which will remain valid until the new end date/time. Note that if the existing Trigger NOTAM is not 'in force', a NOTAMC followed by a NOTAMN will be required (paragraph 2.4.1.5 refers).	
		2.7.5.4	Notification of an Earlier end date/time: Exceptionally, the original end date specified in the AIP SUP may be changed to an earlier date by NOTAM. In this case, if the AIP SUP was the subject of an existing Trigger NOTAM, a Trigger NOTAMR is issued on the date of cancellation, and remains in force until the originally published end of validity of the Supplement or until the next AIP SUP checklist or printed plain-language list of valid NOTAM, if either of these is issued earlier. The Item C) date/time of such 'cancellation' Trigger NOTAMR shall contain the originally published end of validity of the Supplement or the date of the next AIP SUP checklist (whichever is earlier). Note that Item E) shall always contain text clearly indicating that the planned end date has been brought forward. Note that if the AIP SUP was not originally triggered, a NOTAMN may also be issued exceptionally to announce the cancellation in accordance with the above validity and Item E) procedures. Note the use of Condition 'LT' (instead of 'TT') in the NOTAMR to indicate more precisely the nature of the information.	

Differences between
Common Operating Procedures Asia/Pacific and EUROCONTROL OPADD Ver2

3. NOTAM PROCESSING

The paragraph number	ASIA OPADD	The paragraph number	EURO OPADD(VER2)	A summary of difference
Introduction				
		3.1.4	Finally, some States are publishing those of their NOTAM selected for international distribution in an official ICAO language other than English. In order to make this information available to the NOTAM Processing Unit (NPU) Clients in accordance with Annex 15 (Ref [1]) paragraph 5.2.2.1, a translation into English is required.	no mention in Asia
3.1	As a result, differences and discrepancies exist internationally in NOTAM published. NOTAM have to pass through a series of phases where their conformity to the ICAO format is analyzed, and their contents assessed prior to their storage in automated NOF systems. The purpose of this Section on "NOTAM processing", is to define and describe the principles and detailed procedures applied throughout these different phases.	3.1.5	As a result, differences and discrepancies exist internationally in published NOTAM. NOTAM have to pass through a series of phases where their conformity to the ICAO format is analysed and their contents are assessed prior to their storage in automated NOTAM handling systems. The purpose of this Chapter on NOTAM processing is to define and describe the principles and detailed procedures applied throughout these different phases.	minor difference
Objective				
		3.2.2	Processed NOTAM shall be distributed or made available to NPU Clients as soon as possible after receipt of the original NOTAM by the NOTAM Processing Unit.	no mention in Asia
		3.2.4	It is essential that NOTAM Processing Units ensure that their Clients are made fully aware of the NOTAM processing procedures being applied.	no mention in Asia
Definitions				
3.3	• Processing-the examination of NOTAM received from other NOF in order to verify suitability for acceptance into an automated AIS system, undertaking conversion, translation, syntax correction, data correction, editing and/or summarizing as required. • Automatic processing - the processing and storage of NOTAM received from other States without any human intervention. • NOTAM Processing Unit - any unit that is responsible for the reception, processing and further distribution of NOTAM originated by other NOF. This unit may do these functions for its own purposes only, or may act on behalf of other NOF. Chapter 3 • Publishing NOF - the NOF responsible for the creation of the NOTAM, as opposed to the originator of the AFTN message within which the NOTAM is contained (which are not necessarily the same). • Client NOF - any NOF which has subscribed to the services provided by a NOTAM Processing Unit.B28			no mention in Euro

Procedures for the processing of NOTAM				
General Principles				
3.4.1	• The original NOTAM shall be stored as received by the NOTAM Processing Unit and made available on request. Whilst it is expected that most Client NOF will work with the processed version of the NOTAM, the NOTAM Processing Unit should be able to systematically provide: - the processed version; - the original version; or - both versions. depending upon requirements of the clients.	**3.4.1**	Whilst it is expected that most Clients will work with the processed version of the NOTAM, the NOTAM Processing Unit shall be able to make the original version available in accordance with the requirements of its Clients.	minor difference
	• The NOTAM Processing Unit, whether this is an individual Unit of one State, or a centralized Unit handling on behalf of a group of States, will perform the following processing functions: - conversion into the standard format; - syntax correction of obvious mistakes in syntax; - data correction of detected mistakes in data; - editing text in order to clarify it;	**3.4.3**	NOTAM processing functions are as follows: conversion into the standard format; triggering of information of operational significance; translation into English; syntax correction of obvious detected mistakes in syntax; data correction of detected mistakes in data; editing text in order to clarify it;	・Triggering translation no mention in Asia
		3.4.4	A NOTAM Processing Unit shall perform all of the above listed functions.	no mention in Asia
		3.4.5	A NOTAM Processing Unit may also summarise (or reduce) text and make this summary available to its clients.	
		3.4.6	The following table shows the applicable processing functions to be performed on the respective NOTAM data and Items (Note that the matrix is not applicable to Triggering or Summarising): (表省略)	
Conversion of orinal NOTAM Class I				
3.4.2	• Conversion - the transposition of a NOTAM received in the old format into a correctly formatted NOTAM in Annex 15	**3.5.1**	Conversion - the transposition of a NOTAM received in the old format into a correctly formatted ICAO NOTAM.	minor difference
	• On reception of NOTAM from countries that do not adhere to the NOTAM format, the NOTAM Processing Unit has the function to transform these into the correct ICAO Annex 15 NOTAM format before storage and eventual retransmission.	**3.5.2**	On reception of NOTAM from countries that do not adhere to the NOTAM format, the NOTAM Processing Unit shall transform these into the correct ICAO Annex 15 (Ref. [1]) NOTAM format before storing and making them available.	shall in Euro available.
	In this case each Item of the original NOTAM is transposed into the standard NOTAM Item, and those not present (e.g. Item Q) are added.	**3.5.3**	In converted NOTAM, each Item of the original NOTAM shall be transposed into the appropriate standard NOTAM Item, and those not present (e.g. Item Q) shall be added.	shall in Euro
	If the NOTAM Code is present in Item E, it is moved into the Item Q for further qualification, and decoded in Item E according to the text provided in the NOTAM Selection Criteria.	**3.5.4.1**	If the NOTAM Code is present in Item E), it shall be moved into the Item Q) for further qualification, and decoded in Item E) according to the text provided in the NOTAM Selection Criteria.	shall in Euro
	no NOTAM Code is contained in Item E, the subject and condition have to be derived from the NOTAM contents.	**3.5.4.2**	If no NOTAM Code is contained in Item E), the subject and condition shall be derived from the NOTAM contents. Example 1: Incoming original NOTAM	shall in Euro

Triggering of printed publications				
		3.6.1	Triggering - the issuing of a Trigger NOTAM in Series 'T', by the NOTAM Processing Unit, relative to AIRAC AIP Amendments and operationally significant AIP Supplements (or NOTAM Class II) for which no Trigger NOTAM has been issued by the Publishing NOF.	no mention in Asia
		3.6.2	The NOTAM Processing Unit cannot use any of the Publishing NOF's NOTAM series because the NOTAM numbering consistency would not be preserved. Therefore, the Series 'T' is allocated and reserved for this type of Trigger NOTAM.	
		3.6.3	A Trigger NOTAM in Series 'T' shall be created on the initiative of the NOTAM Processing Unit whenever an AIRAC AIP Amendment or AIP Supplement (or NOTAM Class II) containing operationally significant information is received for which it is established that no associated Trigger NOTAM is normally issued by the responsible NOF (paragraph 2.7 refers).	
		3.6.4	The NOTAM Processing Unit shall provide its Clients with a clear indication of those States that do not normally issue their own Trigger NOTAM and for which the issue of these Trigger NOTAM in Series 'T' is to be expected.	
Translation of NOTAM				
		3.7.1	Translation - rendering the text of a NOTAM originated in French or Spanish, into the English language, while maintaining the original sense of the text.	no mention in Asia
		3.7.2	Translation shall be carried out in the same spirit as translation of a technical document. The objective is to provide a text in the English language which corresponds as closely as possible to the original.	
		3.7.3	In Europe, NOTAM received in a language other than French or Spanish are not usually translated and shall therefore be subject to the paragraph 3.13 procedures for 'NOTAM Subject to Query'.	
Syntax correction				
3.4.3	• Syntax correction - changing syntax where these are obviously wrong, it may be carried out automatically by a system or manually by an operator.	**3.8.1**	Syntax correction - changing the published format structure of the NOTAM where these are obviously wrong. This may be carried out automatically by a system or manually by an operator.	minor difference
	• Correction of syntax shall be based on the format described in ICAO Annex 15 and in Section 2 of this Manual.	**3.8.2**	Correction of syntax shall be based on the format described in ICAO Annex 15 (Ref. [1]) and in Chapter 2 of this Manual. Example 1: Incoming original NOTAM	minor difference
Data correction				
3.4.4	• Correction of data shall only be carried out when the error is such that there can be no possible ambiguity. Where appropriate, corrections will be made using validated Static data. Where there is ambiguity or any doubt whatsoever the Publishing NOF shall be consulted and the procedures for "NOTAM SUBJECT TO QUERY" shall be applied (see paragraph 3.4.6).	**3.9.3**	Correction of data shall only be carried out when the error is such that there can be no possible ambiguity. Where appropriate, corrections will be made using validated Static data. Where there is ambiguity or any doubt whatsoever the Publishing NOF shall be consulted and the paragraph 3.12 procedures for 'NOTAM Subject to Query' shall be applied. Example: Incoming original NOTAM	minor difference

Editing				
3.4.5	• Editing - changing the wording of the free text of a NOTAM to make it clearer or express explicitly ideas that are implicit in that text.	**3.10.1**	Editing - changing the Item E) wording and/or layout to make it clearer or to more explicitly express ideas that are implicit in that text. e.g. correcting spelling or abbreviation errors and editing layout or changing line length in order to make it more readable.	layout , Example
	• Editing might be carried out in order to clarify text, or to draw specific attention to important elements which are implied by the original text but not stated explicitly. Under no circumstances shall editing change the sense of the original NOTAM.	**3.10.2**	Editing might be carried out in order to clarify text, or to draw specific attention to important elements which are implied by the original text but not stated explicitly. Under no circumstances shall editing change the sense of the original NOTAM. Example: Incoming original NOTAM (Item E only)	Example
Summarising				
		3.11.1	Summarising - reducing text in order to make it more readable in a Pre-flight Information Bulletin (PIB).	no mention in Asia
		3.11.2	Summarising may be carried out to shorten a long text or to remove unnecessary detail in order to make the information more readable in PIB.	
		3.11.3	Refer to proposed Item X) procedures detailed in paragraph 6.2.	
Procedures for dealing with NOTAM Subject to Query				
3.4.6	•Whenever a received NOTAM contains ambiguities that cannot be clarified by the NOTAM Processing Unit, a query shall be addressed to the Publishing NOF. However, such NOTAM will be retransmitted as "NOTAM SUBJECT TO QUERY" by the NOTAM Processing Unit without delay to all relevant addressees.	**3.12.1**	If a received NOTAM contains ambiguities that cannot be clarified by the NOTAM Processing Unit, a query shall be addressed to the Publishing NOF. However, such NOTAM shall be made available as 'NOTAM Subject to Query' by the NOTAM Processing Unit without delay to all relevant addressees.	shall in Euro
	• The NOTAM Processing Unit shall add the reason for the query after the statement 'NOTAM SUBJECT TO QUERY'.	**3.12.2**	The NOTAM Processing Unit shall add the reason for the query after the statement 'NOTAM Subject to Query' in Item E).	available.
	• If the Publishing NOF follows ICAO procedures the corrected version will consist of a NOTAMR (if the queried NOTAM is already in force) or a NOTAMC followed by a NOTAMN (if the queried NOTAM is not in force). In either case the new NOTAM is processed normally by the NOTAM Processing Unit.	**3.12.3**	If the Publishing NOF follows ICAO procedures the corrected version will consist of a NOTAMR (if the queried NOTAM is already in force) or a NOTAMC followed by a NOTAMN (if the queried NOTAM is not in force). In either case the new NOTAM shall be processed normally by the NOTAM Processing Unit.	shall in Euro
	• If the reply is in the form of a 'Correct Version' NOTAM retaining the Series and Number of the queried NOTAM, it will be processed by the NOTAM Processing Unit, and retransmitted as an ordinary NOTAM. The words 'Correct Version' will be removed.	**3.12.4**	If the reply is in the form of a 'Correct Version' NOTAM retaining the Series and Number of the queried NOTAM, the NOTAM Processing Unit shall make it available as an ordinary NOTAM. The words 'Correct Version' shall be removed.	shall in Euro
	When it is received by a "Client NOF" the latter must recognize that: – it is a duplicate Series and Number; – that it was transmitted by a NOTAM Processing Unit; and automatically use it to overwrite the previous version in their NOTAM database.	**3.12.5**	When this newer version of the NOTAM is received by a Client the latter must recognise that: it is a duplicate Series and Number; and it was made available by a NOTAM Processing Unit; and automatically use it to overwrite the previous version in their NOTAM database.	newer version of the NOTAM available
	• If the reply is in the form of a free text message the NOTAM Processing Unit will edit the last processed version of the queried NOTAM in accordance with the information provided, and the statement 'NOTAM SUBJECT TO QUERY' will be removed. The corrected NOTAM will then be distributed retaining the Series and Number of the original. When received by a NOTAM Processing Unit 'Client NOF' it will be treated as in the previous case.	**3.12.6**	If the reply is in the form of a free text message the NOTAM Processing Unit shall edit the last processed version of the queried NOTAM in accordance with the information provided, and the statement 'NOTAM Subject to Query' shall be removed. The corrected NOTAM shall then be made available retaining the Series and Number of the original.	shall in Euro
		3.12.7	The Client shall treat this newer version of the NOTAM as in the previous case.	available.

Procedure for the creation of NOTAM Series'T'				
		3.13.1.1	NOTAM Series 'T' shall be created by the NOTAM Processing Unit in accordance with OPADD rules.	
		3.13.1.2	NOTAM Series 'T' are both used to trigger specific printed AIS publications, for which no Trigger NOTAM is normally issued by the Publishing NOF, and to deal with exceptional formatting errors made in NOTAM by some Publishing NOF.	
		3.13.1.3	The NOTAM Processing Unit is responsible for the follow-up of the NOTAM Series 'T' that it issues, and, if appropriate, may replace it with a NOTAMR and in due course shall cancel it with a NOTAMC unless the information time expires beforehand.	no mention in Asia
		3.13.1.4	The NOTAM Processing Unit shall make NOTAM Series 'T' available to their Clients only.	
		3.13.1.5	No monthly checklist of Series 'T' NOTAM is issued by the NOTAM Processing Unit. Automatically produced 'ad hoc' Checklists, shall be made available upon request at any time.	
		3.13.1.6	In addition to normal NOTAM creation rules (Chapter 2 refers), the basic procedures listed in the following paragraphs (3.13.2 and 3.13.3) shall be observed:	
Trigger NOTAM in Series'T'				
		3.13.2.1	The State to which the Trigger NOTAM Series 'T' relates shall be identified by the FIR in Item Q) and by the content of Item A).	
		3.13.2.2	Item B) of a Trigger NOTAM in Series 'T' for AIRAC AIP Amendments should contain the effective date of the Amendment. If the information is received after the effective date of the Amendment, the date in Item B) shall be the issue date of the Trigger NOTAM. In other words, the date in Item B) cannot be in the past, even when the information contained in the printed publication was already effective before the day of its triggering by the NOTAM Processing Unit.	
		3.13.2.3	Item C) of a Trigger NOTAM in Series 'T' for AIRAC AIP Amendments shall contain the effective date +14 days (or the issue date of the Trigger NOTAM +14 days if information is received after the effective date of the Amendment) (paragraph 2.7.3 refers).	no mention in Asia
		3.13.2.4	Item C) of a Trigger NOTAM in Series 'T' for AIP Supplements shall contain the end date of validity of the Supplement (paragraph 2.7.4 refers).	
		3.13.2.5	The Item Q) NOTAM Code shall be compiled in accordance with the guidance at paragraphs 2.7.2.6 and 2.7.2.7). The Qualifiers shall then be chosen according to the prevailing association.	

NOTAM in Series'T'				
		3.13.3.1	If the format of a received NOTAM does not allow standard processing, the NOTAM Processing Unit shall create a NOTAM Series 'T'.	no mention in Asia
		3.13.3.2	The Original Publishing NOF shall be identified by the FIR in Item Q) and by the content of Item A).	
		3.13.3.3	A reference to the original NOTAM shall be included at the end of Item E).	
		3.13.3.4	If multiple aerodrome location indicators are listed in Item A), the original NOTAM shall be processed keeping only the first AD. In addition, NOTAM Series 'T' shall be created for the remaining aerodromes with data identical to the original NOTAM.	
		3.13.3.5	If more than 7 FIR are listed in Item A), the original NOTAM shall be processed keeping the first 7 FIR. In addition, NOTAM Series 'T' shall be created for the remaining FIR, with data identical to the original NOTAM.	
		3.13.3.6	If combinations of Aerodrome and FIR are listed in Item A), the original NOTAM shall be processed, according to the relevance of the NOTAM and based on the operational experience, for the FIR or aerodromes. In addition, NOTAM Series 'T' may be created for the other entities, if applicable. Example: Incoming original NOTAM:	
		3.13.3.7	In the example at paragraph 3.13.3.6, NOTAM A0131/04 was processed in accordance with the paragraph 3.12 'NOTAM Subject to Query' procedure for AD LSGG and FIR LSAS ('Scope' 'AE') and the 2 NOTAM Series 'T' were created for AD LSGC and LSGS ('Scope' 'A') giving a reference to the original at the end of Item E).	
		3.13.3.8	Note that, in the example at paragraph 3.13.3.6, if the FIR stated in Item A) of the original NOTAM is identical to the one in the Item Q) and the aerodromes are located in this FIR, then the NOTAM Processing Unit shall delete it.	
		3.13.3.9	When a NOTAM Series 'T' is published by a NOTAM Processing Unit, the related Publishing NOF shall be informed.	
Procedures for Correction of NOTAM				
3.4.7	• If an obvious error is found by the NOTAM Processing Unit, appropriate action will be taken to correct the received NOTAM and a query shall additionally be sent to the Publishing NOF.	**3.14.1**	If an error is detected by the NOTAM Processing Unit, appropriate action shall be taken to correct the received NOTAM and a query shall additionally be sent to the Publishing NOF.	minor difference
	• If the NOTAM Processing Unit detects re-occurring errors, it shall address a letter to the Publishing NOF, indicating the correct procedure.	**3.14.2**	If the NOTAM Processing Unit detects re-occurring errors, it shall inform the Publishing NOF, indicating the correct procedure.	minor difference
	• When a NOTAM Processing Unit is alerted that an error has occurred in a NOTAM processed by itself, the NOTAM Processing Unit will determine the origin of the error, and: – either re-send the NOTAM after correction, when the error was made by the NOTAM Processing Unit; or – proceed with a request to the Publishing NOF, if the error was already contained in the original NOTAM (rules for 'NOTAM SUBJECT TO QUERY' have to be applied).	**3.14.3**	If a NOTAM Processing Unit is alerted that an error has occurred in a NOTAM that it has processed, the NOTAM Processing Unit shall determine the origin of the error, and: - if the error was made by the NOTAM Processing Unit: re-send the NOTAM after correction; or - if the error was already contained in the original NOTAM: proceed with a request to the Publishing NOF (Paragraph 3.12 rules for 'NOTAM Subject to Query' shall be applied).	minor difference
		3.14.4	All NPU Clients shall be aware that only the last version received from the NOTAM Processing Unit is the valid version.	no mention in Asia

NOTAM Verification				
3.5	Basically all NOTAM Items shall be checked according to the rules described in Section 2 on NOTAM Creation.	**3.15.1**	All NOTAM Items shall be checked according to the rules described in Chapter 2 on NOTAM Creation.	**minor difference**
	In addition, the following general verification shall be performed by the NOTAM Processing Unit: • Check if the NOTAM has already been received and differentiate between a 'Dupe' and a 'Correct Version' NOTAM. • Check if there is a logical sequence in the origin time of the AFTN messages whenever an 'identical' NOTAM is received. • NOTAM Series/Number/Year/Sub-number, relative to the Publishing NOF, are valid and in logic ascending sequence. If not, appropriate request for missing NOTAM is sent by the NOTAM Processing Unit to the Publishing NOF. (see Section 4, Database completeness and Coherence messages) • NOTAM Number referred to in a NOTAMR or C is a valid NOTAM from the same Publishing NOF.	**3.15.2**	In addition to the rules described in Chapter 2, the following general verification shall be performed by the NOTAM Processing Unit: a) Check if the NOTAM has already been received and differentiate between a 'Dupe' and a 'Correct Version' NOTAM. b) Check if there is a logical sequence in the origin time of the AFTN messages whenever an 'identical' NOTAM is received. c) NOTAM Series/Number/Year/Sub-number, relative to the Publishing NOF, are valid and in logic ascending sequence. If not, appropriate request for missing NOTAM is sent by the NOTAM Processing Unit to the Publishing NOF (see Chapter 4). d) NOTAM Number referred to in a NOTAMR or NOTAMC is a valid NOTAM from the same Publishing NOF.	**minor difference**
	Additional specific verification will be done as explained in the following subparagraphs.	**3.15.3**	Additional specific verification shall be performed as explained in the following subparagraphs.	**minor difference**
NOTAM Identification				
3.5.1		**3.16.1**		
Publishing NOF Identification				
3.5.1.1	• When transmitting or re-transmitting a NOTAM, the NOTAM Processing Unit enters its own AFTN address into the message origin line according to the same SARPS.	**3.16.2.2**	When transmitting or making available a NOTAM via AFTN, the NOTAM Processing Unit enters its own AFTN address into the message origin line according to the same ICAO SARPs.	**minor difference**
	• However, to assist Client NOF, the NOTAM Processing Unit shall retain the origin line of the original message within which the NOTAM was received and attach it in a line introduced before the opening bracket of the processed NOTAM. Example: a USA NOTAM re-transmitted by a NOTAM Processing Unit: Original NOTAM: Processed NOTAM: GG ..... GG ..... 121800 KDCAYNYX 121805 NOTAM Processing Unit address (A1275/00 NOTAMN 121800 KDCAYNYX A)KJFK B)WIE..... (A1275/00 NOTAMN etc. – Q)KZNY/Q …./….. A)KJFK B) 0008121800			**no mention in Euro**
	• This original origin line shall remain with the processed NOTAM, upon each further retransmission. Note: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, it shall be removed by the NOTAM Processing Unit before retransmission.			
NOTAM Series Allocation				
3.5.1.2	• The NOTAM Processing Unit retains the Series and NOTAM Number of the original NOTAM upon retransmission.	**3.16.3.1**	The NOTAM Processing Unit retains the Series and NOTAM Number of the original NOTAM when transmitting it or making it available.	**minor difference**
	• If the Publishing NOF does not use a NOTAM Series letter, the NOTAM Processing Unit will automatically allocate a Series letter (normally 'A') for such NOTAM.	**3.16.3.3**	If the Publishing NOF does not use a NOTAM Series letter, the NOTAM Processing Unit shall automatically allocate a Series letter (normally 'A') for such NOTAM.	**minor difference**

NOTAM number				
3.5.1.3	• When a NOTAM is received that is out of the numerical sequence, a query for the missing NOTAM number(s) will be initiated, according to Section 4 procedures (Database completeness and coherence messages).	**3.16.4.1**	If a NOTAM is received that is out of the numerical sequence, a query for the missing NOTAM number(s) shall be initiated, according to Chapter 4 procedures (Database Completeness and Coherence Messages).	**minor difference**
	• If the NOTAM number consists of less than 4 digits the NOTAM Processing Unit will add the leading zeros. When the 'Year' indicator is missing, it shall also be added.	**3.16.4.2**	If the NOTAM number consists of less than 4 digits the NOTAM Processing Unit shall add the leading zeros. If the 'Year' indicator is missing, it shall also be added.	**minor difference**
NOTAM Sub-Number(Multi-part NOTAM)				
3.5.1.4	• Whenever a Multi-part NOTAM is received without having the format specified in Section 2, it shall be converted into the correct Multi-part NOTAM format by the NOTAM Processing Unit.	**3.16.5.1**	If a Multi-part NOTAM is received without having the format specified in paragraph 6.3.2, it shall be converted into this format by the NOTAM Processing Unit if the AFTN is to be used when transmitting or making available the processed NOTAM.	**minor difference**
NOTAM Type				
3.5.2	• If the Publishing NOF did not include the NOTAM type in the original NOTAM, the NOTAM Processing Unit will have to insert the appropriate NOTAM type letter.	**3.17.1**	If the Publishing NOF did not include the NOTAM type in the original NOTAM, the NOTAM Processing Unit shall insert the appropriate NOTAM type letter.	**minor difference**
	• If the Publishing NOF wrongly allocated the NOTAM type in the original NOTAM, the NOTAM Processing Unit inserts the appropriate type.	**3.17.2**	If the Publishing NOF wrongly allocated the NOTAM type in the original NOTAM,the NOTAM Processing Unit shall insert the appropriate type.	**minor difference**
	• In both cases, the Publishing NOF will be informed about the change.	**3.17.3**	In both cases, the Publishing NOF shall be informed about the change.	**minor difference**
NOTAM Qualification(Item Q)				
3.5.3.1	Whenever the Item Q is missing, it shall be inserted by the NOTAM Processing Unit.	**3.18.1.1**	If the Item Q) is missing, it shall be inserted by the NOTAM Processing Unit.	**minor difference**
		3.18.1.2	If Item Q) is obviously wrong, it shall be changed by the NOTAM Processing Unit in accordance with the following paragraphs (3.18.2 to 3.18.8).	**no mention in Asia**
Qualifier 'FIR'				
3.5.3.2	The NOTAM Processing Unit shall check that this field contains the ICAO Location Indicator of the FIR concerned, or if more than one FIR is concerned in Item A, the ICAO Country indicator of the Publishing NOF followed by 'XX' or 'XXX'. In this case, the ICAO location indicators of all FIR concerned (up to 7) shall be listed in NOTAM Item A. Example: Q) ZXXX/QWELW/ . . . . . . A) ZGZU ZSHA ZBPE	**3.18.2.1**	Item Q) may contain Location Indicators that indicate applicability to more than one FIR. In this case, the ICAO location indicators of all FIR concerned should appear in Item A).	
		3.18.2.2	The NOTAM Processing Unit shall check that this field correctly applies to the location indicator(s) of the FIR(s) entered in Item A). If not, the correct location indicator will be inserted.	
		3.18.2.3	Note that 'dummy' FIRs, such as UUUU, ZBBB, KFDC and KNMH, may sometimes be used for those countries with more than 7 FIR (i.e. the permitted maximum in Item A).	**no mention in Asia**

	Qualifier 'NOTAM CODE'			
3.5.3.3	• Whenever the NOTAM Code in the Item Q is not filled, the NOTAM Processing Unit shall include the NOTAM Code, corresponding to the Item E content, together with the appropriate 'Qualifiers'.	**3.18.3.2**	If the NOTAM Code is not entered in the Item Q), the NOTAM Processing Unit shall include the NOTAM Code, corresponding to the Item E) content, together with the appropriate Qualifiers.	**minor difference**
	If the NOTAM code does not correspond to the text of Item E, and the text of Item E is clear and unambiguous, the NOTAM code may be brought in line with the text, provided that this does not imply a downgrading in the 'Purpose' qualifier of the NOTAM. The Publishing NOF shall be informed about the change.	**3.18.3.3**	If the NOTAM Code does not correspond to the text of Item E), and the text of Item E) is clear and unambiguous, the Code may be brought into line with the text, provided that this does not imply a downgrading of the 'Purpose' Qualifier. Example: Incoming original NOTAM	**minor difference**
		3.18.3.5	If the original NOTAM has been coded 'QXXXX' and a more appropriate NOTAM Code exists, the NOTAM Processing Unit shall replace the Code and its associated Qualifiers (subject to the limitations specified in paragraphs 3.18.4 to 3.18.8).	**no mention in Asia**
		3.18.3.6	The NOTAM Processing Unit may also use 'QXXXX' to upgrade 'Scope' and 'Purpose' Qualifiers or for NOTAM where 'AG', 'CO' or 'RC' have been used as 2nd and 3rd letters (Note also the possibility of using 'FA' for Aerodrome or 'AF' for FIR).	**no mention in Asia**
	For NOTAM received with a NOTAM Code that is not contained in the NSC, the NOTAM Processing Unit shall allocate a 'NOTAM Code' in accordance with the subject and the condition of the subject specified in the NOTAM text. The Publishing NOF shall be informed about the change.	**3.18.3.7**	For NOTAM received with a NOTAM Code that is not contained in the NSC, the NOTAM Processing Unit shall allocate a Code in accordance with the subject and the condition of that subject specified in the Item E) text (refer to paragraph 2.3.6 for further guidance).	
	When a Trigger NOTAM is received without the 4th and 5th letter 'Condition' indicator "TT", the NOTAM Processing Unit shall replace the original 4th and 5th letter 'Condition' indicator by "TT".	**3.18.3.8**	If a Trigger NOTAM is received without the 4th and 5th letter 'Condition' indicator 'TT', the NOTAM Processing Unit shall replace it with 'TT'. Similarly, if the 2nd and 3rd letter 'Subject' indicator is received as 'XX', the NOTAM Processing Unit shall change it in accordance with paragraph 2.7.2.7 (Note also the guidance at paragraphs 2.7.2.6 and 2.7.2.12). Example: Incoming original NOTAM	**minor difference**
	Qualifier 'TRAFFIC'			
3.5.3.4	• When the 'TRAFFIC' qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents.	**3.18.4.1**	If the 'Traffic' Qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents.	**minor difference**
		3.18.4.2	If the 'Traffic' Qualifier is not according to the NOTAM Selection Criteria, the NOTAM Processing Unit may adapt it to the NSC, taking into account the entry in Item E) and guidance at paragraphs 2.3.7.3 and 2.7.2.12.	**no mention in Asia**
	Qualifier 'PURPOSE'			
3.5.3.5	• When the 'PURPOSE' qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents	**3.18.5.1**	If the 'Purpose' Qualifier is missing, it shall be filled according to the NOTAM Selection Criteria, or, if not specified therein, according to the NOTAM contents.	**minor difference**
	• The 'PURPOSE' qualifier of a NOTAM shall not be modified by a NOTAM Processing Unit, unless it implies an upgrading.	**3.18.5.2**	The 'Purpose' Qualifier of a NOTAM shall not be modified by a NOTAM Processing Unit, unless it implies an upgrading. i.e. Purpose 'M' may be changed to 'B', 'BO', 'NB'3 or 'NBO'; Purpose 'B' may be changed to 'BO', 'NB'3 or 'NBO'; purpose 'BO' may be changed to 'NB'3 or 'NBO'; and purpose 'NB'3 may be changed to 'NBO'. 3 Note that, whilst change is expected, the use of 'NB' remains prescribed in the ICAO NSC at the time of writing this edition.	**NB**

Qualifier 'SCOPE'				
3.5.3.6		**3.18.6.1**		
Qualifier 'LOWER/UPPER'				
3.5.3.7	• It shall be made sure that the values specified in LOWER and UPPER are in logical order, and correspond to the values specified in Items F and G for Navigation Warnings and Airspace Restrictions. Example: F) 2000 FT AGL G) 7500 FT AMSL = LOWER/UPPER: 020/075	**3.18.7.1**	The logical order of the vertical limits indicated in Qualifiers 'Lower' and 'Upper' shall be verified and corrected; these should also correspond to the values specified in Items F) and G) for Navigation Warnings and Airspace Reservations. Example: 'F) GND' and 'G) 7500 FT AMSL' = 'Q) (Lower/Upper) 000/075'	minor difference
	• If Items F and G are filled and: – the values in the Item Q extend beyond the limits of Items F and G, they shall be left unchanged; – the values in the Item Q do not equate but lie between the limits of Items F and G, they shall be modified to correspond to Items F and G – the limits in the Item Q are 000/999, they shall be modified to correspond to Items F and G. The NOTAM Processing Unit shall define these values in accordance with the procedures specified in paragraph 2.3.7.	**3.18.7.2**	If vertical limits have been entered in Items F) and G) and: —the limits in Item Q) extend beyond those given in Items F) and G), they shall be left unchanged unless the 000/999 default has been used; —the limits in Item Q) do not equate but lie between the limits given in Items F) and G), they shall be modified to correspond to Items F) and G): —if the limits in Item Q) are 000/999, they shall be modified to correspond to Items F) and G) if the actual limits stated there are in FL or in FT or M AMSL (i.e. not for those stated in FT or M AGL – see below); — if the limits in Items F) and G) are given as FT or M AGL (or FT or M SFC), Item Q) shall be left unchanged unless the LOWER/UPPER limits areobviously wrong or are missing, then the default value 000/999 shall be inserted. Example: Incoming original NOTAM:	minor difference
		3.18.7.3	The NOTAM Processing Unit shall define the values used to amend NOTAM in accordance with the procedures specified in paragraph 2.3.10.	minor difference
		3.18.7.4	If vertical limits also appear in Item E), these shall be cross-checked and consolidated with Items Q), F) and G). Example: Incoming original NOTAM:	no mention in Asia
Qualifier 'GEOGRAPHICAL REFERENCE'				
3.5.3.8	• The Geographical Reference shall be present in each NOTAM retransmitted by a NOTAM Processing Unit. If this value is not contained in a received NOTAM, the NOTAM Processing Unit has to add it, following the procedures described in Section 2 of this Manual.	**3.18.8.1**	The Geographical Reference shall be present in each NOTAM made available by a NOTAM Processing Unit. If this value is not contained in a received NOTAM, the NOTAM Processing Unit has to add it, following the procedures described in paragraphs 2.3.11 (General Rules), 2.3.12 (Co-ordinates) and 2.3.13 (Radius).	minor difference
		3.18.8.2	If co-ordinates and radius are given, the NOTAM Processing Unit shall only change the entry if it contains an obvious error and the area covered by the given values is greater or less than necessary (e.g. when the whole FIR default 999 is used for a small danger area located within it or when an insufficient radius is used for a navigation aid's area of influence).	no mention in Asia
		3.18.8.3	If a NOTAM is received without geographical reference, and no positional information appears in Item E) the entry in Item A) should permit the coordinates to be derived from the Unit's available Static Data.	no mention in Asia
	• If no radius has been included by the Publishing NOF, and if no radius can be extracted from the Static Database, the NOTAM Processing Unit will include a 'Default Radius Indicator', as specified in the following table: (表省略)	**3.18.8.4**	If a NOTAM is received without a radius and it cannot be derived from the Static Database, the NOTAM Processing Unit shall include a default radius, as specified in the table at paragraph 2.3.13.3.	minor difference
		3.18.8.5	If Item E) contains reference to a published area or facility or the definition a temporary area or facility, this shall be used to correct or determine an appropriate entry in Item Q).	no mention in Asia

Item A)-Location'FIR/AD'-General				
3.5.4.1		3.19.1.1	The given aerodrome or FIR(s) should be valid for the country and for the Publishing NOF. If not, the paragraph 3.12 'NOTAM Subject to Query' procedure shall be applied.	no mention in Asia
	• If the location indicator is unknown to the NOTAM Processing Unit (aerodrome location indicator not in the Static Database), the NOTAM Processing Unit shall replace the location indicator by the Country indicator, followed by 'XX'. The NOTAM Subject to Query procedure shall be applied.	3.19.1.3	If the location indicator is unknown to the NOTAM Processing Unit (i.e. the aerodrome location indicator is not listed in ICAO Doc 7910 or the national AIP, SUP or NOTAM), the NOTAM Processing Unit shall replace the location indicator by the nationality indicator followed by 'XX' (or 'XXX'). The paragraph 3.12 'NOTAM Subject to Query' procedure shall be applied, mentioning 'ICAO LOCATION INDICATOR UNKNOWN	minor difference
		3.19.1.4	If a new location indicator is announced by a NOTAM in which the new indicator is used in Item A), the NOTAM Processing Unit shall make the NOTAM available as received.	no mention in Asia
		3.19.1.5	If the Publishing NOF has no discrete FIR (e.g. Swaziland FD, Lesotho FX, Macau VM), Item Q) should contain the appropriate overlying FIR Indicator. Note that some States (e.g. Japan) use a CTA/TMA indicator as pseudo FIR. If an FIR or CTA/TMA indicator appears in Item A), the NOTAM Processing Unit shall replace it with an indicator that reflects the Item E) text (for example by using the main aerodrome within a TMA or the area affected). Note that if an aerodrome is used, the NOTAM Processing Unit shall also change Item Q) 'Scope' to read 'AE' or 'AW'.	no mention in Asia
		3.19.1.6	If a NOTAM is received with 'Scope' 'A' and an FIR in Item A), and if Item E) confirms the NOTAM applicability to an FIR, the 'Scope' shall be modified to 'W' or 'E', whichever is more appropriate. If the NSC does not provide for 'Scope' 'W' or 'E' to be applied, the 2nd and 3rd letters shall be modified to read 'XX'. However, if Item E) indicates applicability to an Aerodrome, changes to Item A) and to Item Q) ('Scope' 'AE' or 'AW') might be necessary.	no mention in Asia
		3.19.1.7	If a NOTAM is received with 'Scope' 'E' or 'W' and an aerodrome in Item A), and if Item E) confirms the NOTAM applicability to an aerodrome, the 'Scope' shall be modified to 'AW' or 'AE', whichever is more appropriate. However, if Item E) indicates applicability to an FIR, a change to Item A) might be necessary. Example: Incoming original NOTAM:	no mention in Asia
Item A)-Location'FIR/AD'-Single-location NOTAM				
	When an aerodrome indicator is given, it must be an aerodrome situated in the FIR inserted in the Item Q. If not, the FIR in the Item Q shall be changed according to the Static Database.	3.19.2.3	If an aerodrome indicator is given, it must be an aerodrome situated in the FIR inserted in the Item Q). If not, the FIR in the Item Q) shall be changed according to the Static Database.	minor difference
	• For aerodromes without ICAO location indicator Item A shall contain the 2–letter country indicator + XX (e.g. EDXX), with the full name of the aerodrome as first element in Item E.	3.19.2.4	For aerodromes without ICAO location indicator Item A) shall contain the nationality indicator followed by 'XX' or 'XXX' (e.g. EDXX or KXXX), with the full name of the aerodrome as first element in Item E).	minor difference
3.5.4.1.1	If Item A of a received NOTAM contains the full name of an aerodrome, the NOTAM Processing Unit shall replace it by a 4–letter code consisting of the 2–letter country indicator and XX (e.g. LFXX), and shall incorporate the full name into Item E. Examples: A) EBBU (1 FIR) A) LFPO (ICAO location indicator) A) EDXX (no location indicator published by Germany) E) PRITZWALK AD In the latter example, Item E shall contain the full name of the aerodrome as its first element.	3.19.2.5	If Item A) of a received NOTAM contains the full name of an aerodrome, the NOTAM Processing Unit shall replace it by a 4–letter code consisting of the nationality indicator followed by 'XX' or 'XXX' (e.g. LFXX or KXXX), and shall enter the full name in Item E). Examples: A) EBBU (ICAO location indicator for a single FIR) A) LFPO (ICAO location indicator for an aerodrome) A) FBXX (no location indicator published by Botswana) In the latter example, Item E) shall contain the full name of the aerodrome as its first element, e.g.: E) BOTTLEPAN …..	minor difference

Item A)-Location'FIR/AD'-Multi-location NOTAM				
3.5.4.1.2	According to the current NOTAM format there can be only up to 7 FIR location indicators in Item A. If more than 7 FIR were entered, only the first 7 listed will remain in Item A. One or more NOTAM shall be issued with identical data as in the original NOTAM until all original FIR have been covered.	**3.19.3.1**	According to the current NOTAM format there can be only up to 7 FIR location indicators in Item A). If more than 7 FIR were entered, only the first 7 listed shall remain in Item A). One or more NOTAM Series 'T' shall be issued with identical data as in the original NOTAM until all original FIR have been covered.	**minor difference**
		3.19.3.2	If multiple aerodromes are inserted in Item A), the NOTAM Processing Unit shall retain only the first indicated aerodrome. For the remaining aerodromes, one or more NOTAM Series 'T' shall be issued with identical data as in the original NOTAM until all original indicated aerodromes are covered.	**no mention in Asia**
		3.19.3.3	Such NOTAM Series 'T' shall follow the rules described in paragraph 3.13.	**no mention in Asia**
	• In cases where a NOTAM contains 'supra-regional' information covering several FIR belonging to more than 1 country, qualifier 'FIR' of the Item Q shall contain the Publishing NOF' s Country Code followed by 'XX'. If this procedure is not applied by the Publishing NOF, the NOTAM Processing Unit shall correct the Item Q.	**3.19.3.4**	In cases where a NOTAM contains 'supra-regional' information covering several FIR belonging to more than 1 country, the Qualifier 'FIR' in Item Q) shall contain the Publishing NOF's nationality Code followed by 'XX' (or 'XXX'). If this procedure is not applied by the Publishing NOF, the NOTAM Processing Unit shall correct the Item Q).	**minor difference**
Item B)-Start of Activity				**minor difference**
3.5.4.2	• This shall be a 10-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM comes into force. NOTAM Processing Unit shall make sure that all NOTAM are retransmitted in the correct format. Example: B) 0007011200	**3.19.4.1**	This shall be a 10-figure date-time group, giving year, month, day, hour and minutes at which the NOTAM comes into force (paragraph 2.3.16 refers).	**minor difference**
	• For NOTAM received with WIE (With Immediate Effect), Item B will be replaced by a 10 figure date/time group corresponding to the time of origin of the original NOTAM.	**3.19.4.2**	If 'WIE' (With Immediate Effect) appears in Item B), the NOTAM Processing Unit shall replace it with a 10 figure date/time group corresponding to the time of origin of the original NOTAM.	**minor difference**
		3.19.4.3	If Item B) contains 'SR' or 'SS' and the NOTAM Processing Unit can calculate an actual time, it shall replace the letters with that time. If, however, the actual time cannot be calculated, the NOTAM Processing Unit shall insert '0000' and add or complete an Item D) with the given 'SR' or 'SS'.	**no mention in Asia**

	ItemC)-End of Validity			
3.5.4.3	For NOTAM received with 'UFN' (Until Further Notice) in Item C, the NOTAM Processing Unit will retransmit the NOTAM as received, with Item C unchanged (=UFN).	**3.19.5.2**	If 'UFN' (Until Further Notice) appears in Item C), the NOTAM Processing Unit shall make the NOTAM available with Item C) changed to an 'EST' time 48 hours ahead of that given in Item B).	**Item C) changed to an 'EST' time 48 hours ahead of that given in Item B).**
		3.19.5.3	If 'APRX DURATION' appears in Item C), the NOTAM Processing Unit shall change it into a Date/Time Group of 10 figures, corresponding to the approximate duration given, followed by 'EST'.	**no mention in Asia**
		3.19.5.4	If the end of the day is expressed as '2400', the NOTAM Processing Unit shall change it to read '2359' (in accordance with ICAO Annex 5 provisions).	**no mention in Asia**
		3.19.5.5	If Item C) contains 'SR' or 'SS' and the NOTAM Processing Unit can calculate an actual time, it shall replace the letters with that time. If, however, the actual time cannot be calculated, the NOTAM Processing Unit shall insert '2359' and add or complete an Item D) with the given 'SR' or 'SS'.	**no mention in Asia**
	• NOTAM containing 'EST' must be replaced by NOTAMR at the appropriate time, or cancelled by NOTAMC. NOTAM Processing Unit are responsible for the following action regarding such NOTAM: – NOTAM received with 'EST' and retransmitted: If the Publishing NOF does not react at the end of the estimated validity, the NOTAM Processing Unit is supposed to make request action from the Publishing NOF one hour prior to or shortly after the 'EST' time, as the significance of the NOTAM may warrant. – NOTAM received with 'UFN' and retransmitted:' No further action will be initiated by the NOTAM Processing Unit for such NOTAM.	**3.19.5.6**	NOTAM containing 'EST' or an approximate duration should, at the end of the estimated validity, be replaced by NOTAMR or cancelled by NOTAMC. If the Publishing NOF does not react at the end of the estimated validity, the NOTAM Processing Unit shall request action from all Publishing NOF concerned at least once a month.	**If the Publishing NOF does not react at the end of the estimated validity, the NOTAM Processing Unit shall request action from all Publishing NOF concerned at least once a month.**
	ItemD)-Day/Time Schedule			
3.5.4.4	• If the Item D of the original NOTAM is not structured according to the procedures as detailed in Section 2 paragraph 2.4.4, it shall be edited by the NOTAM Processing Unit in accordance with these specifications.	**3.19.6.1**	If the Item D) of the original NOTAM is not structured according to the procedures as detailed in paragraph 2.3.18 till 2.3.21, and if no ambiguity about the originator's intention is present (for example Item E) may contain clear specification), it shall be edited by the NOTAM Processing Unit in accordance with these specifications.	**minor difference**
	ItemE)-NOTAM Text			
3.5.4.5	• In case of a non-standard ICAO NOTAM format, The NOTAM Processing Unit must identify the subject and select the relevant NOTAM Code. If Item E contains more than one subject, the subject of highest operational importance, based on the ' Purpose' qualifier in Item Q, shall be inserted in the Item Q.	**3.19.7.1**	If a NOTAM is received in a non-standard format, the NOTAM Processing Unit must identify the subject and select the relevant NOTAM Code. If Item E) contains more than one subject, the subject of highest operational importance, based on the appropriate 'Purpose' Qualifier, shall be inserted in Item Q).	**minor difference**
	• Whenever the text in the Item E is ambiguous, the NOTAM Processing Unit shall retransmit the original NOTAM with Item E as received according to the procedures described in paragraph 3.4.6.	**3.19.7.5**	If the text in the Item E) is ambiguous, the NOTAM Processing Unit shall make the original NOTAM available with the text 'NOTAM Subject to Query' added to the beginning of Item E) according to the procedures described in paragraph 3.12.	**minor difference**

ItemF)andG)-Lower and Upper Limit				
		3.19.8.1	If Item F) and G) appear in the NOTAM, refer to guidance at paragraph 2.3.23.	**no mention in Asia**
3.5.4.6	NOTAM Processing Unit shall make sure that Lower and Upper limits in Items F and G are inserted for Navigational Warnings (Qualifier 'SCOPE' = W or AW) and for Airspace Organizations ('SCOPE' = E or AE). If these Items are missing, the NOTAM Processing Unit shall add them after verification of the data in Item E, or in the Item Q 'Lower/Upper' qualifiers, or in the Static Database, and/or after consultation with the Publishing NOF.	**3.19.8.2**	NOTAM Processing Unit shall make sure that Lower and Upper limits in Items F)and G) are inserted for Navigational Warnings and Airspace Reservations (NOTAMCodes 'QW...' or 'QR…'). If these Items are missing, the NOTAM Processing Unit shall add them after verification of the data in Item E), or in the Item Q)'Lower/Upper' Qualifiers, or in the Static Database, and/or after consultation with the Publishing NOF. Use of the paragraph 3.12 'NOTAM Subject to Query' procedure may be required	
		3.19.8.3	If NOTAM other than Navigational Warnings and Airspace Reservations are received with Items F) and G), the vertical limits shall be transferred to Item E) using the keywords 'FROM' and 'TO' followed by the appropriate values (e.g. 'FROM 1000FT AMSL TO FL100').	**no mention in Asia**
	• If the values specified in Items F and G do not cover the limits mentioned in Item E, the NOTAM Processing Unit shall: - change the values in Item F or in Item G to correspond to the lowest (Item F) or the highest (Item G) value mentioned Item E; and - the 'NOTAM SUBJECT TO QUERY' procedure shall be used, and the Publishing NOF shall be contacted to clarify the content of the NOTAM. Note: the original values will not be changed, whenever the limits in Item F or G are respectively lower or higher than the limits specified in Item E.	**3.19.8.4**	If the values specified in Items F) and G) do not cover the limits mentioned in Item E), the NOTAM Processing Unit shall: - change the values in Item F) or in Item G) to correspond to the lowest (Item F) or the highest (Item G) value mentioned Item E); and - the paragraph 3.12 'NOTAM Subject to Query' procedure shall be used, and the Publishing NOF shall be contacted to clarify the content of the NOTAM. - Note that the original values shall not be changed, whenever the limits in Item F)or G) are respectively lower or higher than the limits specified in Item E).	**minor difference**
	If no Lower limit (Item F) has been specified in a NOTAM that contains an Item G, but from the Item Q or from the Item E it is obvious that the Lower limit is "Sea or Ground", then the term 'SFC' (surface) shall be inserted in Item F. Example: Item Q shows: LOWER/UPPER = 000/090 Item F) ' SFC' shall be inserted in the processed NOTAM. Note: the NOTAM Processing Unit shall use SFC, as use of GND may be inappropriate due to the unavailability of precise topologic information concerning the area of influence of the NOTAM.	**3.19.8.5**	If no Item F) (Lower limit) has been specified in a NOTAM that contains an Item G),but from Items Q) or E) it is obvious that the Lower limit is sea or ground, then theterm 'SFC' (surface) shall be inserted in Item F). 'SFC', will be used instead of 'GND' because precise topographic information concerning the area of influence of the NOTAM may not be available.	**minor difference**
		3.19.8.6	If 'AGL' or 'AMSL' is omitted and the datum cannot be determined, the NOTAM Processing Unit shall add 'AMSL' to the lower limit and 'AGL' to the upper limit.	**no mention in Asia**

Procedures Related to NOTAM 'R' Processing				
		3.20.1	NOTAMR should be issued in the same series as the NOTAMN or NOTAMR referred to. If this is not the case, the NOTAM Processing Unit shall verify whether the Items of the 'to be replaced' NOTAM correspond to the NOTAMR. If the Items correspond, the NPU shall make the NOTAM available as a NOTAMN and shalldelete the 'to be replaced' NOTAM. The paragraph 3.12 procedure for 'NOTAM Subject to Query' shall be applied.	no mention in Asia
		3.20.2	NOTAMR should replace only one NOTAMN or NOTAMR. If more than one NOTAM are replaced by one NOTAMR, the NOTAM Processing Unit shall change the NOTAMR to replace only the first one in the list and shall delete all the others. If it is identified that this is a recurring error, the Publishing NOF shall be requested to adhere to the published ICAO standards (ICAO Annex 15, Ref [1] §5.2.7 and Doc8126, Ref [2] Table 6-1 refer).	no mention in Asia
		3.20.3	NOTAMR should relate to the same subject (2nd and 3rd letters of the NOTAM Code) as the NOTAMN or NOTAMR referred to. If this is not the case the NOTAM Processing Unit shall compare the two NOTAM subjects, and make the potential necessary changes, when these are obvious from the message contents.	no mention in Asia
		3.20.4	NOTAMR shall have the same Item A) content as the NOTAMN or NOTAMR referred to. If this is not the case, the NOTAM Processing Unit shall compare the Item A) of both NOTAM with the data in Item E) and make any necessary changes. If Item A) of the NOTAMR should be changed to the same value as the NOTAM it replaces, the change will be done in the processed NOTAMR. If however, Item A) of the NOTAMR cannot be changed (e.g. if the activity has moved to a separate FIR), this NOTAMR shall be processed as a NOTAMN and the 'to be replaced' NOTAM shall be deleted. If Item Q) 'Scope' contains 'A', the paragraph 3.12 procedure for 'NOTAM Subject to Query' shall be applied.	no mention in Asia
		3.20.5	NOTAMR should immediately replace the NOTAMN or NOTAMR referred to. NOTAMR which are received with a future date in Item B), are made available with Item B) unchanged. The paragraph 3.12 procedure for 'NOTAM Subject to Query'shall be applied.	no mention in Asia
		3.20.6	In case a NOTAMR is received that replaces only an individual part of a Multi-part NOTAM, the NOTAM Processing Unit shall amend the original Multi-part NOTAMand make all parts of it available to its Client as NOTAMR. If ambiguity is detected the paragraph 3.12 procedure for 'NOTAM Subject to Query' shall be applied.	no mention in Asia
		3.20.7	In case of a NOTAMR replacing a NOTAM Class II or an AIP Supplement, the NOTAM Processing Unit shall change the original NOTAMR into a NOTAMN; and,if appropriate, issue a NOTAMC in Series 'T' to cancel any previously issued Trigger NOTAM in Series 'T'.	no mention in Asia

Procedures Related to NOTAM 'C' Processing				
		3.21.1	NOTAMC should be issued in the same series as the NOTAMN or NOTAMR referred to. If this is not the case, the NOTAM Processing Unit shall verify whetherthe Items of the 'to be cancelled' NOTAM correspond to the NOTAMC. If the Items correspond, the NPU shall make the NOTAM available as a NOTAMN and shall delete the 'to be cancelled' NOTAM.	no mention in Asia
		3.21.2	NOTAMC should cancel only one NOTAMN or NOTAMR. If more than one NOTAM are cancelled by one NOTAMC, the NOTAM Processing Unit shall change the NOTAMC to cancel only the first one in the list and shall delete all the others.	no mention in Asia
		3.21.3	NOTAMC should become active at the time they are issued, and immediately cancel the NOTAMN or NOTAMR referred to.	no mention in Asia
		3.21.4	If a NOTAMC contains a future cancellation date in Item B), the NOTAM Processing Unit shall change it to a NOTAMR. This NOTAM will be identical to the NOTAMC except that Item B) will contain the current date/time and Item C) will be equal to the Item B) date time group of the wrong NOTAMC. The paragraph 3.12 procedure for 'NOTAM Subject to Query' shall be applied.	no mention in Asia
		3.21.5	If a NOTAMC contains an Item C)entry, this Item shall be omitted. If the Item C) contains a future end of validity, the paragraph 3.12 procedure for NOTAM Subjectto Query shall be applied.	no mention in Asia
		3.21.6	For all NOTAMC, the text of the decoded NOTAM Code shall be inserted in Item E)together with details of the NOTAM subject. If no text is inserted by the Publishing NOF, the NOTAM Processing Unit shall add the decoded NOTAM Code, together with the necessary details	no mention in Asia
		3.21.7	If a NOTAMC contains an Item A) but does not contain Items Q), B) or E), the NOTAM Processing Unit shall fill the missing compulsory items. - Item Q) NOTAM Code 2nd and 3rd letters shall be derived from the NOTAM to be cancelled. - Item Q) NOTAM Code 4th and 5th letters shall be 'XX' (unless an Item E) text had been provided to confirm use of 'AK', 'AL', 'AO' or 'CC'). - Item Q) other Qualifiers shall identical to those in the cancelled NOTAM (paragraph 2.4.3.5 refers). - Item B) shall be the date and time of filing of the NOTAMC. - Item E) shall contain a reference to the cancelled NOTAM subject followed, in a new line, by the text 'NOTAM CANCELLED'. Example: Incoming original NOTAM	no mention in Asia

	Checklist Processing			
3.5.5.1	• A received Checklist will be processed and retransmitted to all Client NOF by the NOTAM Processing Unit without undue delay.	3.22.1	A received Checklist shall be processed and, unless otherwise agreed, made available to all Clients by the NOTAM Processing Unit without undue delay.	minor difference
	• In case of any ambiguities, e.g.: – valid NOTAM not on checklist, – NOTAM on checklist is not in the database, etc. The NOTAM Processing Unit addresses the Publishing NOF for clarification.	3.22.2	In case of any ambiguities, e.g.: - a valid NOTAM is not included in the Checklist; or - a NOTAM included in the Checklist is not in the database, etc. the NOTAM Processing Unit shall request clarification from the Publishing NOF. Text shall be added to the Checklist, starting with the statement 'NOTAM Subject to Query' and followed by the observed discrepancies, in order to inform the Client that processing should be delayed or done with extra caution.	minor difference
	When, as a result of a query, omitted NOTAM numbers are restored in the corrected version of a Checklist, the NOTAM Processing Unit shall: - retransmit the revised checklist to their client-NOF - on request, retransmit the omitted NOTAM to their Client NOF.	3.22.3	When, as a result of a query, omitted NOTAM numbers are restored in the corrected version of a Checklist, the NOTAM Processing Unit shall: - make available the revised Checklist to their Client; and - on request, make available the omitted NOTAM to their Client.	minor difference
		3.22.4	Note that certain States (e.g. Japan) use a CTA/TMA location indicator as a pseudo FIR. The NOTAM Processing Unit shall change it to a valid FIR or AD indicator depending on the content (Paragraph 3.22.2.3, 3.22.2.8 refers).	no mention in Asia
		3.22.5	Note also that Checklists may be received as NOTAMN and/or without an 'EST' indication in Item C) (paragraphs 2.5.1.6 and 3.22.2.9 refer).	no mention in Asia
	Checklist Received as a NOTAM			
3.5.5.2	When a Checklist is received as a NOTAM, but it is not in the agreed NOTAM Checklist format (see Section 2), the NOTAM Processing Unit shall convert it as described hereafter:	3.22.2.1	If a Checklist is received as a NOTAM, but it is not in the agreed NOTAM Checklist format (paragraph 2.5 refers), the NOTAM Processing Unit shall convert it as described hereafter:	minor difference
	• Qualifier 'FIR' of the Item Q is - the FIR of the Publishing NOF, if responsible for only 1 FIR; or - the 2–letter country indicator of the Publishing NOF followed by XX, if the Publishing NOF is responsible for multiple FIR (in the same or in different countries).	3.22.2.3	Item Q) 'FIR' Qualifier shall be: - the FIR of the Publishing NOF, if responsible for only 1 FIR; or - the 2–letter country indicator of the Publishing NOF followed by 'XX', if the Publishing NOF is responsible for multiple FIR (in the same or in different countries).	minor difference
	• The NOTAM Code is always ' QKKKK' or will be changed into 'QKKKK' by the NOTAM Processing Unit.	3.22.2.4	The NOTAM Code shall always be 'QKKKK'.	minor difference
	Qualifiers TRAFFIC, PURPOSE and SCOPE will be given the artificial value 'K', even if another qualifier was included by the Publishing NOF.	3.22.2.5	Item Q) 'Traffic', 'Purpose' and 'Scope' Qualifiers shall be given the artificial value 'K', even if another Qualifier was included by the Publishing NOF.	minor difference
	• LOWER/UPPER are default values 000/999, or should be changed accordingly by the NOTAM Processing Unit.	3.22.2.6	Item Q) 'Lower/Upper' Qualifiers shall be the default values '000/999'.	minor difference
		3.22.2.7	Item Q) geographical reference and radius Qualifiers are required and, if missing, they shall be entered by the NOTAM Processing Unit.	no mention in Asia
	• Item A shall contain the list of all valid FIR for the Publishing NOF, if these are not all included, the NOTAM Processing Unit shall add them.	3.22.2.8	Item A) should contain the list of all valid FIR for the Publishing NOF and, if any are missing, they shall be added by the NOTAM Processing Unit. However, for States with a NOF but no own FIR (e.g. Swaziland, Lesotho, Macao), the location indicator of the main aerodrome will be entered in Item A). Otherwise the Checklist cannot be associated to the publishing NOF (e.g. Lesotho would have a Series A Checklist with Q-FIR + Item A FAJS which is the same as for South African A series).	no mention in Asia

	• Item C is the estimated time of validity, usually exactly one month after the publication date and time of the current checklist, followed by 'EST'. Whenever another Date/Time Group is filled by the Publishing NOF, the NOTAM Processing Unit shall not change it.	3.22.2.9	Item C) should indicate the estimated time of validity, usually exactly one month after the date and time of the publication of the current Checklist, followed by 'EST'. Whenever another date/time group is entered by the Publishing NOF, the NOTAM Processing Unit shall not change it.	minor difference
	• Item E is divided in two parts: 1. NOTAM Number Part, identified by 'CHECKLIST' Contains the valid NOTAM promulgated in a particular series, in a format suitable for automatic and manual processing as described in Chapter 2 paragraph 2.7. If required, the NOTAM Processing Unit shall convert the Checklist according to this format. 2. Latest Publication Part, identified by 'LATEST PUBLICATIONS' Contains the list of the latest publications (Amendments, Supplements, NOTAM Class II and AIC). This part shall be transmitted as received. If this part is not present in the original NOTAM, the NOTAM Processing Unit shall retransmit the Checklist without this Latest Publication Part.	3.22.2.10	Item E) should be divided into two parts: NOTAM Number Part, identified by 'CHECKLIST' Should contain a list of the valid NOTAM issued in a particular series, in a format suitable for automatic and manual processing as described in paragraph 2.5. If necessary, the NOTAM Processing Unit shall convert the Checklist into this format. Latest Publication Part, identified by 'LATEST PUBLICATIONS' Should contain a list of the latest publications (Amendments, Supplements, NOTAM Class II and AIC). This part shall be made available as received. If this part is not present in the original NOTAM, the NOTAM Processing Unit shall make the Checklist available without this Latest Publication Part.	minor difference
Checklist Not Received as a NOTAM				
3.5.5.3	• Whenever a NOTAM Checklist is not received as a NOTAM (i.e. when no NOTAM number has been allocated to the Checklist), the NOTAM Processing Unit shall adapt the received AFTN message to the Ad-hoc Checklist format, as described in Section 4.	3.22.3.1	If a NOTAM Checklist is not received as a NOTAM (i.e. when no NOTAM number has been allocated to the Checklist), the NOTAM Processing Unit shall adapt the received AFTN message to the 'ad-hoc' Checklist format, as described in paragraph 4.5.	minor difference
	• The processed checklist shall also be retransmitted as an AFTN message. The message shall start with the word 'CHECKLIST', the 4-letter indicator of the Publishing NOF or any other location indicator to which the numbering of the NOTAM refers and the corresponding NOTAM Series. The valid NOTAM numbers will be included in the next line(s) according to the format described in Section 4, but retaining the latest publication part only if included in the original message. Example:	3.22.3.2	The processed checklist shall also be made available as an AFTN message. The message shall start with the word 'Checklist', the 4-letter indicator of the PublishingNOF or any other location indicator to which the numbering of the NOTAM refers and the corresponding NOTAM Series. The valid NOTAM numbers shall be included in the next line(s) according to the format described in paragraph 4.5.3, but retaining the latest publication part only if included in the original message. Example:	minor difference
Missing NOTAM				
3.6	•In case of missing NOTAM the NOTAM Processing Unit requests the missing NOTAM from the Publishing NOF by a request message.	3.23.1	If NOTAM are missing, the NOTAM Processing Unit shall request them from the Publishing NOF using a Request message. Chapter 4 refers but the syntax requirements of the Publishing NOF shall be observed.	minor difference
	• Time parameters depending on the Publishing NOF will be defined by the NOTAM Processing Unit for initiating the first request message and succeeding repetition of the message.	3.23.2	Time parameters for initiating the first request message and succeeding repetition of the message shall be defined by the NOTAM Processing Unit and may vary depending on the Publishing NOF.	minor difference
	• Client-NOF should request a missing NOTAM to the NOTAM Processing Unit only once.			no mention in Euro

NOTAM Deletion				
		3.24.1	The processing of NOTAM not adhering to the ICAO Standard may force a NOTAM Processing Unit to delete NOTAM by means other than a NOTAMR or a NOTAMC if: a) the NOTAM is cancelled by a printed publication (AIP AMDT, AIP SUP, etc.); b) the NOTAM is cancelled by a checklist; c) the NOTAM is cancelled by an AFTN free text message from the Publishing NOF; d) the NOTAM is cancelled or replaced by a NOTAMC or a NOTAMR with more than one NOTAM to be cancelled or replaced; e) the NOTAM is deleted because an updated/corrected version of the NOTAM shall follow.	no mention in Asia
		3.24.2	NPU Clients shall receive notification of deletion of a NOTAM (See Chapter 6 for a possible implementation of a notification mechanism).	no mention in Asia

Differences between
Common Operating Procedures Asia/Pacific and EUROCONTROL OPADD Ver2

4 DATABASE COMPLETENESS AND COHERENCE MESSAGES

The paragraph number	ASIA OPADD	The paragraph number	EURO OPADD(VER2)	A summary of difference
4.1 General Principles				
4.1 General Principles	For every request, the 4 - letter indicator of the Publishing NOF or any other location indicator to which the numbering of the required NOTAM refers, shall be included. • Request messages shall only refer to one Publishing NOF. • A reply message shall contain only one NOTAM, or a status text regarding the requested NOTAM, normally followed by the requested NOTAM. • The reply message of a processed NOTAM shall always include the original origin line (DTG + Publishing NOF address). Note: Where a Client NOF' s system would be adversely affected by inclusion of this initial origin line, on request by the Client NOF, it shall be removed by the NOTAM Processing Unit before retransmission. • The maximum number and series of requested NOTAM in a single request message will be based	**4.1 General Principles**	For the avoidance of network overload, the number of requested NOTAM in a single request message shall be limited in 'RQN' or in 'RQO'. It is recommended that the maximum is set to 100. 4.1.5 Request shall include the 4–letter indicator of the Publishing NOF or any other location indicator to which the numbering of the required NOTAM refers (e.g. USA). 4.1.6 A reply message shall contain only one NOTAM (or several messages in case of a multi-part NOTAM), or a status text regarding the requested NOTAM, normally followed by the requested NOTAM. 4.1.7 Request shall refer to only one Publishing NOF.	
4.4 Content of the Reply Messages (RQR)				
		4.4.1.1	4.4.1.1 A Reply message to RQN and RQO contains only one NOTAM (or one part of a Multi-part NOTAM). If a request was made for multiple NOTAM it will result in multiple reply messages.	
		4.4.1.2	A single 'RQN' or 'RQO' request for multiple NOTAM shall result in multiple reply messages unless the requested NOTAM are not available for a reply (exception 4.4.1.7 refers).	
		4.4.1.3	In reply to a RQN by a NOTAM Processing Unit, if the NOTAM queried has been processed by the NPU, the reply message shall contain the code of the NPU as the originator instead of the code of the Publishing NOF.	
		4.4.1.4	If the queried NOTAM is 'no longer valid' or 'not available', this status will be communicated through the reply as follows: a) if the NOTAM is no longer valid, a 'Status line' will precede the transmission of the requested NOTAM. b) if the NOTAM is not available, only a relevant 'Status line' will be transmitted.	
		4.4.1.5	Only one 'Status line' shall be included in the reply and it shall contain only one status expression if the RQR contains a NOTAM, e.g. no additional line nor status expression shall be included in case of 'ORIGINAL NOTAM'.	

		4.4.1.6	**In order to limit the number of RQR messages in reply to a RQN for more than one NOTAM and when these NOTAM are not available in the NPU's database, the RQR shall contain all NOTAM numbers concerned by the same reply: 'NOTAM REQUESTED' or 'NOTAM NO LONGER IN DATABASE' or 'NOTAM NOT ISSUED'. For example, instead of 99 RQR messages with 'NOTAM NOT ISSUED', only one RQR shall be sent.**	
4.4.2 Standard Expressions in Reply Messages				
		4.4.2.1	**' NOTAM DELETED' NOTAM was deleted by the NOTAM Processing Unit. Reasons for deletion might be for example that the NOTAM was omitted from Checklist, deleted by printed publication, or other information received from publishing NOF. 'NO VALID NOTAM IN DATABASE' For reply on a RQL if no valid NOTAM is available.**	
5.2 SNOWTAM				
5.2.1 Definition	Example: GG EDZZ.... ..... 300645 EDDKYDYX SWED0012 EDDK 12300645	**5.2.2 Examples**	Example 1: GG EFCC.... 281225 EFTPZTZX	
5.2.2 Procedures	The incorporation of SNOWTAM in PIB is highly recommended, as it improves pre-flight briefing and provides airline operators with more comprehensive information. The verification of a SNOWTAM should be made in the first line of the AFTN message text. This heading starts with the SNOWTAM indicator 'SW' followed by the designator for the State e.g. 'ED', and a serial number in a four-figure group. The aerodrome to which the SNOWTAM refers is indicated with its four-letter location indicator. The observation time is shown as an eight-figure group (MMDDHHMM). Example: SWED0012 EDDK 12300645 These five indicators provide data to differentiate the SNOWTAM, and allow retrieval with a particular aim. Whenever a significant change of the weather condition occurs, a new SNOWTAM will be published. Therefore it is necessary for the system to always check for the latest SNOWTAM. The former SNOWTAM can be recognized easily, due to the lower serial number and the earlier observation time. The previous SNOWTAM is outdated then and shall not appear anymore in PIB. The maximum validity of a SNOWTAM is 24 hours. Therefore it shall be assured that a SNOWTAM will not appear in a PIB more than 24 hours after its observation time.	**5.2.3 Procedures**	5.2.3.1 The format detailed in Annex 15 (Ref [1]) Appendix 2 shall be strictly adhered to. 5.2.3.2 A list of aerodromes for which SNOWTAM are likely to be issued shall appear in an AIS publication (AIP, AIP SUP or AIC) together with details of the originators and of the numbering system to be used. 5.2.3.3 It is recommended to adopt a numbering sequence starting either at the beginning of the snow season or at the beginning of the year. 5.2.3.4 It will be necessary for systems to identify the latest SNOWTAM for each affected aerodrome by reference to the serial number and observation time. 5.2.3.5 Only one SNOWTAM can be valid for each affected aerodrome at any one time. 5.2.3.6 The next planned observation may be declared in Item S), but whenever a significant change of the weather condition occurs, a new SNOWTAM shall be published and will completely replace any SNOWTAM previously issued. 5.2.3.7 The maximum validity of a SNOWTAM is 24 hours. 5.2.3.8 The incorporation of SNOWTAM in PIB is highly recommended, as it improves preflight briefing and provides airline operators with more comprehensive information.	

5.3 ASHTAM				
5.3.2 Procedures	The incorporation of ASHTAM in PIB is highly recommended, as it improves pre-flight briefing and provides airline operators with more comprehensive information. The verification of an ASHTAM should be made in the first line of the AFTN message text. This heading starts with the ASHTAM indicator 'VA' followed by the designator for the State, e.g. 'LI', and a serial number in a four-figure group. The FIR to which the ASHTAM refers is indicated with its four-letter location indicator. The observation time is shown as a eight-figure group. Note: These procedures are based on the ASHTAM format described in Annex 15, as very few example of ASHTAM were available at the time of composing this document. Example: VALI0001 LIRR 11250800 These five indicators provide data to differentiate the ASHTAM, and allow retrieval with a particular aim. Whenever there is a change in the level of alert, a new ASHTAM will be published. Therefore it is necessary for the system to check if a ASHTAM was issued for the concerned FIR before. The former ASHTAM could be recognized easily then, due to the lower serial number and the older observation time. The previous ASHTAM is outdated then and shall not appear anymore in PIB. The maximum validity of a ASHTAM is 24 hours. Therefore it shall be assured that ASHTAM will not appear in a PIB after 24 hours of its observation time.	5.3.2 Procedures	5.3.2.1 ASHTAM identification shall appear in the first line of the AFTN message text and shall start with the ASHTAM indicator 'VA' followed by the designator for the State e.g. 'LI', and a serial number in a four-figure group. The FIR to which the ASHTAM refers is indicated with its four-letter location indicator. The observation time is shown as an eight-figure group. Example: VALI0001 LIRR 11250800 5.3.2.2 Whenever there is a change in the level of alert, a new ASHTAM shall be published and will completely replace any ASHTAM previously issued. 5.3.2.3 It will be necessary for systems to check whether an ASHTAM has been issued for the FIR concerned by reference to this serial number and observation time. ASHTAM for the same FIR issued previously (lower serial number), or with an earlier observation time will be outdated.	

See also: [AN-WP/8086] [AN-WP/8080] [AN-WP/8067] [AN-WP/8062] [AN-WP/8049] [AN-WP/8027] [AN-WP/8012] [AN Min. 171-7] [AN Min. 170-6] [AN Min. 170-2] [AN Min. 170-12] [AN Min. 170-11] [AN Min. 169-12] [AN Min. 168-8] [AN Min. 165-12] [171-7] [170-6] [170-2] [170-12] [170-11] [169-12]

International Civil Aviation Organization

AN-WP/8153
25/9//06

WORKING PAPER

AIR NAVIGATION COMMISSION

ANC Task No. AIS-0501: Amendment to the NOTAM format and code
ANC Task No. MET-6201: Wind shear in the terminal area
ANC Task No. MET-8201: Volcanic ash warnings within the IAVW
ANC Task No. MET-8202: WAFS planning and implementation
ANC Task No. MET-8801: Monitoring and provisions of warnings to aircraft of radioactive debris and toxic chemical "clouds"
ANC Task No. MET-9101: Automated air reporting
ANC Task No. MET-9206: Observing and reporting of weather conditions at the aerodrome and in the terminal area
ANC Task No. MET-9301: Uplink of OPMET information to aircraft in flight
ANC Task No. MET-9601: Development of SIGMET information
ANC Task No. MET-9801: Clear air turbulence warnings
ANC Task No. MET-0101: Aeronautical MET data representation and codes
ANC Task No. MET-0401: Development of tropical cyclone advisories for international air navigation
ANC Task No. MET-0402: Provision of meteorological information to support ATM
ANC Task No. MET-0403: Forecasting of weather conditions at the aerodrome and in the terminal area

FINAL REVIEW OF PROPOSED AMENDMENTS TO ANNEX 3 AND CONSEQUENTIAL AMENDMENTS TO ANNEXES 11, 15, PANS-ABC AND PANS-ATM, IN THE LIGHT OF COMMENTS FROM STATES AND INTERNATIONAL ORGANIZATIONS

(Presented by the Director of the Air Navigation Bureau)

SUMMARY
This paper presents the results of a consultation with States and international organizations on a proposal to amend Annex 3 regarding automated air reporting; uplink of operational meteorological (OPMET) and SIGMET information; word area forecast system (WAFS); introduction of wind shear alerts; aerodrome observation and forecast requirements; international airways volcanic watch (IAVW); tropical cyclone advisories and tsunami warnings. A summary of replies is given in Appendix A. Substantive comments are shown in Appendix B, together with the Secretariat's comments and proposals for action. Action by the Air Navigation Commission is in paragraph 7.

COORDINATION
AIS/MAP, ATM, FLS

REFERENCES	
AN-WP/8086	* Annex 15
AN-WP/8080 and blue rider	* Doc 8400, PANS-ABC
AN-WP/8067	* Doc 4444, PANS-ATM
AN-WP/8062	* State Letter AN 10/1-06/02
AN-WP/8049	Doc 8896, *Manual of Aeronautical Meteorological Practice*
AN-WP/8027 and Corrigenda 1 and 2	Doc 9817, *Manual on Low-Level Wind Shear*
AN-WP/8012	Doc 9766, *Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List*
AN Min. 171-7	*Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization* (Doc 7475)
AN Min. 170-12	
AN Min. 170-11	
AN Min. 170-6	
AN Min. 170-2	
AN Min. 169-12	
AN Min. 168-8	
AN Min. 165-12	
* Annex 3	
* Annex 11	

This working paper relates to Strategic Objectives A and D

* Principal references

1. INTRODUCTION

1.1 On 16 June and 6 October 2005, the Air Navigation Commission (169-12 and 170-2) carried out a preliminary review (AN-WP/8027 and Corrigenda 1 and 2) of a proposal to amend Annex 3 — *Meteorological Service for International Air Navigation* regarding specifications related to automated air reporting, uplink of operational meteorological (OPMET) and SIGMET information developed by the Secretariat with the assistance of the Meteorological Information Data Link Study

Group (METLINKSG).

1.2 On 16 June 2005, the Air Navigation Commission (169-12) carried out a preliminary review (AN-WP/8049) of a proposal to amend Annex 3 related to the world area forecast system (WAFS) developed by the Secretariat with the assistance of the World Area Forecast System Operations Group (WAFSOPSG).

1.3 On 8 November 2005, the Air Navigation Commission (170-6) carried out a preliminary review (AN-WP/8062) of a proposal to amend Annex 3 regarding the introduction of wind shear alerts developed by the Secretariat with the assistance of the Low Level Wind Shear and Turbulence Study Group (WISTSG).

1.4 On 24 November 2005, the Air Navigation Commission (170-11) carried out a preliminary review (AN-WP/8067) of a proposal to amend Annex 3 regarding specifications related to aerodrome observations and forecasts developed by the Secretariat with the assistance of the Aerodrome Meteorological Observing Systems Study Group (AMOSSG).

1.5 On 29 November 2005, the Air Navigation Commission (170-12) carried out a preliminary review (AN-WP/8080) of a proposal to amend Annex 3 related to the development of the international airways volcano watch (IAVW) developed by the Secretariat with the assistance of the International Airways Volcano Watch Operations Group (IAVWOPSG).

1.6 On 3 February 2006, the Air Navigation Commission (171-7) carried out a preliminary review (AN-WP/8086) of a proposal to amend Annex 3 related to tropical cyclone advisories and tsunami warnings developed by the Secretariat in consultation with the World Meteorological Organization (WMO) Tropical Cyclone Programme.

1.7 The Commission agreed that the foregoing proposed amendments be sent to States and international organizations for comment. Accordingly, a consolidation of the proposed amendments was sent to States in State letter AN 10/1-06/02 dated 24 February 2005, with a request for replies by 9 June 2006.

1.8 Under the agreement between ICAO and WMO, consultations on the proposed amendments to Annex 3 were carried out by ICAO on behalf of both organizations for those ICAO Contracting States that are also Members of WMO, and by WMO for its Members that are not Contracting States of ICAO.

1.9 The analysis of the replies to State letter AN 10/1-06/02 has been coordinated with WMO and the proposals for action have been agreed to by both Secretariats.

2. summary of replies

2.1 By 9 June 2006, fifty-six replies had been received from fifty-four States and two international organization. By 31 August 2006, seventy-one replies had

been received from sixty-seven States and four international organizations. A summary of replies is in Appendix A.

3. nature and scope of the replies

3.1 In general, the replies show broad support for the proposed amendment, although some States and international organizations have provided comments or questions on particular parts of the proposal.

4. secretariat review

4.1 Substantive comments on the amendment proposal itself, together with the Secretariat's comments and proposals for action thereon, are given in Appendix B.

5. consequential amendments

5.1 The amendment proposal to Annex 3 will require consequential amendments to Annex 11 — *Air Traffic Services*, Annex 15 — *Aeronautical Information Services*, to the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444).

6. applicability DATE

6.1 States and international organizations were advised that the common applicability date of 7 November 2007 was envisaged for the proposed amendment to Annex 3 to coincide with WMO regulatory documents and 22 November 2007 for the consequential amendments to Annexes 11, 15, the PANS-ABC and the PANS-ATM. However, regarding the applicability date to Annex 3, some States have expressed a desire for at least a one year delay on the applicability date of the provisions regarding the extension of the validity period of an aerodrome forecast (TAF) and other amendments related to the WMO *Manual on Codes* (WMO—No. 306) to ensure improved global implementation.

7. ACTION BY THE AIR NAVIGATION COMMISSION

7.1 The Air Navigation Commission is invited to:

a) note the summary of replies in Appendix A;

b) consider the material in Appendix B and decide on the action to be taken on all matters raised therein;

c) agree that the proposed amendment to Annex 3, as contained in Attachment A to State letter AN 10/1-06/02 and as modified by action taken under b) above, constitutes Amendment 74 to Annex 3;

d) agree that the proposed consequential amendments to Annexes 11 and 15, the PANS-ABC and the PANS-ATM, as reflected in Attachments B, C, D and E of State letter AN 10/1-06/02, and as modified by action taken under b) above, be consolidated with any further proposals for amendment to those documents;

e) agree that the proposed amendment to Annex 3 should become applicable on 7 November 2007 except for paragraphs 6.2.6, 6.2.7; Appendix 3, 2.3.2 j), 4.1.5.2 c), 4.5.4.2 e) and f), 4.5.4.4 c), 4.8.1.3, Tables A3-1 and A3-2; and Appendix 5, 1.2.4, 1.3 i), Tables A5-1, A5-2 and Example A5-1 concerning the extension of the validity period of TAF which should become applicable on 5 November 2008;

f) agree that the consequential amendments to Annexes 11 and 15, the PANS-ABC and the PANS-ATM should become applicable on 22 November 2007;

g) agree that the Secretariat, with the assistance of the AMOSSG, under Strategic Objective D:

1) study the classification of automatic observations backed-up by a human observer;

2) clarify when a newly issued TAF cancel TAF previously issued for the same place and for the same period of validity or part thereof;

3) study the desirability of upgrading the provision related to SPECI criteria (in Appendix 3, 2.3.2) to a Standard;

4) study the indication of direction of the minimum visibility when it cannot be identified using the eight compass points;

5) study whether the use of "VV///" is appropriate in TAF;

6) study the desirability to develop guidance in Attachment A related to the accuracy for the observation of present weather phenomena; and

7) align guidance in Attachment B related to operationally desirable accuracy of forecasts to the TAF amendment criteria;

h) agree that the Secretariat, with the assistance of the METLINKSG, under Strategic Objective A, study the applicability of the eddy dissipation rate (EDR) metric for

reporting turbulence during approach/take-of and develop guidance, as necessary;

i) agree that WMO be invited to:

1) prepare a model chart for graphical area forecasts for low-level flights in support of the issuance of AIRMET, in time for Amendment 75 to Annex 3;

2) consider allocating a data-type designator for SIGMETs for radioactive clouds; and

3) establish criteria for a "severe squall line";

j) note that the Secretariat intends to develop guidance for inclusion in the *Manual of Aeronautical Meteorological Practice* (Doc 8896) regarding:

1) the use of automatic meteorological observing systems at aerodromes where topography and complex climatology are factors;

2) the interpretation of existing 6.1.2 in cases where an amended TAF is issued before the validity time of the subsequent forecast; and

3) the combined use of GAMET and graphical area forecasts for low-level flights during the same flight;

k) note that the Secretariat intends to develop guidance for inclusion in the *Manual on Low-Level Wind Shear* (Doc 9817) regarding the need to clarify the roles of "wind shear warnings" and "wind shear alerts", respectively;

l) note that the Secretariat intends to develop guidance in *Handbook on the International Airways Volcano Watch (IAVW) — Operational Procedures and Contact List* (Doc 9766) regarding the use of the "narrow line" feature in volcanic ash advisories in high latitudes; and

m) instruct the Secretary regarding the preparation of the draft report to Council.

APPENDIX A

SUMMARY OF REPLIES TO STATE LETTER

A — Agreement without comments (includes "no objections")
AC — Agreement with comments and/or reservations
DC — Disagreement with comments
NP — No indication of position (includes "no comments" and acknowledgements)

Note.— X in the "AC" and "DC" columns indicates that the State concerned agrees with comments on certain parts of the amendment whilst disagreeing with others.

State/International Organization	Annex 3				Annex 11				Annex 15				PANS-ABC				PANS-ATM			
	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP
Afghanistan																				
Albania																				
Algeria																				
Andorra																				
Angola																				
Antigua and Barbuda																				
Argentina		X				X			X				X				X			
Armenia																				
Australia		X			X				X				X				X			
Austria			X		X				X				X				X			
Azerbaijan	X				X				X				X				X			
Bahamas																				
Bahrain	X				X				X				X				X			
Bangladesh																				
Barbados																				
Belarus	X				X				X				X				X			
Belgium		X			X				X				X				X			
Belize																				
Benin																				
Bhutan																				
Bolivia		X			X				X				X				X			
Bosnia and Herzegovina																				
Botswana	X				X				X				X				X			
Brazil	X				X				X				X				X			
Brunei Darussalam																				
Bulgaria																				
Burkina Faso																				
Burundi																				
Cambodia																				
Cameroon																				
Canada		X			X				X				X				X			
Cape Verde																				
Central African Republic																				
Chad																				
Chile		X			X				X				X				X			
China		X			X				X				X				X			
Hong Kong, China		X			X				X				X				X			
Macao, China	X				X				X				X				X			
Colombia																				
Comoros																				
Congo																				
Cook Islands																				
Costa Rica																				
Côte d'Ivoire																				
Croatia																				
Cuba		X			X				X				X				X			
Cyprus		X			X				X				X				X			
Czech Republic		X			X					X			X				X			

State/International Organization	Annex 3				Annex 11				Annex 15				PANS-ABC				PANS-ATM			
	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP
Democratic People's Republic of Korea																				
Democratic Republic of the Congo																				
Denmark	X				X				X				X				X			
Djibouti																				
Dominican Republic																				
Ecuador																				
Egypt	X							X				X				X				X
El Salvador																				
Equatorial Guinea																				
Eritrea																				
Estonia																				
Ethiopia																				
Fiji																				
Finland		X			X						X		X				X			
France		X			X						X		X				X			
Gabon																				
Gambia																				
Georgia																				
Germany		X			X					X				X			X			
Ghana																				
Greece																				
Grenada																				
Guatemala	X				X				X				X				X			
Guinea																				
Guinea-Bissau																				
Guyana	X				X				X				X				X			
Haiti																				
Honduras																				
Hungary		X			X				X				X				X			
Iceland		X			X				X				X				X			
India		X			X				X				X				X			
Indonesia																				
Iran (Islamic Republic of)																				
Iraq																				
Ireland																				
Israel		X						X				X				X				X
Italy	X				X				X				X				X			
Jamaica																				
Japan	X				X						X		X				X			
Jordan	X				X				X				X				X			
Kazakhstan																				
Kenya																				
Kiribati																				
Kuwait	X				X				X				X				X			
Kyrgyzstan																				
Lao People's Democratic Republic																				
Latvia																				
Lebanon	X							X				X				X				X
Lesotho																				
Liberia																				
Libyan Arab Jamahiriya																				
Lithuania	X				X				X				X				X			
Luxembourg																				
Madagascar	X				X				X				X				X			
Malawi																				
Malaysia	X				X				X				X				X			
Maldives																				

State/International Organization	Annex 3				Annex 11				Annex 15				PANS-ABC				PANS-ATM			
	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP
Mali																				
Malta																				
Marshall Islands																				
Mauritania																				
Mauritius	X				X				X				X				X			
Mexico		X			X				X				X				X			
Micronesia (Federated States of)																				
Monaco																				
Mongolia																				
Morocco																				
Mozambique																				
Myanmar																				
Namibia																				
Nauru																				
Nepal																				
Netherlands		X			X				X				X				X			
New Zealand		X						X				X				X				X
Nicaragua																				
Niger																				
Nigeria		X			X				X				X				X			
Norway		X			X					X			X				X			
Oman																				
Pakistan				X				X				X				X				X
Palau																				
Panama	X				X				X				X				X			
Papua New Guinea																				
Paraguay		X			X				X				X				X			
Peru																				
Philippines																				
Poland	X				X				X				X				X			
Portugal																				
Qatar																				
Republic of Korea	X				X				X				X				X			
Republic of Moldova																				
Romania	X				X				X				X				X			
Russian Federation																				
Rwanda																				
Saint Kitts and Nevis																				
Saint Lucia																				
Saint Vincent and the Grenadines																				
Samoa																				
San Marino																				
Sao Tome and Principe																				
Saudi Arabia					X				X				X				X			X
Senegal																				
Serbia																				
Seychelles																				
Sierra Leone																				
Singapore			X			X				X				X				X		
Slovakia			X			X					X			X				X		
Slovenia			X			X				X				X				X		
Solomon Islands																				
Somalia																				
South Africa	X					X				X				X				X		
Spain			X			X				X				X				X		
Sri Lanka																				
Sudan																				

State/International Organization	Annex 3				Annex 11				Annex 15				PANS-ABC				PANS-ATM			
	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP	A	AC	DC	NP
Suriname																				
Swaziland																				
Sweden		X			X						X		X				X			
Switzerland		X						X			X				X					X
Syrian Arab Republic																				
Tajikistan																				
Thailand	X				X				X				X				X			
The former Yugoslav Republic of Macedonia																				
Timor-Leste																				
Togo																				
Tonga																				
Trinidad and Tobago																				
Tunisia	X				X				X				X				X			
Turkey	X				X				X				X				X			
Turkmenistan																				
Uganda																				
Ukraine		X			X				X				X				X			
United Arab Emirates		X			X				X				X				X			
United Kingdom		X			X					X			X				X			
United Republic of Tanzania																				
United States		X			X				X				X				X			
Uruguay	X				X				X				X				X			
Uzbekistan	X				X				X				X				X			
Vanuatu																				
Venezuela	X				X				X				X				X			
Viet Nam																				
Yemen																				
Zambia																				
Zimbabwe																				
International Organizations																				
EUROCONTROL				X				X			X					X				X
IATA		X			X				X				X				X			
IFALPA		X			X				X				X				X			
WMO		X						X				X				X				X
TOTALS	30	37	1	3	61	1	0	9	53	5	6	7	61	1	1	8	62	0	0	9

APPENDIX B

COMMENTS OF STATES AND INTERNATIONAL ORGANIZATIONS IN RESPONSE TO STATE LETTER AN 10/1-06/02

Note.— All references are to Attachment A to State letter AN 10/1-06/02 unless indicated otherwise.

REFERENCE: Annex 3, General

STATES' AND INTERNATIONAL ORGANIZATIONS' COMMENTS

Mexico
(Note.— See appropriate partial language version of this AN-WP for original text.)

We would also suggest that in all references to wind, the word "speed" be replaced by "intensity".

Netherlands

The proposed changes to Annex 3 are substantial for data originators, data distribution and storage, especially the changes to the templates of METAR and SPECI (Table A3-2) and the template of TAF (Table A5-1) are considered to have a major impact on these type of systems and processes. Whilst the Amendment to Annex 3 is scheduled for applicability an 7 November 2007, the amendment to the supportive WMO *Manual on Codes* (WMO — No. 306) and other relevant WMO publications are not available or scheduled. This supportive WMO information is necessary to specify the relevant changes to the systems and processes for the applicable METAR, SPECI and TAF code forms as referred to in the Annex 3 itself (Appendix 3, 2.1.2 and Appendix 5, 1.1). For the Netherlands it is essential to have the relevant WMO supportive information available before the amendment to Annex 3 could be implemented. Therefore, it is strongly advised to coordinate with WMO on the timely availability of these documents before the applicability date of 7 November 2007. If this could not be achieved, a (partial) postponement or a transitional period for the changes to the code form, proposed in the above mentioned templates, should be considered.

New Zealand

It is pleasing to see that the proposed changes continue to reflect the concerted efforts of States to maintain pragmatic Standards and Procedures in the meteorological field.

Nigeria

We wish to commend the Air Navigation Commission for the extensive work done.

Singapore

We view these proposed amendments as contributing to greater efficiency of international air navigation as well as flight safety by the timely provision of operational meteorological information such as OPMET and SIGMET, world area forecasts, wind shear alerts, advisories on tropical cyclones and volcanic activities, and others.

ACTION PROPOSED

Agree that the Secretariat, with the assistance of the AMOSSG align guidance in Attachment B related to operationally desirable accuracy of forecasts to the TAF amendment criteria.

REFERENCE: Annex 3, Attachment D
(Note. — The above provision is not subject to an amendment proposal)

STATES' AND INTERNATIONAL ORGANIZATIONS' COMMENTS

Belgium

Another inconsistency still exists and can be found in the current Annex 3 Attachment D, in the cloud column: Base ≤ 1 500 m (5 000 ft) while in Chapter 1 the definition of "Clouds of operational significance" says: < (below) 1 500 m (5 000 ft).

SECRETARIAT'S COMMENTS

The comment by **Belgium** is supported.

ACTION PROPOSED

In Attachment D (to be renumbered Attachment C):
1. *replace* "Base ≤" to read "Base <"; and
2. *add* a row after "Base ...." as follows: "1 500 m (5 000 ft) ≤ Base ≤ 3 000 m (10 000 ft) 300 m (1 000 ft)" .

REFERENCE: Page B-4, Annex 15, Appendix 6

STATES' AND INTERNATIONAL ORGANIZATIONS' COMMENTS

Czech Republic

States would be allowed to issue NOTAMR and NOTAMC with a future effective date. In many cases with a future effective date, the validity of the NOTAM to be replaced will not be clear for the period between the receipt of the NOTAMR or NOTAMC and the effective date in item B of the NOTAMR and NOTAMC.

Aeronautical Information Service of the Czech Republic has no problem with the technical aspect of this proposal. AIS CR is capable to keep NOTAMR and NOTAMC with a future effective date but from the operational point of view it seems to be inconvenient.

Finland

Finland disagrees with the proposal because the proposed method would be a retrograde step as it would complicate the present NOTAM handling process. It would cause confusion, create misunderstanding and compromise the integrity of the published information.

Rational behind the comment:

Changing present procedures would induce potential confusion and additional costs associated with system notification.

The current practice is not to cancel and replace with immediate effect on receipt of a NOTAMC and of a NOTAMR respectively. Changing the Standard to allow NOTAMR with future date in Item B) to mean that the NOTAM replacement is not done immediately but is to be done in a future date/time would create a problem. When subsequent changes take place it will result in the need to replace or cancel several NOTAM, not just the original but also the NOTAMR or NOTAMC previously issued with a future pending date/time. Users would be required to cross refer several NOTAM in order to ascertain a clear and precise situation. Furthermore, it would be difficult for the issuing NOF to track active/valid NOTAM and produce NOTAM checklists. This could cause misunderstandings that could lead, in worst case scenario, to safety incidents.

France
(Note.— See appropriate partial language version of this AN-WP for original text.)

The elimination of the last sentence of Annex 15 Appendix 6, paragraph 5, item B is not advisable. The acceptance of the proposal would constitute a step backwards by complicating the current procedure for the completion of the NOTAM format. This could cause confusion and generate interpretation errors which could affect integrity.

Germany

The implementation of an anticipated date of entry into force — or in fact the re-implementation of this procedure, which was discontinued years ago for safety reasons — re-introduces ambiguities and unacceptable safety gaps in global NOTAM creation and processing, severely degrading data integrity.

In the case of NOTAMR the ambiguity arises whether the original NOTAM(N) shall be retained until the new NOTAMR takes over, or if the original NOTAM(N) shall be discarded upon receipt of the NOTAM(R). It can be anticipated that world-wide adoption of the procedure by all States will be a lengthy process and in the transition period both versions of Item B) handling will be applied by different States. In the worst case safety related information will not be available to pilots! This ambiguity could be easily avoided by the appropriate procedure of canceling the original NOTAM and issuing a fresh NOTAM(N), containing the correct end date in Item C).

The proposed procedure supports only States, issuing an extremely high yearly amount of NOTAM in one single NOTAM series, thereby running out of available NOTAM numbers (max. 9999 p. a) already early in the year. These (few) States however could easily split the NOTAM amount into different NOTAM series.

A NOTAMC with an anticipated date of entry into force can be considered obsolete anyway. Procedure-wise and for the benefit of end users a NOTAM(R), containing in item C) the correct end-date for the validity of the information seems far more appropriate.

Japan

NOTAMC
In the case of NOTAMC, the date-time group in Item B) should be the actual origination date-time of NOTAMC.

If a future date-time in Item B) of NOTAMC is allowed, it is considered there will be potentially a few problems.

1. The NOTAMC which is set the future date in Item B in order to cancel a NOTAM in the future may be possible. But both NOTAMC and the previous NOTAM exist until the previous NOTAM is cancelled at the future date-time in Item B) of NOTAMC, as a result users need to check both NOTAMs to realize the matters exactly. Things like that would possibly confuse users.

2. Any change to the NOTAMC which is set the future date in Item B would not be possible since neither a NOTAMR nor a NOTAMC can be issued to replace or cancel the NOTAMC.

3. The announcement of a future cancellation of a NOTAM can be achieved by issuing a NOTAMR with Item C) equal to the future date of end of validity.

On the basis of the above, a future date-time in Item B) of NOTAMC should not be allowed.

NOTAMR
In the case of NOTAMR, the date-time group in Item B) should be the actual origination date-time of NOTAMR.

Item B) after a NOTAMR origination (future date in Item B) could be interpreted in two ways. The two ways of interpretation would possibly make the difference of interpretation between NOTAM Offices.

1. The first way of interpretation is that the NOTAMR would enter into force in the future and therefore, the NOTAM to be replaced would remain valid until such time would be reached.

   In this case, both NOTAMR and the previous NOTAM exist until the previous NOTAM is replaced at the future date-time in item B) of NOTAMR, as a result users need to check both NOTAMs to realize the matters exactly. Things like that would possibly confuse users.

2. The second way of interpretation is that the NOTAM to be replaced would be replaced immediately by NOTAMR and such a NOTAMR would enter into force in the future.

In order to avoid misinterpretation, the rule to avoid future dates is the preferred way.

Norway

Norway would like to suggest that the proposed amendment is cancelled, as we conclude that this change would increase the likelihood that valid NOTAMs are unintentionally replaced or cancelled. The

proposed amendment would also induce economic consequences related to technical issues, in particular automatic briefing systems and decoding to bulletin presentation.

Slovakia

Analysis:

1. Automated system impact:

The NOTAM office of the Slovak Republic uses for NOTAM provision automated system designed to cover all the requirements of ICAO and EUROCONTROL for NOTAM provision. Therefore, any changes in procedures for NOTAM provision presented by ICAO have to be implemented to the system before they come into force. Nowadays, system does not allow, as probably most of the automated systems used around the world, publication of a NOTAMR or NOTAMC with future validity. Allowing it would cause a significant change to the existing system concerning not only for a publication of NOTAM, but also of NOTAM maintenance (NOTAM database, CHECKLIST) and PIB preparation. However, an attribute do not allow a publication of NOTAMR and NOTAMC with future validity was one of the most important requirements when the system was in the preparation phase and its cancellation would mean a step backwards.

2. Possible misunderstandings or confusion:

A publication of NOTAMR or NOTAMC with future validity could lead to a various unclear situations for originating subject so as for users.

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For example:

a) Publishing a NOTAMR with future validity could mean that existing NOTAM is still valid and will be changed in the future, but it also could mean that existing NOTAM is cancelled immediately after NOTAMR is published and NOTAMR will come into force according to its item B).

b) When NOTAMR or NOTAMC (replacing or cancelling NOTAM AXXXX/06) with future validity would be already published and there would be a sudden operational need to replace NOTAM AXXXX/06 sooner, it would mean to publish 2 different NOTAMR or NOTAMC for the same *NOTAM,* which would be especially in the case of NOTAMC very confusing.

3. Operational experience and current practice:

According to operational experience at the NOTAM office of the Slovak Republic all possible occasions concerning the announcement of the future cancellation or future replacement of a NOTAM could be solved when using current practice, and there is no operational need to change it, thus, to allow publication of NOTAMR or NOTAMC with future validity.

Conclusion:

When taking into consideration system impact, an increase of possible misunderstandings and current practice we recommend not to amend current NOTAM Format in Appendix 6 of Annex 15 and to not allow publication of NOTAMR and NOTAMC with future validity.

Sweden

Sweden supports the important work done by IAVWOPSG to improve the flight safety concerning volcanic ash. However, Sweden cannot agree with the proposed change to the NOTAM format. It will cause problems to the established NOTAM system, e.g. how to interpret and handle a NOTAM which will be cancelled or replaced in the future, to issue NOTAM checklists and will result in a need for modifications in the technical systems which is not necessarily economically justified. It is possible today within the NOTAM system to achieve required replacements and cancellations.

Switzerland

The content of this paragraph shall be kept in the former version as follows:

"For date-time group use a ten-figure group, giving year, month, day, hours and minutes in UTC. This entry is the date-time at which the NOTAMN comes into force. In the cases of NOTAMR and NOTAMC, the date-time group is the actual date and time of the NOTAM origination."

Reason

Past and present experience shows that the application of NOTAMR and NOTAMC containing an item B in the future is often subject to query or cause of misinterpretation regarding the validity of the NOTAM to be replaced or cancelled.

Example:
Original messages received on 06 MAY 15
151447 OAKBYNYX
A0574/06 NOTAMN
Q) OAKX/QXXXX/IV/NBO/A/000/999
A)OAKN B)0605151446 C) 0608152359
E) RUNWAY AVAILABILITY IS 5100FT X 9OFT DUE TO RUNWAY DAMAGE AND REPAIR ABEAM TAXIWAY CHARLIE. FOR EMERGENCY AND DIVERT FIGHTER TYPE AIR CRAFT RUNWAY AVAILABILITY IS 7230FT X 45FT ON NORTH SIDE OF RUNWAY.

Following NOTAM received later
151527 OAKBYNYX
(A0575/06 NOTAMR A0574/06
Q) OAKX/QXXXX/IV/NBO/A/000/999
A)OAKN B)0605161000 C)0605162000
E) RUNWAY AVAILABILITY IS 5100FT X 9OFT DUE TO RUNWAY DAMAGE AND REPAIR ABEAM TAXIWAY CHARLIE. FOR EMERGENCY AND DIVERT FIGHTER TYPE AIRCRAFT RUNWAY AVAILABILITY IS 7230FT X 45FT ON NORTH SIDE OF RUNWAY.

Upon receipt of a NOTAMR with Item B in the future it is never entirely clear if the old NOTAM is cancelled on receipt or if it is to remain valid until the new NOTAM comes into force. The receiving NOF has to compare the messages in detail to find out if NOTAM A0574/06 can be cancelled immediately or if it is valid up to the effective date of the new NOTAM A0575/06. As no changes to the text can be detected in this example, it can be assumed that A0574/06 can be cancelled with immediate effect.

If the text had also been changed, there would not have been a chance to guess with certainty what the intention of the originator had been as there would have been two options: Cancelling the first NOTAM upon receipt or keeping it until the new NOTAM comes into force.

State letter AN 10/1-06/02, page 6, paragraph 10 states that the proposal was mainly based on the argument that NOTAMR or NOTAMC sometimes have to be withheld to be compliant to the current Annex 15 and thus preventing users from knowing about the changes at an earlier date.

We do not fully agree with this statement as the mentioned problem can be solved by applying a different method, which is not only compliant to the existing Annex 15 but also safer as misinterpretations can be prevented. Furthermore, as NOTAMR/C without Item B in the future are unambiguous, they can be processed automatically without concern.

Instead of retaining NOTAMR/C we recommend to apply the following procedures:

Procedure 1: NOTAMR directly followed by a NOTAMN

Example 1/situation changes earlier than expected:
Date today: 19 May. Text of the existing NOTAM: "RWY 16 DTHR 500M,..."
The NOTAM is already in force on 19 May according to Item B.
New information received today (19 May) with following content:
From 25 May for about 2 weeks DTHR reduced to 350M only.
Changes to be published as follows on 19 May:
Step 1: NOTAMR replacing existing NOTAM. Details of NOTAMR are as follows:
ITEM B: 0605191014 (current date/time), ITEM C: 0605242359,
ITEM E: "RWY 16 DTHR 500M..."
Step 2: NOTAMN as follows:
ITEM B: 0605250000, ITEM C: 0606082359 EST, ITEM E: "RWY 16 DTHR 350M,..."

Example 2/situation is back to normal earlier than expected:
Date today: 19 May. Text of existing NOTAM: "RWY 16 DTHR 500M,..."
New information received today (19 May) with following content:
New activation of D6: June 05-07 instead of May 28-30, same times.
Changes to be published as follows on 19 May:
Step 1: NOTAMC cancelling existing NOTAM:
ITEM B: 0605191014 (current date/time), ITEM C: NIL
ITEM E: "D-AREA ACT cancelled" or any other appropriate text
Step 2: NOTAMN as follows:
ITEM B: 0606050800, ITEM C: 0506071600, ITEM E: "D-AREA LS-D6 ACT"

Example 4a/NOTAM containing Iitem D
Date today: 19 May (NOTAM valid but not in force according to item D).
Item B of existing NOTAM: 0505010800, Item C: 0505311600,
Item D: 01-03 08-11 15-17 22-24 29-31 0800-1600, item E: "D-AREA LS-D6 ACT."
New information received today (19 May) with following content:
D6 not active on 22-24 May, other days as published
Changes to be published as follows on 19 May:
Step 1: NOTAMC cancelling existing NOTAM:
ITEM B: 0605191014 (current date/time), ITEM C: NIL
ITEM E: "D-AREA ACT changed, new NOTAM to follow" or any other appropriate text
Step 2: NOTAMN as follows:
ITEM B: 0605290800, ITEM C: 0505311600, ITEM E: "D-AREA LS-D6 ACT"

Example 4b/NOTAM containing Item D/same situation as in example 4a but the new information is received on May 17 between 0800 and 1600 instead of May 19. (NOTAM to be re-placed is valid and in force upon receipt of the new activation days). As in this case, the NOTAM is not only valid but also in force according to item D, it can be replaced with immediate effect. Procedure 1 can be applied. NOTAMR published on May 17 reads as follows:
Item B: current date and time, item C: 0605311600
Item D: 17 1115-1600 29-31 0800-1600, Item E: D-AREA LS-D6 ACT.
Remark: the beginning of the activation time in Item D for 17 May corresponds to the time in item B and to the date and time of the date-time-group in the origin.

Example 4c /NOTAM containing Item D/activation is cancelled with immediate effect for the current day only
Date today: 17 May (NOTAM is valid and in force, too)
Item B of existing NOTAM: 0505010800, Item C: 0505311600,
Item D: 01-03 08-11 15-17 22-24 29-31 0800-1600, Item E: "D-AREA LS-D6 ACT."
New information received on 17 May at 1000 with following content:
D6 activation finished for today, other dates as published.
Changes to be published as follows on 17 May:
Step 1: NOTAMC cancelling existing NOTAM:
ITEM B: 0605171000 (current date/time),
ITEM C: NIL
ITEM E: "D-AREA deactivated" or any other appropriate text
Step 2: NOTAMN as follows:
Item B: 0505220800, Item C: 0505311600,
Item D: 22-24 29-31 0800-1600, Item E: "D-AREA LS-D6 ACT."

Remark

The OPADD Focus Group made a Position Paper dated 28th April 2006 (enclosed as a pdf-file) to this subject with a conclusion, which skyguide fully supports[1].

United Kingdom

The removal of the last sentence would allow the use of NOTAMR and NOTAMC with a future effective date. This proposal goes against the ICAO General Specification of "one subject, one condition". In turn this would leave room for a potential flood of NOTAM related to one subject. The impact would be that users would be required to sift through more NOTAM in order to build up the required picture and which would be an additional burden.

NOTAM publishers and data houses would experience difficulty in tracking active and valid NOTAM. The cancellation of one NOTAM, in a string of related NOTAM, would result in the requirement to cancel several more within the string. Further development work would be required by NOF and other users to ensure that their systems were able to manage this scenario and continue to ensure the integrity of a PIB. This work would of course have a cost implication.

The United Kingdom does not support the removal of the final sentence as proposed in the amendment.

[1] Available in the MET Section.

EUROCONTROL

The following text to be removed "In the cases of NOTAMR and NOTAMC, the date time group is the actual date and time of the NOTAM origination."

Impact

States would e allowed to issue NOTAMR and NOTAMC with a future effective date. States may need to change their current NOTAM system to adhere to the new rule. In many cases with a future effective date, the validity of the NOTAM to be replaced will not be clear for the period between the receipt of the NOTAMR or NOTAMC and the effective date in Item B of the NOTAMR or NOTAMC.

Analysis

How to interpret a NOTAMC with any entry into force (Item b) not being equal to the actual date and time of the NOTAM origination?

Item B) after the NOTAMC origination (future date in Item B) would mean an announcement that a NOTAM will be cancelled in the future. Receiving systems would need to keep the NOTAM to be cancelled until the time of applicability before effecting the cancellation. Any correction to this NOTAMC would not be possible since neither a NOTAMR nor a NOTAMC can be issued to replace or cancel a NOTAMC. For example, if for any reason, after the issue of NOTAMC with a future date in Item B), but before this future data is reached, the NOTAM would need to be cancelled immediately this would create two NOTAMs with diverging information for the same subject.

Item B) before the NOTAMC origination would mean retro-active cancellation of a NOTAM. It is important to state explicitly that this is not allowed.

How to interpret a NOTAMR with an entry into force (Item B) not being equal to the actual date and time of the NOTAM origination?

Item B) after the NOTAMR origination (future date in Item B) could be interpreted in two ways. The first way of interpretation is that the NOTAMR would enter into force in the future and therefore, the NOTAM to be replaced would remain valid until such time would be reached.

In theory, a second way of interpretation may be that the NOTAM to be replaced would be replaced immediately (and therefore would cease to be valid immediately) and that the replacement NOTAM would enter into force in the future.

If future dates were to be used in Item B) of a NOTAMR, it would be important to state explicitly that the original NOTAM is to be replaced immediately. The proposed amendment of ICAO Annex 15 does not specify this rule explicitly, this will lead to misunderstandings.

Item B) before the NOTAMR origination would mean retro-active replacement of a NOTAM. It is important to state explicitly that this is not allowed.

System Changes

Receiving systems may need to be changed in order to keep a NOTAM to be cancelled until the future date mentioned in Item B) of the NOTAMC will be reached.

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Receiving systems may need to be changed if a NOTAMR with a future date in Item B) does not replace immediately the NOTAM to be replaced.

Briefing Systems may need to be changed in order to provide a NOTAM to be cancelled. The PIB, in the worst case (i.e. in an overlapping time window) would show both NOTAM, which will be confusing for the users.

Recommendation

Procedures for announcing the future replacement of a NOTAM

The announcement of a future replacement of a NOTAM in a period when this NOTAM is active can be done by issuing two NOTAM.

One NOTAMR of this NOTAM with:

— identical items for Q, A, E, D, F and G (if appropriate) but with item B = origination date/time;
— item C: date/time until the situation according to the NOTAM remains unchanged

And one NOTAMN with:

— item B: according to item C of the NOTAMR = start of the changes.

The announcement of a future replacement of a NOTAM in a period when this NOTAM is not active or is not yet in force can be done by issuing a NOTAMC of this NOTAM immediately followed by a NOTAMN with an Item B) in the future.

Conclusion

Current procedures can be applied by a NOTAM Office, without changing the Standard, for issuing in advance information about a new end of validity of a NOTAM or for issuing in advance information about replacement in the future of a NOTAM. The procedures described in this paper do not force the NOTAM office to withhold from distribution the new NOTAM until the date-time the change comes into force. Changing these procedures would induce potential confusion and additional costs associated with system notification.

The current practice is to cancel and replace with immediate effect on receipt of a NOTAMC and of a NOTAMR respectively. Changing the Standard to allow NOTAMR with future date in Item B) to mean that the NOTAM replacement is not done immediately but is to be done in a future date/time would create a problem. When subsequent changes take place it will result in the need to replace or cancel several NOTAM, not just the original but also the NOTAMR or NOTAMC previously issued with a future pending date/time. Users would be required to cross refer several NOTAM in order to ascertain a clear and precise situation.

Furthermore, it would be difficult for the issuing NOF to track active/valid NOTAM and produce NOTAM checklists. This could cause misunderstandings that could lead, in worst case scenario, to safety incidents.

The removal of the final sentence in Appendix 6, paragraph 5 Item B of Annex 15 is not recommended. Acceptance of this proposal will be a retrograde step as it will complicate the

present NOTAM handling process. It will cause confusion, create misunderstanding and has the potential to compromise the integrity of the published information

SECRETARIAT'S COMMENTS

Besides fifty-three "agreement without comment" replies, comments were received from ten States and one International organization and several of the replies suggested that the existing provisions in Annex 15, Appendix 6, NOTAM Format, Item B), should remain unchanged. **Finland**, **Germany**, **Japan**, **Slovakia**, **Switzerland** and **EUROCONTROL** provided examples and in depth analysis in support of their suggested action to keep the status quo. In addition, **Finland** and **Germany** pointed to potential safety issue if the proposed change is re-introduced in Annex 15 while **Czech Republic** although commenting that States should be allowed to issue NOTAMR and NOTAMC with a future effective date in Item B), indicated that from the operational point of view this would be inconvenient. **France**, **Japan** and **Slovakia** pointed out that the proposed change may potentially create confusion while the **United Kingdom** stressed that this could lead into a potential flood of NOTAM information that would leave users with the uncertainty as to what is valid information and from when.

Finland, **Norway**, **Slovakia** and **Sweden** indicated that the proposed change would have impact on the existing NOTAM systems and that modifications to those systems would have financial implications.

It should be recalled that the Air Navigation Commission (AN 168-8) when it reviewed the AN-WP/8012 concerning the approval of an executive summary for a new task and the preliminary review of a proposal to amend Annex 15 submitted by the Secretariat, agreed that there was a need for a new ANC Task No. AIS-0501. The objective of the task was to develop amendment to the NOTAM Format to allow for the insertion of an anticipated date of entry into force in Item B) for NOTAMR and NOTAMC. This was initiated on the basis of comments received from a few States on the adopted new provision in Annex 15, with applicability date 27 November 2003, that would require inclusion of date of origination of NOTAMR and NOTAMC in Item B). In the mean time **Canada** filed the difference to ICAO Council on Annex 15, Item B).

From the replies received, a strong support of the proposed change to Annex 15, Item B) of the NOTAM Format is evident and only States that were the originators of the change made in 2003 together with **EUROCONTROL** are opposing the proposed change that is nothing else but a restoration of the provision that existed in Annex 15 until 2004. The Secretariat supports the proposed change as it is less restrictive then the existing Annex 15 provision and it allows those States that would want to use in Item B) date of NOTAMC or NOTAMR origination, could do that without problem. In the NOTAM systems, when a NOTAMC or NOTAMR with the future effective date is received, the system should be programmed in such a manner to be able to store it and keep it inactive until such time when the information in the NOTAM becomes effective.

ACTION PROPOSED

No change.

AITF TASK LIST

(Last updated February 2007)

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
1.	Consider a standard model for the electronic exchange of aeronautical information.	Immediate	Task Force		APANPIRG/17 (August 2006) supported the conclusions and recommendations of the AIS Congress (June 2006, Madrid) and, to promote the development and implementation of data system that provide timely, accurate and high integrity data, adopted Conclusion 17/14.
2.	Draft an improvement plan to address the deficiencies in the AIS field	Immediate	Work Group, Australia		
3.	Investigate the differences between EUROCONTROL OPADD (Operating Procedures for AIS Dynamic Data) and the current Asia/Pacific Region OPADD	Immediate	Work Group, Japan		
4.	Endorse the work of the AIS Operations Subgroup of Eurocontrol and adopt the Second Edition of the Asia/Pacific OPADD.	AITF/3	Task Force		Regional differences are an obstacle to global harmonisation and should be discouraged.
5.	Reinforce to States the critical safety nature of AIS and adherence to Annex 15 provisions, in particular those relating to AIRAC, as well as the need to ensure accurate and timely publication of AIS data.	Immediate	ICAO, All States		APANPIRG/17 (August 2006) agreed that the text of Conclusion 14/9 continued to adequately describe the long standing regional concerns in this respect and should be further promulgated. The meeting elected to adopt Conclusion 17/17, incorporating and superseding Conclusion 14/9.

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
6.	Consider how best to relay via APANPIRG to the Conference of the Director Generals of Civil Aviation (DGCA) of the importance of adhering to the AIRAC cycles.	44th meeting of the Conference of the DGCA (October 2007)	Chairman		

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