



*International Civil Aviation Organization*

**The Seventh Meeting of the Asia/Pacific Aeronautical Information Services –  
Aeronautical Information Management Implementation Task Force  
(AAITF/7)**

Ha Noi, Viet Nam, 13 – 16 March 2012

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**Agenda Item 2: Review Outcomes of Related Meetings**

**ICAO AIS-AIMSG PROGRESS**

(Presented by the United States of America)

**SUMMARY**

This paper presents a summary of the results of the Fifth Meeting of the ICAO AIS-AIMSG and related comments concerning the activities of the ICAO AIS-AIMSG Ad-hoc Group on AIM Development and the Ad-hoc Group on Aeronautical Charting.

This paper relates to –

**Strategic Objectives:**

A: *Safety* – *Enhance global civil aviation safety*

**Global Plan Initiatives:**

GPI-18 Aeronautical information

**1. INTRODUCTION**

1.1 The fifth meeting of the Aeronautical Information Services-Aeronautical Information Management Study Group (AIS-AIMSG/5) was held at the International Civil Aviation Organization (ICAO) Headquarters in Montréal, Canada, from 7 to 11 November 2011.

1.2 The full AIS-AIMSG/5 Summary of Discussions and the supporting study notes (SNs), information papers (IPs) and presentations are under the AIS-AIMSG web page for meetings: <http://www2.icao.int/en/ais-aimsg/Lists/Meetings/AllItems.aspx>

1.3 The AIS-AIMSG Ad-hoc Group on AIM Development was held at the EUROCONTROL Headquarters, Rue de la Fusée 96, B-1130 Brussels, Belgium 13-15 February 2012.

1.4 The AIS-AIMSG Ad-hoc Group on Aeronautical Charting was held at the EUROCONTROL Headquarters, Rue de la Fusée 96, B-1130 Brussels, Belgium 16-17 February 2012.

1.5 This paper is a summary of the results of the AIS-AIMSG/5 meeting with some added comments concerning the follow-on activities of the AIS-AIMSG Ad-hoc Group on AIM Development and the Ad-hoc Group on Aeronautical Charting.

## **2. DISCUSSION AND COMMENTS ON THE AIS-AIMSG/5 AGENDA ITEMS**

### **2.1 AGENDA ITEM 1: DEVELOPMENT AND IMPLEMENTATION OF AIS-AIM TRANSITION**

#### **2.1.1 AGENDA ITEM 1.1: DEVELOPMENT OF ANNEX 15 AMENDMENT 37**

2.1.1.1 AIS-AIMSG/5-SN/2 reported on the outcome of the work of the ad-hoc group on AIM development concerning Amendment 37. The draft amendment introduced a significant change to Chapters 1, 2, and 3 of Annex 15 which was designed to improve the alignment with other annexes as well as providing a better format for defining the division of responsibilities roles and functions applicable to the State and AIM organization. Additionally, the reworked Chapter 3 provided an improved introduction to AIM related provisions in a more consistent manner.

2.1.1.2 The group held considerable discussion about amendment to the definition “AIS Product”, deliberating whether it should include both *products* and *form* (ie. paper, electronic, or digital) . While a proposal for a different definition was discussed, the group concluded that it would be better to propose a definition that has a general description and is concentrated on the form.

2.1.1.3 There was also confusion concerning the note attached to the definition of “Area Navigation”. The Secretary agreed to investigate the usage of the definition of “area navigation” in other ICAO documents and coordinate within the Secretariat with respect to the intent behind the included note.

2.1.1.4 It was identified that the current Annex 15 definitions of “Validation” and “Verification” are sourced from International Organization for Standardization (ISO) definitions with no additional guidance on the applicability of the definitions as they pertain to AIS/AIM. Several definition proposals were discussed but no agreement could be reached. It was therefore decided to defer this to the Amendment 38 discussions. It was further noted that the discussion would benefit from material that could be made available as a result of the work on Aeronautical Data Quality being carried on in Europe.

2.1.1.5 There was discussion concerning the proposed provisions on arrangements between data originators and AIS. It was considered necessary to specify an overarching requirement for States to develop a framework that specified the obligations of data originators and allowed for AIS/AIM units to receive information that met the operational needs of the users of AIM data and information. The Group was able to come to agreement on the necessary text to be included in the draft Amendment 37.

2.1.1.6 The current Annex 15, paragraph 3.1.7 was discussed at length, in particular the need to retain the functional description of “and/or originate” in the list of AIS functions. The Secretary explained to the group that the provision was directive and not permissive in defining the functional responsibilities of AIS. Moreover, for the element in question, the outcome of a logical combination using the expression “shall receive and/or originate” created the obligation to at least receive and if not then there would be an obligation to “originate”. The Secretary notified the group that this would be the explanation from the Secretariat when asked for interpretation and that this could have the unintended consequence of creating an obligation to survey for ANS feature data and information in a circumstance where a facility or service refused to forward information. The Secretary relayed to the group that this particular provision had been the cause of confusion in a number of circumstances in defining the scope of the minimal AIS required functions. The group agreed that additional work was required. An ad-hoc group was formed and tasked to investigate the scope of AIM functions and the best way to describe them in a report at the AIS-AIMSG/6 meeting, scheduled for 21-25 May 2012 in Buenos Aires, Argentina.

2.1.1.7 A decision was made for some proposals deemed to have larger conceptual changes and greater potential for impact to be postponed to Amendment 38. In doing this, it was noted that there would be an opportunity to get a wider consensus from States at the MET/AIM divisional meeting planned for 2014. Other proposals requiring further study that included data protection provisions, references to charting and database resolutions, scalability of accuracies, and the use of the same source for a range of products and uses were deferred to Amendment 38.

2.1.1.8 The group observed that throughout Annex 15, the word “printed” would need to be re-evaluated to see if it is still relevant considering that the Integrated Aeronautical Information Package (IAIP) now includes electronic and digital publications. The Secretariat undertook to systematically scan the usage of the words “form”, “formats” and “media” and adjust them where necessary.

2.1.1.9 The group examined the existing provisions related to “copyright” and “cost recovery” and debated whether to modify them to recognise the expanded role of AIS/AIM with the addition of “data sets”. The group was informed by the Secretary that the provisions were added subsequent to recommendations from the AIS/MAP Divisional Meeting held in 1998. It was noted that the whole issue of copyright, cost recovery and other elements of AIM intellectual property is receiving increasing attention worldwide and requires a level of expertise that is not present in the study group. In consideration of the work reported under Agenda Item 7, recognising the sensitivity of the subject, and the need to potentially defer to other stakeholder and expert groups, the consensus reached was that no changes should be considered for the provisions related to cost recovery and copyright for amendment 37.

2.1.1.10 The group noted that the current provisions in Section 8.3 may not adequately meet an operational need and are likely otherwise to be in need of a review since the indicated roles and responsibilities are not clear. It was observed that in order to provide the intended clarity it would be necessary to be specific about roles and responsibilities. It was further noted that the reorganization of Chapters 1, 2, and 3 was intended in part to be able to concentrate the division of intended roles and responsibilities between State sovereign functions and AIS organization functions in Chapter 2. In discussing ways to improve Section 8.3, the group noted that there were still other sections in the annex where specific assignments of provisions were still made. The group concluded that a wider scan of the whole Annex 15 will still need to be done to ensure that all roles and responsibilities are concentrated in Chapter 2 and that this will be accomplished with the further re-structuring to be done in Amendment 38.

2.1.1.11 The group decided that the new provisions on data modeling and data exchange would be a Recommendation in order to encourage States in their implementation and with the view to elevate them to a Standard in Amendment 38.

2.1.1.12 The completed Amendment 37 proposal is contained in Appendix D to the AIS-AIMSG/5 summary of discussion online. The Secretary will make some refinements to the text in accordance with the AIS-AIMSG/5 meeting discussions and ICAO editorial practice.

## **2.1.2 AGENDA ITEM 1.2: DEVELOPMENT OF ANNEX 15, AMENDMENT 38 AND PANS-AIM**

2.1.2.1 The meeting recalled Action agreed 4/1 from AIS-AIMSG/4 which tasked the ad-hoc group on AIM development to draft a PANS-AIM document as a concurrent activity with Amendment 38 development and during the development of provisions, consider their appropriate placement in either Annex 15 or the developing PANS-AIM.

2.1.2.2 The meeting was provided with AIS-AIMSG/5-SN/3 which presented the culmination of the work thus far completed. The study note outlined a proposed document structure for Annex 15 after Amendment 37 and a coordinated outline for the new PANS-AIM document as well as a timeline for Amendments 4 and 5 to Doc 8126.

2.1.2.3 The meeting acknowledged that the need for a PANS-AIM document has now been widely acknowledged and that it would fill a vital role in standardizing procedures and processes in the ongoing evolution to a net-centric, service oriented AIM. Further, it was recognised that it would be desirable for the development of PANS-AIM to be aligned with the development of other emerging PANS documents such as PANS-MET and PANS-AGA (Aerodrome and Ground Aids).

2.1.2.4 The existing ad-hoc group on AIM Development was tasked to continue the development of Amendment 38 and concurrent development of PANS-AIM in accordance with the objectives and principles of the AIM Operational Concept as it becomes available. The ad-hoc group met in Brussels 13-15 February 2012 and began preliminary work which resulted in the following:

a) A list of items tabled from Amendment 37 and new items that require study was prepared and discussed. Members were invited to add additional items determined to need consideration.

b) The initial draft of the AIM Operational Concept was presented and discussed. The goal of the concept paper was to ask the right questions during an in-depth study of the issues; provide an understanding of the environment in the transition to AIM; and provide a vision for the way toward System Wide Information Management (SWIM). It was recognized that the draft was a visionary document versus a complete operational concept. The members were invited to make an input to further develop the draft.

c) The group observed that the current Roadmap for the Transition from AIS to AIM will be updated based on the operational concept and on the outcomes of the 12<sup>th</sup> Air Navigation Conference (12<sup>th</sup> AN-Conf) to be held in November 2012. Roadmaps are being prepared to support the Aviation System Block Upgrades (ASBUs) to be reviewed by the 12<sup>th</sup> AN-Conf. Once approved, the roadmaps will become a part of the Global Air Navigation Plan (GANP).

d) The group discussed the need to further update Annex 15 in Amendment 38, particularly Chapters 4-11 and the Appendices. The revision would involve the provision of the required performance requirements in Annex 15, the move of existing procedures, processes and protocols from Annex 15 to PANS-AIM and the development of new materials for the PANS-AIM as needed.

e) The question arose as to exactly what AIM products and services are to be provided? The need to provide for the temporality of information for all phases of flight was considered as well as the inventory of the ATM information requirements. But how about user requirements/expectations in the provision of data and products? Reference was made to a recent airspace user's forum. Large airlines and data houses reported that they just want the data. However, smaller operators and other users wanted a visual display, i.e. electronic, digital or paper. This leads to a requirement for both digital data and visual products.

f) For the long term, the group considered the need to simplify the current range of products which currently include the AIP and its amendments, AIP Supplement, AIC, NOTAM and PIB.

g) The utility of the AIP content and its supporting documents require further evaluation. However, to begin the evaluation, the group recognized that the AIP is the official repository of a State's aeronautical information that includes broad content from rules and procedures to airspace, to airport and other infrastructure information. The range of products could be simplified by first identifying the information that may be provided in digital format to be considered as the "data scope". The remaining text, such as for the rules and procedures could be provided in a document that could be temporarily referred to as a "rules book" in the initial development of Amendment 38. It was also considered that a minimum set of charts should continue to be provided for ease in the visual portrayal of the information that they provide.

h) The group also recognized the need to address temporality and the timely distribution of aeronautical information and aeronautical data. The user requirements at each phase of flight will differ. To support the flight planning phase the use of AIRAC is expected to continue in the long term to ensure timely receipt by users in the data chain to update their systems, especially in the event of major changes. Even so, as digital data becomes more available and more accessible by way of improved data exchange (XML) processes and delivery methods (i.e. improved data bandwidth) there may be instances where the AIRAC cycle may be reduced down to 7 days or eliminated where practical. Finally, the need for the PIB was questioned, especially if the data will be available for the end user to extract as needed for a particular phase of flight. The group considered that the PIB will continue to be needed in the short term and the processes for providing the PIB could be included in the PANS-AIM document.

i) The range of AIS services in the form of the current products are expected to be reduced or simplified over time as digital data becomes more fully available. Digital data services will increase while new products such as the "rules book" and charts are provided as the minimum set of AIM products required. The group noted that user requirements will need to be better understood. For example, is a Type A Obstacle Chart required if the obstacle data sets are readily available? Is it necessary to provide predefined data services for the provision of say AMDB data or are the current industry standards sufficient whereby users can set their own query to obtain the data required?

j) The group determined that SARPS for the evolution of AIM from information products toward a data-centric approach should be provided in Amendment 38 with expected updates in Amendments 39 and 40. The group decided to reorganize chapters 4-11 into three new chapters (4 Data and information scope; 5 Temporality and distribution; and 6 Services). In general, performance requirements will be drawn from the current sources of content as in Annex 15 and Doc 8126 while rules, procedures and protocols will be transferred to the new PANS-AIM document.

k) The group plans to present the initial rough draft of Amendment 38 to the AIS-AIMSG/6 meeting in May 2012.

### 2.1.3 **AGENDA ITEM 1.3: GLOBAL AIM OPERATIONAL CONCEPT AND ROADMAP**

2.1.3.1 The initial results of the work being conducted by the Secretariat to develop an AIM Operational Concept were discussed. The AIM Operational Concept is intended to give a forward view of the benefits to be expected as well as the operating features of future AIS/AIM services that had fully transitioned to a net-centric, service oriented operating methodology fully integrated with other information domains in a SWIM environment. The concept would serve as an objective for roadmap development and guide the development of future changes to ICAO provisions as well as provide a target for future system and service development. In consideration of this, the group was encouraged to think of the nature of AIS/AIM services that should be provided to meet the needs of the greater air traffic management (ATM) community 3, 6, 9, and 15 years into the future.

2.1.3.2 The group acknowledged that the development of the AIM operational concept was of considerable importance and value, and observed that the lack of a concept coordinated with other ATM developments, in particular SWIM concepts, was a significant impediment to allowing the development of AIM provisions.

2.1.3.3 The proposed document chapters were discussed and some were represented in a presentation by a diagram for the purpose of triggering discussion and to gather feedback from the group. For example, a diagram was presented showing the different members of the ATM user community. Controllers, pilots and dispatchers in particular (referred to as the AIM actors), are directly affected by the transition to AIM since they interface with AIM information in an operational context. Another slide addressed the various information domains that AIM has to interoperate and interface with, e.g., meteorology, flight and flow, surveillance and other information domains, and how the focus changes depending on one's individual perspective. Then, a slide on the information life cycle was presented and discussed, showing that user feedback is important in validating that the aeronautical information provided was indeed fit for its intended use. This was followed by a diagram showing the Distribution of Information from data producers, or the various accountable sources of information, to data consumers via a Single Authoritative Source.

2.1.3.4 The transition from data to information to knowledge to wisdom was graphically represented by what is known as the DIKW model. This graphic attempted to identify the areas covered by AIS and AIM, as well as some corresponding products. The notion of current AIS products versus future AIM applications was the theme of a graphic showing the evolution to AIM. The products and applications were listed for the different temporalities ranging from planning and reference, pre-flight, in-flight to post-flight.

2.1.3.5 Some of the discussion was concerned with how to differentiate between AIM and SWIM, data and information, static and dynamic, product-centric versus data-centric, etc. The group concluded that it was important to find common, consistent and unambiguous terminology and definitions in order to gain common understanding. Furthermore, it was observed that ideally, these definitions should form part of a global lexicon of data definitions. The discussion on Single Authoritative Source concluded that a key objective here is to minimize multi-path data sources, but that the responsibility will continue to stay with the State, irrespective whether they delegate that responsibility, or not. Another discussion centred on the future of charting under AIM, whether charting will continue to play a role in aviation operations, and in what form it may take in the future.

2.1.3.6 Further discussions focused on next steps and how the AIM Operational Concept document should lay the foundation for developing the AIM Roadmap which should closely align with the Aviation System Block Upgrades (ASBUs) now under development. A debate ensued whether the group can leverage lessons learned from previous roadmap initiatives since there is little time remaining for the development of the AIM concept and roadmap. It was recognized by the group that the AIM concept also needs to be coordinated with the development of a SWIM concept. The group assigned an ad-hoc group to further develop the concept. The concept was further developed and presented to the ad-hoc group on AIM Development as discussed in paragraph 2.1.2.4 b) above. Also as mentioned above the ad-hoc group members were invited to make an input to further develop the draft.

## 2.2 AGENDA ITEM 2: AIM DATA COLLECTION AND REQUIREMENTS

### 2.2.1 AGENDA ITEM 2.1: ETOD

2.2.1.1 The group was presented with AIS-AIMSG/5-SN/8 which reported on the efforts undertaken by EUROCAE WG44/RTCA SC217 group to further clarify the amended provisions for eTOD provided in Annex 15, Amendment 36.

2.2.1.2 The meeting was informed that the efforts to resolve outstanding ambiguities in the current eTOD provisions were reflected in the aggregate change proposal presented in AIS-AIMSG/5-SN/2. It was noted that the change proposal did not contain any material changes to collection requirements but sought to bring clarity to the provisions.

2.2.1.3 The group was of the opinion that the proposed changes did much to resolve inconsistencies in the provisions. Notwithstanding, outstanding items requiring attention by the Secretariat include:

- a) the figures in Appendix 8 need to be amended and be aligned with the text; and
- b) the need to exclude the expression of numerical integrity values.

2.2.1.4 The group noted that certain expressions such as “provided” vs. “made available” and the effort to interpret the context of usage indicated that the responsibility and accountability for data sourcing and collection was still an area of critical interest in the implementation of eTOD. The group was informed that there was no intent in the design of the provisions to define the responsibility and financial liability associated with the provision of eTOD, and that as in most circumstances, it was the prerogative of individual States to decide how best to implement and divide and allocate costs within the scope of state authority.

### 2.2.2 AGENDA ITEM 2.2: AMDB

2.2.2.1 The meeting noted with satisfaction, the progress of coordinating the development of appropriate aerodrome mapping database (AMDB) specifications with the Aerodromes Panel (AP) after AIS-AIMSG/4. In particular, the group was pleased to note the level of agreement that was achieved for the coordination of AMDB provisions in Annex 14 — *Aerodromes* and Annex 15. It was noted that the finalised proposed provisions for both annexes will be presented to the Aerodromes Panel meeting at the end of November 2012.

2.2.2.2 Notwithstanding the level of coordination among the stakeholders, it was noted that there is a different vocabulary used in RTCA/EUROCAE and ICAO. For example, aircraft stand versus parking stand, and that differences will likely continue to persist.

2.2.2.3 In considering the application of AMDB, there was agreement that the need to define implementation and collection of feature data would be closely tied to an identified need and operational use. The application of the data would provide a safety benefit and mitigate identified surface movement risks, ie. hot spots. Notwithstanding, the development of AMDB is not yet matured enough to include specific criteria for when an AMDB is needed, and therefore the application of AMDB will only be included as a recommendation at this time.

2.2.2.4 In this regard, it was determined to be necessary to develop and include provisions outlining that the required features to be collected would be determined in association with the operational need defining the AMDB implementation. It was further concluded that this would require specific guidance on application.

2.2.2.5 A question was posed on the definition of “*Data Base*” as opposed to “*Data Set*” as it relates to aerodrome mapping. It was observed that database and data set are not synonymous or interchangeable since a database implied structure, functions, and utilities that were not necessary to define a data set. The comparison was made with eTOD and the potential for overlapping data set descriptions. It was explained to the group that AMDB is not something new, and that RTCA/EUROCAE had developed a format before AIXM was developed. Notwithstanding that AIXM 5.x can handle AMDB; AMDB is defined as its own conceptual model like AICM.

2.2.2.6 After discussion by the group, a final proposal was developed and presented to the group by flimsy. This proposal also received input from members of the Aerodromes Panel who were given the opportunity to comment by e-mail. The amended proposal was incorporated to the final Amendment 37 proposal as an outcome of AIS-AIMSG/5-SN/2 and will be the subject of a separate working paper to be presented by the Secretary at the next Aerodromes Panel meeting.

2.2.2.7 A member of the AIS-AIMSG was assigned to develop guidance on the application of AMDB in connection with the use of the phrase “where deemed relevant by States” and on the identification of required features associated with specific applications. Additionally, the Secretariat agreed to ensure that the relevant parts of Annex 14, Appendix 5 are copied to Annex 15 as part of Amendment 37 and to coordinate with the Aerodromes Panel at their next meeting outlining the final proposal to be implemented.

### 2.2.3 **AGENDA ITEM 2.3: NUMERICAL REQUIREMENTS (INCLUDING RESOLUTION)**

2.2.3.1 Under this item, the group considered AIS-AIMSG/5-SN/9 concerning the use of the term “Fix Formation”. The group recalled that the use of the term had been raised in AIS-AIMSG/4 since that it had been reported to have caused some confusion in determining its application. The group noted that its use in Annex 4 — *Aeronautical Charts* and Annex 15 was confined to values for distance and bearing listed in Appendices 6 (Annex 4) and 7 (Annex 15) in the tables that were associated with the formation of en-route, terminal, and instrument approach procedure fixes. The specific concern conveyed previously was that the listing of “distance” and “bearing” in combination with the term “fix formation” implied a specific constraint on how fixes were derived.

2.2.3.2 The group recalled that the issue originated from a European study of AIP compliance where it was determined that the use of the term had been interpreted differently by AIS staff in different administrations.

2.2.3.3 It was observed in AIS-AIMSG/4 that fixes could be composed by combinations using bearing/bearing, bearing/distance, distance/distance, or by the specification of geographic coordinates. The opinion of the group at AIS-AIMSG/4 was that clarity would be provided by incorporating a definition of “fix formation” that would detail the generic ways that fixes could be defined.

2.2.3.4 As a result, a definition was developed and Action agreed 4/6 assigned the review and refinement of the definition to the secretariat. The secretariat was further charged to seek the views of the Instrument Flight Procedures Panel (IFPP).

2.2.3.5 The Secretariat noted that any attempt to define “fix formation” could have a significant impact on the work of the IFPP. Furthermore it was noted that the use of the term was well understood within the IFPP community and any attempt to further define it could have significant ramification on the *Procedures for Air Navigation Services — Aircraft Operations* (PANS-OPS, Doc 8168). In conducting its analysis, the secretariat noted that if there was to be a need to revise the definition of the term, the definition should come from the IFPP. The Secretariat looked at the original issue and came to the conclusion that the term was not really necessary to be used in Annex 4 and 15



since the primary objective of its use was to define the data quality requirements to be assigned to bearings or distances that were used for the determination of certain specified fixes, and that there was no intention to specify which elements were required or eligible for the determination of fixes.

2.2.3.6 The Secretariat presented AIS-AIMSG/5-SN/9 which outlined the results of the secretariat consultations and investigations, and proposed that rather than defining the term “fix formation”, the term should be deleted in favour of rewording the lines in the table where it was used to emphasise the element of bearing or distance that was associated with a specified fix.

2.2.3.7 During discussion, it was again observed that dealing with the term “fix formation” could have undetermined ramifications on PANS-OPS. The group decided that accepting the secretariat proposal would be an effective means of dealing with the issue without creating issues for PAN-OPS. The group agreed to amend the sections of the Annex 4 and 15 appendices and to have the changes incorporated into the AIS-AIMSG/5-SN/2 Annex 15, Amendment 37 proposed changes.

## 2.2.4 **AGENDA ITEM 2.4: HEIGHTING**

2.2.4.1 No papers were presented on this subject but the group considered the subject in light of the most recent developments.

2.2.4.2 During AIS-AIMSG/2, it was observed that Annex 15 paragraph 3.7.2 was missing guidance material on the Earth Gravitational Model, EGM-96. As a result, during AIS/AIMSG/4, AIS-AIMSG/4-SN 14 was presented which provided proposed text. During the discussion it was suggested that EGM-08 could be used. The consensus of the group was that there are a number of methods by which the heighting requirements of ICAO Annex 15 can be met and that no single method is appropriate to all States.

2.2.4.3 Given the identification of this issue originally at AIS-AIM/SG/2 and subsequent attempts at progressing the issue, the group discussed what might be mature for inclusion in Amendment 37 of Annex 15. The consensus reached by the group was that mature material was not yet ready for inclusion in the Annex. The group acknowledged that there is a need to change from EGM-96 to EGM-08, but that it was best to wait until Amendment 38. In support of this, it was observed that such a change could have an impact on a larger community and that it would be desirable to seek consensus at a larger forum. In this regard, it was noted that the proposed Divisional Meeting in 2014 would allow a larger group to consider the change and have the advantage of sufficient time prior to inclusion in Amendment 38.

2.2.4.4 It was agreed that the subject requires further study and in particular, it was considered important that any proposed text be validated by specialists with geodetic expertise. Additionally, it was considered necessary to identify the user community affected by WGS-84 and any changes to a heighting reference. An ad-hoc group was formed to coordinate further with the eTOD working group and EUROCAE/RTCA SC217/WG44 and provide a study note at the next meeting, providing an update to the material available on heighting and on the use of EGM-08.

### 2.3 **AGENDA ITEM 3: AIM INFORMATION AND DATA ASSEMBLY, EXCHANGE, AND PROMULGATION**

#### 2.3.1 **AGENDA ITEM 3.1: DIGITAL NOTAM**

2.3.1.1 Under this item, the group was presented with AIS-AIMSG/5-SN/5 which gave a report on the Federal Aviation Administration (FAA) experience in using Aerodrome Mapping Data in support of Graphical NOTAM.

2.3.1.2 The group noted the capability of the graphical NOTAM to convey construction activities at an aerodrome thereby demonstrating the emerging data convergence that will be the norm under a SWIM environment. Also the significance of the operational improvement that this would allow the user community was recognized.

#### 2.3.2 **AGENDA ITEM 3.2: NOTAM/SNOWTAM/ ASHTAM**

2.3.2.1 The group considered AIS-AIMSG/5-SN4 which presented the NOTAM Guidance contained in Chapter 5 of Doc 8126. The group expressed its appreciation for the detailed work undertaken to clarify and update the guidance given for NOTAM, and in particular the in depth revision to the NOTAM Code.

2.3.2.2 The group discussed the Trigger NOTAM specification and reached consensus to extend the duration for AIS Sup Trigger NOTAM to cover the validity time. The group also questioned the need for the monthly printed plain language list of valid NOTAM and concluded that more information was needed on the utility and actual use of the list. The Secretariat agreed to investigate the use of the monthly plain language list of valid NOTAM and report back to the group.

2.3.2.3 Since the proposed amendment to Doc 8126 was rather extensive, the group considered that more time would be necessary to properly review and comment on the revision.

2.3.2.4 The group was presented with AIS-AIMSG/5-SN/12 which reported on the recent activities of the International Volcano Ash Task force (IVATF) and solicited the opinion of the AIS-AIMSG whether a new term, such as "Volcanic Ash Alert Area" could be considered as a fourth internationally-recognised term to be notified by NOTAM for volcanic ash. The study note further requested the AIS-AIMSG to convey their findings to the IVATF/3 meeting, which took place 15 to 17 February 2012.

2.3.2.5 The study note pointed out that one of the key concerns of the IVATF is to harmonise the global approach to volcanic ash reporting processes to facilitate the implementation of the Operator Safety Risk Assessment as part of *The Management of Flight Operations with Known or Forecast Volcanic Cloud Contamination*. It was observed that the application of different terminology across States/Regions does not assist operators to develop a common approach to flight in areas of volcanic ash, irrespective of where in the world they were flying.

2.3.2.6 The study note further notes that Annex 15 permits the notification by NOTAM of Prohibited, Restricted or Danger areas, which are the only three internationally-agreed terms that States can use to identify the presence of hazards which may affect air navigation or to limit access to a particular area. It was further conveyed that the IVATF had concluded that none of these terms were adequate for the purpose of alerting flight crews to the potential presence of volcanic ash and had procedural implications not related to the hazard created by ash.

2.3.2.7 It was pointed out that the use of a new term was not currently supported by an AIXM “static data” feature for the system now in use in some States, resulting in the inability to generate a digital NOTAM. The Secretary reminded the group that the function of AIS/AIM was to acquire the information necessary to convey the reality of the ATM system and conditions to the user and not to impose constraints on how the ANS infrastructure was to be designed, provided, and conditions reported.

2.3.2.8 The group agreed to provide comments on AIS-AIMSG/5-SN/12, and in particular, the impact of using a new term to describe areas affected by volcanic ash.

2.3.2.9 The Secretary provided a verbal update on the progress on developing a global reporting format. It was noted that there is now considerable interest in harmonizing the formats used by different agencies to report various airspace and environmental conditions. In particular, there is interest in coalescing the diverse reporting mechanisms, formats, and measurement standards used in winter condition reporting at aerodromes. The Secretary noted that there are numerous friction measurement schemes in use globally but that few of them provided data that was coordinated with the requirements for operational conditions listed in aircraft flight manuals. This has posed a dilemma for flight crews who desire and need greater fidelity in determining accurate landing distances in reduced friction scenarios. In this regard, the Secretary reported that there is considerable interest in the standardised condition reporting emerging from the FAA TALPA ARC (Take Off and Landing Performance Assessment, Aviation and Rule Making Committee) program.

2.3.2.10 The group reviewed the Report of the Second Meeting of the International Volcanic Ash Task Force (IVATF). The group was informed that there was considerable interest and participation by the airlines in the work of this task force. In particular the Airlines have highlighted the varying levels of information and multiple channels of distribution as a significant impediment, effecting safety and economic operation during a volcanic effect. The message conveyed to the group is that the Airlines would like to see harmonised and improved information delivery concerning the presence of volcanic ashes so that they could make effective and safe risk based decisions. Of particular note, the airlines were concerned that the absence of such information could lead to pre-emptive airspace closures and that this was a consequence to be avoided.

2.3.2.11 The meeting was informed that the airlines were anxious to participate in any group or forum that would lead to development of more effective information dissemination. The meeting formed an ah-hoc group to investigate the relevant outcomes of the IVATF with a view to proposing a way forward on volcanic ash hazard reporting.

### 2.3.3 **AGENDA ITEM 3.3: INTEGRATED BRIEFING**

2.3.3.1 The group reviewed AIS-AIMSG/5-SN/8 which provided updated guidance on integrated briefing.

2.3.3.2 The group expressed confusion on some of the terminology in the proposed Annex 15, paragraphs 8.1.3 and 8.1.8 and observed that this would need further work to achieve clarity.

2.3.3.3 The group observed that the notion of integrated briefing had changed from the issues that were first presented in AIS-AIMSG/2 and that there was a need to clarify the future role and function of integrated briefing. It was noted that the proposal, while containing some future oriented elements, does not cover the transition to AIM. In this respect, it was particularly noted that there will be a need for clarification with respect to an evolved AIM system operating within a SWIM environment. It was also noted that guidance for the transition of evolved capabilities and functions will need to highlight the necessity to have a parallel system in operation during any transition period.

2.3.3.4 Through AIS-AIMSG/5-SN/8 the Secretariat posed a number of questions which the group agreed to provide comments before 25 November 2011.

#### 2.3.4 **AGENDA ITEM 3.4: USE OF THE PUBLIC INTERNET**

2.3.4.1 The group reviewed AIS-AIMSG/5-SN/11 which proposed changes to Doc 9855 and outlined ways that an increasing use of the internet could improve the operation of the AIM functional activities. The group agreed to provide comments on AIS-AIMSG/5-SN/11 to the Secretariat before the end of February, 2012.

2.3.4.2 The Secretariat agreed to provide an updated proposal for the amendment of Doc 9855 for presentation at AIS-AIMSG/6.

#### 2.3.5 **AGENDA ITEM 3.5: AIP TEMPLATE**

2.3.5.1 The proposed changes to the AIP template contained in Annex 15, Appendix 1 were reviewed in connection with Agenda Item 1.1. A group member agreed to investigate the rationale behind the proposed changes to GEN 2.2, with particular emphasis on the apparent restriction on scope and report back to the Secretary.

#### 2.3.6 **AGENDA ITEM 3.6: CHARTING**

2.3.6.1 The meeting was presented with AIS-AIMSG/5-SN/13, AIS-AIMSG/5-SN/14, and AIS-AIMSG/5-SN/15 which provided a work schedule for the ad-hoc group on Aeronautical Charting for the advancement of Annex 4, Aeronautical Charting Manual (Doc 8697) and harmonisation of the two with the other documents, based on three steps:

- *STEP 0 – Consolidation*, where Amendment 4 to the Aeronautical Chart Manual (Doc 8697) will be produced, with the task of bringing the manual in line with Amendment 56 to Annex 4 and of generally reviewing it, whether the structure shall be slightly updated.
- *STEP 1 - PBN – Annex 4 Amendment 57, Doc 8697 Amendment 5*, where Annex 4 Amendment 57 will be developed, based on IFPP (Instrument Flight Procedures Panel) inputs and on material coming from the ICAO Aeronautical Chart 1:500 000 harmonisation activity in the European region. In STEP 1 Doc 8697 will be updated to be in line with Amendment 57 to Annex 4.
- *STEP 2 – Data Sets – Annex 4 Amendment 58, Doc 8697 Amendment 6*, where Annex 4 will be fully transformed by Amendment 58 to SARPs which are needed in an environment where all aeronautical data, obstacle data, and terrain data will be provided in form of data sets; consequently raising the questions: (1) Do we need (electronic) charts when data sets are available? (2) Do we need data derived charting? If yes, why? (3) Do we need (electronic) charts in addition to data sets just as visualisation and for information only?

2.3.6.2 The group noted that work on aeronautical charting had been largely dormant, but had been rejuvenated by the new rapporteur. The group agreed to confirm and reconstitute the membership of the ad-hoc group. The meeting also realized that the STEP 2 topics need a dedicated and in depth discussion with additional experts. The Ad-hoc Group on Aeronautical Charting was tasked to collect and develop Annex 4 and Doc 8697 amendment materials.

2.3.6.3 The ad-hoc group met in Brussels 16-17 February 2012 and began their work. The following items were discussed and require further discussion during future meetings:

2.3.6.3.1 The group noted the progress made thus far and further planned its activities to develop Amendment 4 to Doc 8697 to include the revisions required as a result of Annex 4 Amendments 54, 55 and 56:

- Doc 8697 has been transformed almost completely into a MS Word document to ease the update process.
- A WIKI site has been established for ad-hoc group members to make inputs to the update process and track changes.
- Ad-hoc group members have volunteered to lead the revision of several parts of the work to be performed; however, other leaders and volunteers to assist them are needed.
- Doc 8697 is to be updated in accordance with an outline of the Annex 4 amendment revisions provided by the Secretariat and a table of the chapters and sections affected.
- Chapter 4 – Cartographic Techniques is being replaced by a new Chapter 4 – Automated Aeronautical Charting currently under development. This is being done with the assumption that cartographic techniques are sufficiently covered by the technical literature and do not need any further explanation within the Doc 8697.

2.3.6.3.2 During the discussion in the activities to develop Amendment 5 to Doc 8697 and Amendment 57 to Annex 4 the following points were made:

- Once the IFPP/IWG provides the final updates of the PBN Charts, the future work for inclusion into Doc 8697 will be identified.
- Necessary changes to ICAO aeronautical chart 1:500,000 will be studied and developed for Amendment 57 to Annex 4.

2.3.6.3.3 The future of chart requirements to be included in Annex 4 Amendment 58 and Doc 8697 was discussed at length:

- The requirements for aeronautical charts to be supported in digital form needs to be determined. In a digital environment, current charting requirements, such as en route charts may no longer be needed.
- Aeronautical information will be based upon open standards to provide global definitions for the information domains, models and exchange schemas. The information, including that currently held in the current products (AIP, Charts, etc) will be stored as data sets and data sets series.
- The availability of all standardized data sets (terrain, obstacle, cultural and aeronautical) required to support the provision of digital charts must be established, and processes for integrity and consistency in application and use defined. Annex 4 Amendment 58 will need to be in line with Annex 15 Amendment 38 to ensure the scope of data requirements is clearly defined.
- The data exchange standards (AIXM) will also need review to ensure support for digital charts.

- Within the SWIM environment, applications and services will need to be developed to allow the user to display charting information without redundancy, duplication, and fitting specific requests. Quality of service will be important as well as an understanding of the user requirements and expectations.
- Will these major changes require a change in the name of Annex 4?

### 2.3.7 **AGENDA ITEM 3.7: AIS MANUAL, DOC 8126**

2.3.7.1 The group was presented with AIS-AIMSG/5-SN/6 which reported on the work by the Secretariat to update Chapter 9 of Doc 8126. The group noted that the update of Chapter 9 was considered timely in view of the proposed changes to Chapter 8.

2.3.7.2 The group observed that the term “integrated automated AIS system” describes a system that would be intended to include, national automated AIS systems, multinational automated AIS system, and AIS not or not fully automated. Similarly, the term “Integrated briefing” is intended to describe a harmonized service including AIS and MET. The term “Integrated automated AIS system” was, in the amendment proposal, to be changed to “Centralized AIS Databases” to avoid confusion. It was concluded that “Database” is not the best word to use for this purpose and that this would require further input from the group.

2.3.7.3 The group also noted that it would be useful to make an expanded reference to AIXM in this chapter.

2.3.7.4 The group agreed to provide comments and suggestions for further development on the material contained in AIS-AIMSG/5-SN/6 to the Secretariat by the end of February, 2012.

## 2.4 **AGENDA ITEM 4: INTEGRATION WITH OTHER SERVICES**

### 2.4.1 **AGENDA ITEM 4.1: SWIM**

2.4.1.1 No papers were presented on this agenda item; however the group was provided draft papers on SWIM and information management domains that are to be presented to the ATMRPP (Air Traffic Management Requirements and Performance Panel) at its next meeting.

2.4.1.2 The group was of the opinion that SWIM was a topic that extended to and affected the work programs of many groups but that the ATMRPP was in the best position to outline SWIM in the Context of the meaning of the Global ATM Operational Concept.

2.4.1.3 It was observed that within the FAA NextGen program, SWIM is primarily constituted as an implementation program as opposed to SESAR where it is constituted as a research and development program.

2.4.1.4 The meeting was informed of a Secretariat initiative to develop a high level SWIM concept for consideration at the 12th Air Navigation Conference, with the intent to find the common ground between NextGen and SESAR. The coordination between ATM, MET and AIS is seen to be crucial.

### 2.4.2 **AGENDA ITEM 4.2: MET INTEGRATION**

2.4.2.1 No papers were presented on this topic, however the group was given the opportunity to review the Summary of discussion for the latest meeting of the AMOFSG (Aerodrome Met Observation and Forecast) which was distributed by the Secretary prior to the meeting.

### 2.4.3 **AGENDA ITEM 4.3: FIXM**

2.4.3.1 Under this item the group was presented with a presentation outlining the development and current status of the Flight Information Exchange Model (FIXM).

### 2.4.4 **AGENDA ITEM 4.4: GLOBAL ANS IMPLEMENTATION UPDATES**

2.4.4.1 AIS-AIMSG/5-IP/5 was provided for the review of the group detailing current AIM implementation in the Peoples Republic of China.

2.4.4.2 The secretary agreed to provide latest update to the material on Aviation System Block Upgrades (ASBUs) to the group.

### 2.5 **AGENDA ITEM 5: AIM QUALITY SYSTEM**

#### 2.5.1 **AGENDA ITEM 5.1: AIM QUALITY MANUAL**

2.5.1.1 No papers were presented on this item but the Secretary informed the group that the AIM Quality Manual was still under review and that this work was now over due. The Secretary proposed a new date for finalization of July 2012 but would work to get the manual out sooner if possible.

2.5.1.2 The group noted that the draft manual should be amended by the secretariat to include some specifications from RTCA documents or make references to those documents. The group observed that the RTCA material contained useful guidance with respect to processes about data integrity, validation and verification of data and that the existing Chapter 8 of the draft manual is insufficient in this regard.

#### 2.5.2 **AGENDA ITEM 5.2: DATA INTEGRITY**

2.5.2.1 No papers were presented on this subject, but the group had considerable discussions on this topic under agenda item 1.1 and in connection with agenda item 5.1.

2.5.2.2 The Secretariat agreed to update Chapter 8 of the *Manual on Quality Management Systems for Aeronautical Information Management* to take into account latest data integrity changes.

### 2.6 **AGENDA ITEM 6: AIM STAFF TRAINING GUIDANCE**

2.6.1 The AIS-AIMSG was presented with AIS-AIMSG/5-SN/19 which reported on the outcome of the ad-hoc group developing AIM guidance material. The group noted with satisfaction that the task was now complete and that the Ad-hoc group had delivered a very good document. The group further observed that this was a defined deliverable in the original terms of reference of the group and that it was now able to close the task.

2.6.2 The group considered that the competency based approach taken in the document was of particular relevance for AIM staff positions, with the particular observation that there was no standard description of what would constitute an AIM staff position. The group recognised that AIM organizations would require a diverse set of knowledge, skills, and abilities, combined in a range of operational functions and that this would imply that a number of professional job descriptions would be employed.

2.6.3 As a consequence of the diverse expertise requirements inherent in performing AIM tasks, it was recognised that rather than providing a standard training syllabus, the competency based approach would allow for a modular approach to training and training development, where the

specific needs of a particular job description could be identified through a structured approach. It was recognised however, that some States may still need additional assistance and guidance in using the framework to develop specific training programs. It was observed though, that would likely imply that the need is larger than training, and that the real need was to have guidance and assistance in determining the business processes and functions of an AIM organization.

2.6.4 The ad-hoc group was tasked to add a bibliography to the final draft of the *AIM Training Development Manual* and deliver the final draft to the Secretariat.

## 2.7 **AGENDA ITEM 7: LEGAL AND INSTITUTIONAL ISSUES**

2.7.1 AIS-AIMSG/5-SN/7 was presented to the group which provided a legal evaluation of the conclusions of the ICAO ad hoc group on legal and institutional issues presented in AIS-AIMSG/2-SN/3 and AIMSG/2-SN/17, and outlines CANSO's analysis of the practical outcome.

2.7.2 The group recalled that from previous work, there were no legal or institutional issues that would hinder or prevent the transition from the current product based AIS to a data centric and service oriented AIM. However, it was recognized that the current system as well as the move to transition to AIM would need to deal with some existing and emerging issues.

2.7.3 From the perspective of the ANSPs as outlined at CANSO, the study note noted three elements with respect to how copyright and cost recovery should be dealt with at the global level:

- a) speak to State responsibility, not liability;
- b) point to copyright laws, and not attempt to determine copyright; and
- c) permit a flexible mechanism for cost recovery options.

2.7.4 Discussion ensued about the topics of copyright, cost recovery, and liability. Opinion was expressed that ICAO should not make provisions concerning how States handle responsibility. However, it was recognised that roles and responsibility need to be clearly defined under State responsibility. The group agreed that it is important for industry and airspace users, that the State takes the responsibility for the contents of aeronautical data and aeronautical information.

2.7.5 A proposal to remove all items about copyright, cost recovery, and liability was expressed. The group was informed that the provisions were included in Annex 15 following recommendations during an AIS divisional meeting in 1998. It was considered that great caution would need to be exercised prior to proposing any changes.

2.7.6 Concerns were raised about current practices applying differential charges to users of data, e.g. EAD which charges third party providers, has hampered the evolution to AIM. The group concluded that items concerning cost recovery are not in the purview of the AIS-AIMSG under its terms of reference and should be referred to the ANSEP (Air Navigation Services Economics Panel).

2.7.7 The ad hoc group on legal and institutional issues was tasked to develop from the existing material a list of issues for discussion at the next meeting.



2.8 **AGENDA ITEM 8: WORK PROGRAMME**

2.8.1 The group discussed the work program, noted the progress made, and updated the timetable produced at AIS-AIMSG/4 (included below).

	<b>Dates(s)/Timeframe</b>	<b>Event/ milestone</b>	<b>Work Deliverables</b>
<b>2012</b>	Q1/Q2 2012	Secretariat review of completed manuals	<ul style="list-style-type: none"> <li>○ Training Manual (Q2/2012)</li> <li>○ Quality Manual (Q2/2012)</li> <li>○ AIS Manual v3 (Q1/2012)</li> <li>○ Manual on Public Usage of the Internet update (Q2/2012)</li> <li>○ TOD Manual (Q1/2012)</li> </ul>
	13-17 Feb 2012		Charting and Amendment 38 discussion (Brussels)
	1 April 2012		Final Secretariat ANC-12 papers including final AIM Concept and final AIM Roadmap. Estimated last date for State papers Mid Sept 2012.
	21 - 25 May 28-30 May	AIS-AIMSG/6 (Buenos Aires) IFAIMA Global congress (Buenos Aires)	Buenos Aires (Secretary participation to be confirmed)
	Late Aug	Air Transportation Information Exchange Conference (Washington)	Seek to combine with Comment Review and/or ad-hoc group.
	Q3/4 2012 ?	Ad-hoc group Amendment 38	Ad-hoc Amendment 38 meeting? WGS-84 Manual (accuracy & heighting) Q3-4/2012
	Q4/2012		Charting Manual update
	Q4/2012		State letter replies discussion ANC
	19-30 November 2012	ANC-12 (Montreal)	
<b>2013</b>	14-18 January 2013	AIS-AIMSG/7 (Montreal)	
	2013		Updated AIS to AIM transition roadmap?
	November 2013	Annex 15 Amendment 37 applicable	
<b>2014</b>	June 2014	AIM/MET Divisional Meeting (Montreal)	Draft Pans-AIM Draft Amendment 38 + SWIM elements?
	November 2014		Finalised Amendment 38
<b>2016</b>	November 2016	Annex 15 Amendment 38 applicable & PANS-AIM introduced	Completion of AIS-AIMSG work program

2.9                    **AGENDA ITEM 9:    ANY OTHER BUSINESS**

2.9.1                It was brought to the attention of the group that the AIM Implementation Task Force in the Asia and Pacific Region was wishing closer coordination with the work of the AIS-AIMSG and in particular, would appreciate an update on Study Group activities and outcomes. The group was invited to send a representative to their next meeting in March.

2.10                 **NEXT MEETINGS**

2.10.1              The group decided that the next meeting should be held in Buenos Aires, 21 to 25 May 2012 at the invitation of Argentina and IFAIMA. AIS-AIMSG/7 is tentatively scheduled for 14 to 18 January 2013 in Montréal, Canada.

**3.                    ACTION BY THE MEETING**

3.1                    The meeting is invited to:

- a)                    note the information contained in this paper; and
- b)                    discuss any relevant matters as appropriate.

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