



International Civil Aviation Organization

**NINTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND
METEOROLOGY SUB-GROUP OF APANPIRG
(CNS/MET SG/9)**

Bangkok, Thailand, 11–15 July 2005

Agenda Item 6: Surveillance

**DISCUSSION ON AIRBUS VIEW REGARDING PROPOSED
ANNEX 10 VOL. III AMENDMENTS**

(Presented by Japan)

SUMMARY

The first meeting of the Surveillance and Conflict Resolution Systems Panel (SCRSP) which was held in Montreal in November 2004 submitted the report to the Air Navigation Commission. This report included the proposed amendment to Annex10, Volume III Part1, Appendix of Chapter 5 “SSR Mode S Air-ground Data Link” (i.e., ADS-B technical requirements).

Airbus provided a paper on its view regarding this proposed amendment on ADS-B to third meeting of Automatic Dependent Surveillance – Broadcast (ADS-B) study and Implementation Task Force (ADS-B/TF/3) which was held in March 2005. Airbus paper was also submitted to SCRSP Working Group (WG) meeting which was held in May 2005 in Australia and discussed.

During ADS-B/TF/3 meeting, Japan was requested to prepare an introduction paper on this issue for consideration by the ninth meeting of CNS/MET Sub Group of APANPIRG. This information paper provides discussion results of SCRSP/1 held in November 2004 and also WG meeting held in May 2005 briefly.

1. Introduction

1.1 Current ADS-B technical requirements using Mode S extended squitter are described in Annex10, Volume III Part1, Appendix of Chapter 5 “SSR Mode S Air-ground Data Link”. These requirements are basically consistent with RTCA DO-260 MOPS. This version of the extended squitter formats defined “navigation uncertainty category” (NUC) as the statement of navigation performance that

was to be reported in the extended squitter messages. Depending upon the source available for NUC, the reported performance could be a measure of navigation accuracy or navigation integrity.

1.2 However, in order to develop applications that use ADS-B data, it was realized that accuracy and integrity must be reported separately. For this purpose, SCRSP/1 decided to revise the formats to include navigation accuracy category (NAC) and navigation integrity category (NIC) as separately reported measures of navigation quality. Those revised formats and related new requirements are basically consistent with RTCA DO-260A MOPS.

1.3 SCRSP/1 also considered the document structure for insertion of the revised extended squitter material in Volume III. Since many aircraft are now being fitted with Amendment 77 extended squitter formats and protocols, changing the SARPs in a way that eliminates the current material would imply the need for the current extended squitter implementations to upgrade to the revised formats. This was seen as a cost impact that would raise concerns with current extended squitter users, and could delay acceptance of needed transponder revisions, with a resultant impact on Mode S programs.

1.4 This concern is addressed by maintaining the current version of extended squitter (identified as suitable for air-ground applications) and including the revised material (identified as required for air-air applications). After discussion, SCRSP/1 decided to insert the revised formats and protocols into a new Appendix 2, to Chapter 5 of Part 1, Volume III. The resulting SARPs structure permits a mix of current and revised extended squitter equipment to co exist. The revised formats are backward compatible with the current formats so mixed operation is accommodated by the proposed revisions.

1.5 To clarify the differences between Appendix 1 and 2, paragraph 5.2.7 “Mode S specific services processing” of Chapter 5 of Part 1, Volume III was also revised as follows:

Mode S specific services processing

1.6 The data formats and protocols for messages transferred via Mode S specific services shall be as specified in Appendix 1 to this chapter for early applications of extended squitter and Appendix 2 to this chapter for extended squitter implementations that support both air-air and air-ground services. Mode S specific services shall be processed by an entity in the XDLP termed the Mode S specific services entity (SSE).

2. Discussion summary of ADS-B/TF/3

2.1 Airbus provided a paper on its view regarding this proposed amendment on ADS-B to ADS-B/TF/3 which was held in Bangkok in March 2005 and stated that the proposed amendment prepared by SCRSP/1 requires RTCA DO-260A MOPS for air-to-air ASAS applications. This is considered unnecessary by Airbus. Airbus believes that the proposed amendment to SARPs, if unchanged, would delay the implementation of ASAS applications. This view does not preclude implementers (avionics equipment, aircraft manufacturers, Air Navigation System Providers, etc) to select DO-260A for their products as considered useful for their needs (e.g. as to gain experience on NIC/NAC/SIL). It was noted that Airbus is committed to deployment of ADS-B applications for both air-ground surveillance service (ADS-B out) and air-air surveillance service (ADS-B in). The meeting noted that Airbus had already offered all aircraft types Mode S Extended Squitter based on ICAO Annex 10 Volume III Chapter 5 Amendment 77 (DO-260). The meeting discussed the compatible problem, retrofit cost regulatory requirement, etc., that may be resulted from this proposed amendment from different

perspectives. In order to find out what performance problems that may exist, the expert from Japan was requested to prepare an introduction paper on this issue for consideration by the ninth meeting of CNS/MET Sub Group of APANPIRG to be held from 11-15 July 2005.

3. Discussion summary of SCRSP WG

3.1 SCRSP WG consists of WG-B and WG-A. WG-B is in charge of surveillance systems and WG-A is in charge of conflict resolution systems (i.e., ACAS). Airbus paper (See attachment 1 of this paper) was submitted to both WG meeting. Also another working paper was submitted by the FAA (See attachment 2 of this paper) to provide the US position on the views expressed by Airbus. Both papers were discussed at both WG-B/A meeting carefully. Unfortunately, both groups could not come up with an agreed position on this issue and therefore this issue will be discussed at Technical Sub Group meeting which will be held in July 2005 and also at the Working Group of the Whole meeting planned for October 2005.

4. Discussion summary of WG-B

4.1 Following is the discussion summary of WG-B on this issue and this was extracted from final report of the 8th meeting of WG-B.

Start of quotation

5. WP/B/8-30: Airbus view on proposed Annex 10 Vol. III amendments

Presented by Kojo Owusu

5.1 In a paper prepared for the ICAO Asia Pacific Regional ADS-B Task Force meeting in May 2005, Airbus indicated it did not agree with the wording proposed for inclusion in Annex 10 Vol. III Part 1 Appendix 2 to Chapter 5 on requirements for air-air surveillance applications.

The SCRSP/1 report included a change to Paragraph 5.2.7 as follows:

"The data formats and protocols for messages transferred via Mode S specific services shall be as specified in Appendix 1 to this chapter for early applications of extended squitter and Appendix 2 to this chapter for extended squitter implementations that support both air-air and air-ground services..."

Airbus argues that the provisions in Appendix 1 are suitable for some air-air applications and there is no need to specify compliance with Appendix 2. They make the point that they do not oppose the requirements in Appendix 2, but believe a requirement to comply with the new Appendix for air-air will set back implementation.

The meeting discussed the urgency associated with this issue and agreed that SCRSP should resolve the issue prior to the revised SARPS being published.

Mikaël suggested a softening of the words in Paragraph 5.2.7 along the lines of a suggestion made at SCRSP/1, which says more advanced applications should use Appendix 2.

5.2 WP/B/8-34: US Position on Airbus view

Presented by Bill Petruzel

This working paper provides the US position on the views expressed by Airbus and included in WP B8-30.

The FAA considered the issues surrounding the use of the Appendix 1 (i.e., DO-260) versus Appendix 2 (i.e., DO-260A) message formats when preparing TSO-C166 for the certification of extended squitter systems for ADS-B. While the FAA recognized there may exist certain simple air-air applications that potentially could support situational awareness, it felt that creating new implementations that would be limited to only such a basic capability should not be allowed.

It was noted that airlines and users wanted to obtain maximum benefit from existing investments and did not want standards to change rapidly.

Bev indicated that it may be too early to come up with an agreed position on this issue, and that views from EUROCAE and RFG would also need to be considered.

Mikaël mentioned that Airbus had expressed this concern about a year ago. He recalled that some States had questioned the need for Appendix 2 when it was initially proposed, given that the RFG had not completed its work. He proposed that the TSG be asked to consider the issue and come to the Paris meeting with a proposal. He pointed out that if this issue was not dealt with now, it would come up again when State letters were circulated.

Action B/8-03: TSG to take into account WP B8-30 “Airbus view on proposed Annex 10 Vol. III amendments”, WP B8-34 “US Position on Airbus View”, and the views of EUROCAE WG51 and the RFG, and reconsider whether Paragraph 5.2.7 of Annex 10 Vol. III Part 1 should be revised.

Action B/8-04: Kojo Owusu to advise the TSG of the outcome of discussions on WP B8-30 and WP B8-34 at the WGA Gold Coast meeting. These WPs discuss requirements for Vol. III Appendix 1 and Appendix 2 when implementing air-air applications.

End of quotation

6. Discussion summary of WG-A

6.1 Following is the discussion summary of WG-A on this issue and this was extracted from draft minutes of the 8th meeting of WG-A.

Start of quotation

7. WP A/8-020, Airbus View on Proposed Annex 10, Volume III Amendments and WP A/8-030, FAA Position on Airbus View on Proposed Annex 10, Volume III Amendments

7.1. Kojo Owusu presented this paper to provide details of the view expressed by Airbus in a paper prepared for the ICAO Asia Pacific regional ADS-B Task Force meeting held in May 2005. Airbus

indicated it did not agree with the wording proposed for inclusion in Annex 10 Vol. III Part 1 Appendix 2 to Chapter 5 on requirements for air-air surveillance applications. The inclusion of this new Appendix into the Annex was recommended at SCRSP/1. Airbus noted that they did not oppose the requirements contained in Appendix 2, but believed that a requirement to comply with the provisions of this Appendix will delay implementation. Kojo noted that AirServices Australia believes that some benefits can be delivered with equipment manufactured to the requirements of Appendix 1.

7.2 Kojo reported that the discussions on this paper in Working Group B concluded that the SCRSP/1 recommended change to Paragraph 5.2.7 would be reviewed by the TSG. Working Group A supported this review of technical aspects by the TSG. The Rapporteur suggested that this issue be reviewed by the Working Group of the Whole meeting planned for October 2005. ***Action Item 8-5. The Panel Secretary is requested to ensure that this topic is included on the October WGW meeting agenda.***

7.3 Bill Petruzzel presented WP A/8-030 that provided the FAA response to the Airbus position/proposal contained in WP A/8-020. The paper noted that the FAA opposes the Airbus proposal to modify the SCRSP/1-proposed SARPs provisions in Annex 10, Volume III. The opposition is based on the position that only limited applications will be possible using the requirements now contained in Volume III, Appendix 1 and that these applications would provide only limited operational benefits.

7.4 Jean Marc Loscos noted that the proposed Amendments to Annex 10 were now in the hands of the ANC and that there was little the Working Group could do to modify their contents at this time. The next opportunity to have input into the contents of the Amendment would be when the State Letter was disseminated by ICAO. Jean Marc also noted that the ANC may elect to revise the SCRSP/1-proposed amendments prior to the release of the State Letter. Until the next Amendment is approved, the existing provisions of Annex 10, Volume III remain in effect.

7.5 The discussion of these papers resulted in an extended review of the status of RTCA DO-260 and DO-260A. From the end of May 2005, there are two *de facto* standards for extended squitter formats: DO-260 and DO-260A. For international interoperability, it is necessary to describe both or prohibit one of the standards. RTCA has found DO-260A to be necessary to support some applications that cannot be supported by DO-260. It seems overwhelmingly probable that further work, for example in the RFG, will support this general conclusion. Thus operators that equip with DO-260 should expect to find that there are applications of ADS-B that their aircraft cannot undertake.

7.6 Working Group A advises manufacturers and operators not to assume that any particular application can be undertaken with either version of extended squitter until the analyses are complete and the procedures authorized. The arguments above seem good reason for manufacturers and operators to prefer DO-260A, and good reason for SCRSP to encourage DO-260A rather than DO-260. DO-260A is the preferred format from WGA point of view. However, there is no certainty that DO-260A will support *all* uses of extended squitter that will eventually be desired. It should be anticipated that there could well be a DO-260B and, thus, it is premature to require DO-260A. Additionally, in the present circumstances it is essential to continue to encourage fitting extended squitter and it would be very counter-productive to prohibit DO-260.

7.7 Both standards exist and must be described. The choice of format to use for new extended squitter installations, and whether or not to upgrade from DO-260 to DO260A must, for the time being, be a choice for manufacturers and operators. In making their choice, they should be advised that DO-

260A will be more capable than DO-260, but there is no guarantee that DO-260A will be the final version of this document.

End of quotation

8. Conclusion

8.1 The meeting is invited to note above mentioned information.

**SURVEILLANCE AND CONFLICT RESOLUTION SYSTEMS PANEL (SCRSP)
SURVEILLANCE SYSTEMS
WORKING GROUP-B**

**8TH MEETING
Brisbane, 23 to 27 May 2005**

Airbus view on proposed Annex 10 Vol. III amendments

(Prepared by Kojo Owusu)

Summary

This paper presents details of the view expressed by Airbus in a paper prepared for the ICAO Asia Pacific regional ADS-B Task Force meeting in May 2005. Airbus indicated it did not agree with the wording proposed for inclusion in Annex 10 Vol. III Part 1 Appendix 2 to Chapter 5 on requirements for air-air surveillance applications.

Airbus view on proposed Annex 10 Vol. III amendments

1. Introduction

- 1.1.1 In a paper prepared for the ICAO Asia Pacific regional ADS-B Task Force meeting in May 2005, Airbus indicated it did not agree with the wording proposed for inclusion in Annex 10 Vol. III Part 1 Appendix 2 to Chapter 5 on requirements for air-air surveillance applications.
- 1.1.2 This paper presents the Airbus view and requests that the issue be clarified. The Airbus paper is presented as an Appendix to this paper.

2. Proposed change to Annex 10 Vol. III Chapter 5

- 2.1.1 The data formats for extended squitter are defined in ICAO Annex 10, Vol III, Part 1, Appendix to Chapter 5. At the SCRSP/1 meeting in November the Panel agreed on a proposal to rename the existing appendix "Appendix 1" and introduce a new Appendix 2.
- 2.1.2 Effectively the requirements in Appendix 1 are aligned to DO-260 while Appendix 2 is aligned to DO-260A. In developing this material SCRSP noted that a large number of aircraft installations currently comply with the requirements in the existing Appendix to Chapter 5. The decision was taken to retain this material in recognition of these installations.
- 2.1.3 The more significant changes introduced in Appendix 2 (DO-260A) include:
 - 1. the separate reporting of accuracy and integrity (NAC, NIC, SIL vs NUC),
 - 2. the inclusion of requirements and the definition of message formats for TIS-B,
 - 3. the definition of new extended squitter messages (e.g. the Aircraft Operational Status Message and the Target State and Status Message), and
 - 4. the definition of an event-driven extended squitter message for broadcasting ACAS RAs
- 2.1.4 The SCRSP proposal included a change to Paragraph 5.2.7 as follows:

"The data formats and protocols for messages transferred via Mode S specific services shall be as specified in Appendix 1 to this chapter for early applications of extended squitter and Appendix 2 to this chapter for extended squitter implementations that support both air-air and air-ground services..."

3. Airbus view of proposed change

- 3.1.1 The Airbus reading of the proposed wording in Paragraph 5.2.7 is that compliance with Appendix 2 is required for air-air applications. They argue that the provisions in Appendix 1 are suitable for some air-air applications and there is no need to specify compliance with Appendix 2. They make the point that they do not oppose the requirements in Appendix 2, but believe a requirement to comply with the new Appendix will set back implementation.
- 3.1.2 Australia supports the Airbus position and believes some benefits can be delivered with equipment manufactured to the requirements of Appendix 1.

4. Action by SCRSP

The meeting is invited to note the Airbus view on the proposed SCRSP/1 amendments to Annex 10 Vol. III Chapter 5, and is further invited to consider a way to clarifying the issue.

Appendix: Airbus Paper on proposed changes to Annex 10 Vol. III



International Civil Aviation Organization

THE THIRD MEETING OF ADS-B STUDY AND IMPLEMENTATION TASK FORCE (ADS-B TF/3)

Bangkok, Thailand, 23 – 25 March 2005.

Agenda Item 3: Review the progress made by ADS-B related ICAO panels

Airbus view regarding the Approval of ICAO Annex 10 SCRSP/1 Amendments

(Prepared by Thomas Fixy – Airbus)
(Presented by Chairman on Behalf of Airbus)

SUMMARY

This paper provides Airbus position regarding the ICAO SCRSP/1 (Surveillance and Conflict Resolution Systems Panel) proposed amendments to ICAO SARPs for Mode S extended squitter. (Reference : Annex 10 — *Aeronautical Telecommunications*, Volume III — *Communication Systems Part I — Digital Data Communication Systems* : Appendix of Chapter 5 *Mode S Data Link*)

The proposed amendment requires RTCA DO-260A MOPS for air-air ASAS applications. This is considered by Airbus unnecessary and detrimental to ASAS deployment.

4.1 Airbus believes that the proposed amendment to SARPS, if unchanged, will delay the implementation of ASAS applications.

ICAO SCRSP/1 proposes an amendment to SARPS ICAO Annex 10 Volume III Chapter 5, requiring RTCA DO-260A MOPS for air-air applications.

However, strong indications exist that the requirements of (at least some of) the ATSAW applications would be satisfied by current ICAO Annex 10 Volume III Chapter 5 Amendment 77 (DO-260) based avionics.

Airbus is committed to deployment of ADS-B applications, both air-ground (ADS-B OUT) and air-air (ADS-B IN), and, as such, is already offering on all aircraft types Mode S Extended Squitter based on ICAO Annex 10 Volume III Chapter 5 Amendment 77 (DO-260).

Taking into account that:

- current SARPS Amendment 77 provides an adequate basis for validation activities and pre-operational implementations,
- early “ADS-B IN” implementations would rely on and benefit from the large “ADS-B OUT” population of aircraft currently equipping with ICAO Annex 10 Volume III Chapter 5 Amendment 77 (DO-260) transponders,

- the proposed SCRSP/1 Annex 10 Amendment is considered to be not fully justified on the basis of globally harmonised and validated application requirements,
- the joint RTCA/EUROCAE/FAA/EUROCONTROL Requirement Focus Group (RFG) currently establishes globally harmonised and validated requirements for ADS-B applications,
- validation activities, such as Australian pre-operational implementations and Eurocontrol Cristal trials, provides the basis for globally validated and harmonised requirements,
- that as a result, SARPS will need to evolve,

4.2 *Conclusion*

4.3 *Airbus believes that the proposed amendment to SARPS, if unchanged, will delay the implementation of ASAS applications.*

4.4 *Note : This position does not preclude implementers (avionics equipment manufacturers, aircraft manufacturers, Air Navigation System Providers, etc) to select DO-260A for their products as considered useful for their needs (e.g. as to gain experience on NIC/NAC/SIL).*

WP B8-34
20 May 2005

SURVEILLANCE AND CONFLICT RESOLUTION SYSTEMS PANEL (SCRSP)

WORKING GROUP-B, Agenda Item 3.2

FAA Position of on Airbus View on Proposed Annex 10 Vol. III Amendments

WORKING PAPER

(Prepared by Ron Jones)
(Presented by Bill Petruzel)

SUMMARY
This working paper provides the FAA position on the views expressed by Airbus and included in WP B8-30.

Reference: WP B8-30 “Airbus view on proposed Annex 10 Vol. III amendment,” prepared by Kojo Owusu, 16 May 2005.

1. Introduction

SCRSP/1 proposed changes to Annex 10, Vol. III, Part 1, Chapter 5 that included certain changes associated with the original appendix to that chapter (i.e., Appendix 1) plus the addition of a second appendix (i.e., Appendix 2). Appendix 1 conveys the original version of the extended squitter message formats for ADS-B (now referred to as version zero (0) message formats) while the new Appendix 2 conveys the enhanced message formats (referred to as version one (1) message formats) applicable to both ADS-B and TIS-B. The viewpoint expressed in WP B8-30, including the proposed change in section 3 of that paper includes an objection to the limited context allowed by the SCRSP/1 proposed amendment for the Version 0 versus Version 1 message formats. Specifically in the SCRSP/1 proposal for para. 5.2.7 of the SARPs in reference the appendices states: "The data formats and protocols for messages transferred via Mode S specific services shall be as specified in Appendix 1 to this chapter for early applications of extended squitter and Appendix 2 to this chapter for extended squitter implementations that support both air-air and air-ground services..." Airbus, as well as the position of Australia stated in para. 3.1.2 of WP B8-30, is that "the provisions of Appendix 1 are suitable for some air-air applications and there is no need to specify compliance with Appendix 2." They go on to say that "that they do not oppose the requirements in Appendix 2, but believe a requirement to comply with the new Appendix 2 will set back implementation."

2. Background

There has been significant work sponsored and/or supported by the FAA that has uncovered some of the limitations of DO-260 (ie., SARPs Appendix 1) message formats.

- a) A few years ago the ASA MASPS (RTCA DO-289, Table AE-1) reported that it was possible to support "basic" and "intermediate" level air-to-air applications with DO-260 equipment. These applications include Enhanced Visual Acquisition, Airport Surface Situational Awareness (ASSA), Final Approach and Runway Occupancy Awareness (FAROA), and enhanced visual approach. The basic and intermediate ASA applications roughly equate to the following "package 1" applications being defined by the Requirements Focus Group (RFG):
 - i) Enhanced Traffic Situational Awareness on the Airport Surface
 - ii) Enhanced Traffic Situational Awareness during Flight Operations
 - iii) Enhanced Visual Acquisition for See & Avoid
 - iv) Enhanced Successive Visual Approaches
- b) It is notable that while ASSA and FAROA are technically supported by DO-260, RTCA DO-260 compliant transmitting equipment cannot assign a NUC_P value equivalent to the position accuracy of $NAC_P = 9$ and R_C of $NIC = 9$ (which can be achieved by GNSS equipment with SA off). Likewise, RTCA DO-260 compliant receiving equipment is unable to interpret a $NIC = 9$ into an equivalent NUC_P value but assigns the next lower $NUC_P = 7$ value which is equivalent to $NIC = 8$. $NAC_P = 9$ and $NIC = 9$ are the minimum normal operation requirements for ASSA/FAROA identified in Table 2-3 of DO-289. The degraded accuracy and R_C of the position data associated with the lesser $NUC_P = 7$ value that is transmitted or the lower $NIC = 8$ value translated by a receiver, results in ASSA and FAROA applications displaying degraded traffic target symbology when RTCA DO-260 compliant transmitting or receiving equipment is involved, and this quality data is transmitted/ received. Therefore with DO-260 equipment ASSA/FAROA applications will operate in a degraded mode only.

- c) More advanced applications requiring higher capability levels (Application Capability Levels, ACL) as defined in the ASA MASPS will not be supported by DO-260 equipment because, at a minimum, DO-260 does not have a message format structure currently defined to support transmission of ACL. In DO-260A 3-bits would be used within the Airborne Capability Class (CC) subfield of the Operational Status message to convey ACL. It is intended that the specific coding would be proposed to be added to MOPS and SARPs to define the ACL values once the required ACL values have been agreed by RTCA/EUROCAE and ICAO.
- e) Initial analysis of requirements for the Package-1 Sequencing and Merging (S&M) application indicate that S&M implementation will require higher ACL than "basic" or "intermediate." Therefore the S&M will not be supported by DO-260.
- f) It is likely that other Package-1 applications, i.e., In-trail Procedure in Oceanic Airspace and Enhanced Crossing and Passing Operations, will also require higher than "intermediate" ACL and will not be supported by DO-260.
- g) While the above discussion has focused on air-air applications, it is likely that there will be certain air-ground ATC surveillance applications that will not be supported by the DO-260 message set. These may include applications requiring high precision surveillance capability such as needed for precision runway monitoring and runway incursion detection.

3. US Position

The FAA considered the issues surrounding the use of the Appendix 1 (i.e., DO-260) versus Appendix 2 (i.e., DO-260A) messages formats when preparing TSO-C166 for the certification of extended squitter systems for ADS-B. While it was recognized there may exist certain simple air-air applications that potentially could support situational awareness, creating new implementations that would be limited to only such a basic capability should not be allowed. The rationale for this decision included (but was not limited to) the following factors, in addition to the issues discussed above:

- a) DO-260A introduced extensive new performance and functional requirements for extended squitter receiving systems that were felt to be essential for providing a viable system to support air-air applications in the US. The FAA felt that the improved capabilities and associated improved testing requirements defined by DO-260A were essential for supporting the air-air applications envisioned to be operationally allowed for use in the US within the next several years. Note that the only receiving system capabilities defined by the proposed SARPs are consistent with the DO-260A requirements and require support for the messages formats of both Appendix 1 and Appendix 2. The only basis for certification of extended squitter receiving systems is based on DO-260A and DO-260 based ADS-B receiving systems will not be certified for use in the US.
- b) Once an investment has been made to install a capability on an aircraft (either new or retrofit), the aircraft owner or operator will be reluctant to invest additional resources for upgrades until a return on the initial investment has been realized. Since virtually no aircraft are currently equipped with ADS-B IN capability, it is strongly felt that if any installation were to be certified that only supported DO-260 (i.e., Version 1) message formats (for both ADS-B IN and ADS-B OUT) it would in fact do a disservice to the aviation community by allowing equipage with a configuration that offers minimal capability to support future applications, including a lack of support

for the ADS-B Package-1 application set. Also by permitting these users to invest in such a limited airborne capability would in fact create a significant roadblock to moving forward with a system possessing the capabilities to support many of the more worthwhile air-air and future air-ground applications.

It should be noted that in addition to the NUC versus NIC/NAC/SIL differences between the Appendix 1 and Appendix 2 message formats, the Airbus position questions the need for some of the additional information defined by Appendix 2 (i.e., DO-260A). However, the proposed SARPs and DO-260A define a number of Classes of avionics and the lower classes only add a modest increase in the information required to be conveyed beyond that provided by the message formats defined in Appendix 1. For example, the target state information mentioned in para. 2.1.3, item 3 of WP B8-30, is only required to be broadcast by Class A2 and A3 equipped aircraft and an implementation not supporting such a message type could be certified as a Class A0 or A1 system.

3. Action by SCRSP

- a) The working group is invited to review the above Background and US Position and the underlying reasons for the position that has been taken when developing their position relative to the Airbus viewpoint described in WP B8-30.
- b) It is proposed that the working group oppose modifications to the SCRSP/1 proposed SARPs provisions. That is, the SARPs should not allow for airborne installations that support both ADS-B IN and ADS-B OUT capability to support only the message formats described in Appendix 1 (Version 0 message formats). For such systems the ADS-B OUT should be required to use the Version 1 (Appendix 2) message formats while the ADS-B IN capability should be required to support reception of both Version 0 (Appendix 1) as well as Version 1 (Appendix 2) message formats.
- c) The working group should coordinate with WG-A/ASAS-SG on the position of that subgroup on the need for support of the Appendix 2 (Version 1) extended squitter formats for use with the ASA applications being defined by that group.