

RTCA DO-242A ADS-B MASPS  
 Ad Hoc Working Group  
 Minutes of 5th Meeting held at Rockwell Collins Offices, Arlington, VA  
 May 21-24, 2001

The attendees included:

Tom Foster, Rockwell Collins	Bill Flathers, AOPA	Bob Passman, FAA / AIR-130
Stuart Searight, FAA / ACT-350	Steve Friedman, ADSI, Inc.	Christos Rekkas, Eurocontrol
Jerry Anderson, FAA / AIR-130	Jonathan Hammer, Mitre/CAASD	Bob Stamm, Raytheon
Richard Barhydt, NASA Langley	Ron Jones, FAA	Ken Staub, Trios Assoc.
John A. Brown, Boeing Air Traffic Mgmt.	Gary Livack, FAA / AFS-400	Hartmut Uhr, InfoSys
Dan Castleberry, Rockwell Collins	James Maynard, UPS AT	Tony Warren, Boeing Air Traffic Mgmt.

**Monday May 21, 2001**

1. Tom Foster began the meeting with a few opening remarks and an outline of his goals for the meeting.
  - The Issue of Independent Passive Ranging was brought up by Tony Warren. It is his belief that the TLAT report infers that this is a necessary activity safety-wise for ADS-B links. Jonathan Hammer stated he believed that if passive ranging is found in the TLAT report, it is probably included in response to concerns about security and spoofing. However, the plenary has explicitly decided that we will not address those issues in this round of document development. It was mentioned that WG's 3 & 5 were examining this issue, and that before they get ahead of the MASPS development, either this group or WG4 needs to address it, or - at minimum - produce a Issue Paper and/or white-paper on the subject. Jonathan stated he felt that no formal action was needed by this group or WG4 since passive ranging will be included as part of the WG4's safety and fault tree analysis which is being done with the ASA MASPS development. Jim Maynard volunteered to write up an issue paper to document the issue [AI 5-1] and the group agreed that this Issue Paper will very likely be given a status of DEFERRED.
2. The group reviewed the agenda for this meeting.
  - It was agreed to move agenda items 15 and 16 to this afternoon's agenda, and have items 5, 6, 8, 9, and 10 as a single agenda item for Wednesday to be presented by Gary Livack and Ken Staub.
  - Items 12, 13, and 14 were moved to Tuesday.
3. The minutes from the last meeting, held April 3-6 in Brussels, Belgium were accepted without comment.
4. Tom Foster gave a quick recap on the ADS-B MASPS work plan including time line of group meetings and milestones. (See 242A-WP-4-08)
5. Jonathan Hammer gave a presentation on recommendations to NOT include Issue Papers 2 and 29 in DO-242A. (IP2 requests that altitude rate not be a required message element, and IP29 requests that geometric altitude not be required in SVR) (242A-WP-5-10)

- Jonathan's analysis shows that the conflict detection scenario used during DO-242 development shows a loss of over 10 seconds in the time it takes to detect the defined conflict if IP 2 and/or IP 29 are adopted.
- It was suggested that we should require a particular accuracy on the broadcast altitude, but not place requirements on the specific altitude source.
- While the integrity and accuracy of some geometric information was debated, Jonathan stated he felt that it was inferred that this information was for augmented data only in the NUC tables (Table 2-1a). Jim Maynard said he felt otherwise as Table 3-5 clearly shows required state vector elements and included geo altitude and geo altitude rate.
- Jonathan pointed out that the apparent source of most of the confusion on these matters, is that Table 2-1a states the need to transmit geo alt and alt rate only when operating at a  $NUC_R$  of 8 or 9, while other tables (3-4 and 3-5) only say geo data is required SV element when available.
- Tom Foster asked if we are to leave altitude rate and geometric altitude (when available) as required elements, what quality requirements can we place on the data?? Can this be done as part of the Issue Paper being authored by Jim Maynard [AI 3-4 and AI 4-1] on equipage or capability class codes?? Tony, Jim and Dan Castleberry all felt that between the work being done on NIC/NAC and class codes, we should be able to resolve people's concerns about transmitting faulty altitude rate and/or geometric altitude data.
- It was agreed to table the discussion on deferring or rejecting IPs 2 and 29 until after the presentations on NIC/NAC and class codes.
- Tony Warren suggested that an addendum or alternate resolution to IP2 be generated that proposes to use the "best" source for rate and use that in the SVR, rather than deleting both altitude rates as required state vector elements. [AI 5-2]

## Tuesday May 22, 2001

6. The morning began with a review of Issue Paper 30, which was submitted by Steve Heppe on expanding the definition of ADS-B.
  - There was great concern expressed about some of the proposed additions to the ADS-B definition, particularly the peer-to-peer capabilities.
  - It was also suggested that none of these additions are needed, since the MASPS is a minimum set of requirements, and that additional capabilities do not preclude a system from being an ADS-B system. Further, some ADS-B systems may have additional functions that are not considered part of the ADS-B functionality. VDL-4, therefore, can meet the MASPS while still doing peer-to-peer and implementing variable update rates, etc..
  - Tom Foster suggested that the proposed changes alter the fundamental definitions to ADS-B, and such a change is outside the scope of this ad hoc group's terms of reference. Tom proposed that we either defer or reject this IP, and that if this IP is to be addressed in the future, it needs to be reviewed and approved by the full plenary.
  - Dan Castleberry stated his belief that the MASPS should only be about the reports sent, and the contents of those reports. Other considerations regarding implementations, protocols, etc. should not be addressed within the MASPS. Jonathan Hammer agreed and suggested that perhaps such a statement could be included as a footnote to the definition for ADS-B. This

would prevent the appearance that certain characteristics of some links are out of scope of an ADS-B system. This approach was agreed to, and Dan Castleberry will propose such a footnote. [AI 5-3]

7. Ron Jones presented his paper on a proposed anonymous mode for ADS-B. (242A-WP-5-03)
  - On the proposed implementation in 2.1b to use VFRxxxx where xxxx are randomly selected values between 0000 and 9999:
    - a. It was pointed out that it needs to be verified that “VFR” is not currently a country code or airline abbreviation used in ICAO addresses or flight IDs.
    - b. Tony Warren expressed concern that only having four digits randomly selected would produce to high a probability that duplicate numbers could be found in the same airspace.
  - Ron felt that some of the presented material – if accepted – will need to be requirements, and other parts of the paper might be placed in an appendix as guidance material for implementing an anonymous mode within ADS-B.
  - It was agreed that this Working Paper should be included as an attachment to IP5 on anonymity protection. And its merits will be debated when the group reviews how to resolve IP5. Tom invited everyone to review this paper and IP5 and issue any comments via email.
  - A resolution for IP5 will be a likely agenda item for our next meeting.
8. Ron Jones introduced Bill Harman’s IP35 which proposes deleting or changing Note 7 of Table 3-4 in the MASPS.
  - Jonathan stated another cause for confusion in Table 3-4 was that some interpretations are that it was permissible to meet either the 99% requirement or the 95% requirement, but the MASPS was written to have both of these requirements met.
  - It was agreed that this is a valid issue paper and it will be addressed in DO-242A.
  - Jonathan Hammer agreed to review the formula proposed in IP35 to determine if the new formula will be consistent with the requirements defined in Table 3-4 [AI 5-4]
9. The group next was briefed on the current status for proposed Integrity Changes (NIC/NAC). This discussion was led by Tony Warren and Jim Maynard.
  - It was proposed to add an appendix which will include guidance material to help people understand the various data sources needed to support the different levels of ADS-B functionality. Tony Warren agreed to write an issue paper calling for such an appendix. This Issue Paper will attempt to scope out and outline the needed contents of this proposed Appendix. [AI 5-5]
  - Tom stated it is his goal to be able to have final decisions reached on the NIC/NAC proposals that will be included within DO-242A at our July meeting in Seattle.
10. Richard Barhydt gave his presentation on updates to Intent/TCP issues and the addendum for Issue Paper 26. (242A-WP-5-12)
  - There was concern expressed about placing the burden of constructing projected flight paths onto the receiving aircraft.
11. The next agenda item was Christos Rekkas presenting a paper on Eurocontrol requirements for Selected Altitude, which was first presented at the Surveillance and Conflict Resolution Systems Panel in April. (242A-WP-5-14)

- A long discussion followed which included proposals to have Issue Papers on Selected Altitude, Selected Heading, and navigation mode indicator. Before reaching final consensus on the best way to incorporate these issues into Issue Papers, it was agreed to have Richard Barhydt's presentation on a proposed consolidation of all Issue Papers related to Air Reference Velocity Vectors.
12. Richard Barhydt gave his presentation on a proposed consolidation of all Issue Papers related to Air Reference Velocity Vectors. This includes Issue Papers 9, 27, 28, and "3X" which was presented in Brussels as 242A-WP-4-07. (242A-WP-5-13 and attachments)
- Related to one of Richard's proposals to have heading and air-speed as part of a new on-condition report, Tony Warren pointed out that DO-242 only requires A3 aircraft to issue on-condition reports. This would need to be changed in Revision A to have all equipage classes have on-condition reports. Jonathan stated his belief that this is a good idea regardless of whether we accept Richard's proposal on heading and air-speed.
  - **An Issue Paper is needed that proposes all equipage classes have on-condition reports.**
  - Jonathan expressed a concern that rather than have the receive side calculate wind from the ground track and air speed, it would be simpler if the transmit side simply broadcast wind information.
  - There seemed to be consensus that heading and airspeed data can be removed as required elements
  - The second part of Richard's proposal, which would create requirements for class A2 and A3 equipment to be capable of broadcasting heading and airspeed, however, was met with more contention. Jonathan suggested making this an optional functionality, but Tony Warren stressed he felt that it had to be a requirement.
  - Dan Castleberry suggested that the root of most of the problems in this area go back to the over generalization of some of the tables in DO-242. Specifically, Table 3-8a states that the SV must be sent for certain equipages (such as A0), where what they should define is the minimum data requirements. The idea of reexamining how state vector elements are documented is the topic of Jim Maynard's new IP33.
  - Richard, Jim, and Dan were empowered as a group to develop a straw-man proposal for a resolution of IP33. [AI 5-6] Jonathan Hammer asked this group to keep him apprised of their work, but could not volunteer his services as a full-contributing member.
  - Jonathan expressed some concern that if the SV is drastically reworked, or a lot of changes are done in the area of equipage and capability codes, the development of DO-242A might become out of sync with the development of the ASA MASPS.
13. Tom concluded the day's meeting by reminding everyone of our agreed upon criteria for addressing issue in DO-242A. Tom asked that everyone remember these criteria as we begin our final review of the IPs in an attempt to make final decision on which IPs will be addressed in DO-242A.

### Wednesday, May 23, 2001

14. Gary Livack and Ken Staub gave a series of briefings as part of their action items from the Brussels meeting on SC-193's input to various Issue Papers including 4, 14, and 19.

- a. Newly Submitted Issue Papers (242A-WP-05-2)
  - New Livack 1: Helicopters on ground or in hover as related to surface movements and runway incursion.
  - New Livack 3: Does the vertical integrity component need to be the same as the horizontal component for a potential ACM system to work against an ADS-B equipped aircraft.
    - Tony Warren wanted to be assured that this issue paper is not in conflict with RNP standards recently adopted by SC181.
    - Tom proposed adopting the material from this issue paper as an attachment to IP8, which is the Issue Paper requesting that NUC be broken out into NIC and NAC. While originally agreed to, further discussion led to the decision to keep this Issue Paper separate, and to formally pass this on to WG4 for consideration and safety analysis. [AI 5-7]
    - Currently there is only a vertical accuracy component. Do all ADS-B aircraft need to have a vertical integrity for unmanaged airspace??
    - Jonathan agreed that the WG4 NIC/NAC subgroup would need to be reconvened to examine this issue and determine if it is needed.
  - New Livack 4: Request to word smith the MASPS so that ADS-B application software could be considered modular and therefore more easily transportable to other hardware platforms.
    - Opinions were expressed that ADS-B is already separate from the applications that it will enable, and therefore this Issue Paper is out of scope.
    - Further discussion related to IP31, and how the use of Capability Class codes will address the separation of applications by the operational capabilities of the ADS-B aircraft.
    - It was agreed to reject this IP as out of scope for the ADS-B MASPS since the ADS-B MASPS is not meant to give hardware and/or software design standards.
- b. Gary quickly went through his overview presentation of potential roles for ADS-B in Data Communications. (242A-WP-5-01)
- c. Ken Staub presented a briefing on Surface Alerting and Runway Incursion Prevention. (242A-WP-5-06)
- d. Ken Staub presented a briefing on a proposed resolution to IP04 to use 4 bits to broadcast aircraft classes in substitution of specific make and model. (242A-WP-5-04)
- e. Ken Staub presented a briefing on IP14, Certified Navigation Center. (242A-WP-5-05)
  - Tom reminded everyone that we have previously agreed that we need – at a minimum – to put some clarifications into DO-242A regarding Certified Navigation Center.
  - Other aspects of this topic need to be passed on to WG4 for analysis on some of the processing requirements regarding taking the navigation sources and transferring them to a common reference point.

- We should also ask WG4 to establish a standard definition for navigation reference point.
15. After lunch, the group reviewed Tony Warren's Addendum to IP02, which proposes to only broadcast the "best source" altitude rate, rather than broadcast both, whenever they are available (IP02 proposes eliminating ALL vertical rates from the state vector.). This closed AI 5-2. (242A-WP-5-09)
- Steve Friedman stated ADSI's belief that false alarm rates at 30 seconds out in a noisy environment will likely be considered too high. Therefore, alarms will not be given at 30 seconds out, which nullifies using Jonathan's simulated scenario as a basis for including ANY altitude rate in the ADS-B State Vector.
  - Tom stated he felt WG4 still needs to perform lots of analysis in this area regarding alert times, false alarms, nuisance alarms, safety, etc. as they relate to conflict detection, collision detection, and collision avoidance.
  - After some discussion about  $NUC_R$ ,  $NAC_V$  and other integrity and accuracy parameters. Tom tabled the discussion on a resolution to IP02 for a later date. For the purposes of this meeting, it is agreed that IP02 is to be considered DO-242A
16. Next, the group began a review of all newly submitted Issue Papers.
- IP31: TCP Update Rate Requirements – This was originally presented in Brussels as IP3Y in 242A-WP-4-06.
  - IP32: Revise Capability Code Definitions – Proposed revision of section 2.1.2.4 on capability code definitions. This closed AI 3-4. It was agreed that this IP will be addressed in Rev A.
  - IP33: Re-organize the SV and MS report elements – AI 5-6 is for Jim, Richard, and Dan to propose a straw-man resolution to this issue paper. Any resolution will hopefully propose report data elements and minimum update rates for each. It was agreed that this IP will be addressed in Revision A.
  - IP34: Standardize the report structure format – Proposal to provide standard, data-link-independent report structure format in the MASPS. This is being proposed so that various applications using different data links - or at least data from different links – will be able to interface and/or fuse the data for use. It was agreed that, while this would be a worthy endeavor and that its benefits diminish if it is done later rather than sooner, this is not a high priority item for the group at this time. Therefore, due to the workload to deliver Revision A to plenary on schedule, it was agreed that while the group would like to address this in revision A, it is a low priority item at this time and might need to be deferred for a later revision.
  - IP35: Delete or change note 7 of Table 3-4 – Discussions from yesterday concluded with agreement that this IP will be addressed in Revision A.
  - IP36: Simultaneous Parallel Approach Ranges – It was agreed that the tables mentioned in the Issue Paper (Tables 2.4a, and Table 3.2-1) do contain incorrect information, and that this issue paper need to be addressed in Revision A.
  - IP37: Air Reference Velocity Vector – This combines IPs 9, 27, 28, and 3X. This issue paper was accepted and an Action Item was taken by Stuart and Richard to expand the Issue Paper to include all material from the original IPs being consolidated. IPs 9, 27, and 28 will be closed and reference this IP as their resolution. [AI 5-8]

- IP38: New Livack 1 – It was agreed to defer this Issue Paper for a future revision due to the reason that there is not a mature operational concept demonstrating a need for this information.
  - New Livack 2 – This proposed Issue Paper attempted to consolidate all submitted Issue Papers that request additional ADS-B message set elements. These IPs include 4, 6, 7, 13, 18, and 19. It was agreed that it would be better to keep these IPs separate, rather than combining them all into a single Issue Paper. This will better allow the group to adopt some of these ideas, while deferring others and facilitate the documentation of those deliberations and decisions. This submission, therefore, will not become a formal IP. Stuart agreed, however, to add a reference to this working paper (242A-WP-5-02) in all the IPs this submission attempted to consolidate. [AI 5-9]
  - IP39: New Livack 3 – It was agreed to include this IP in Revision A. (See item #14a of these minutes.)
  - IP40: New Livack 4 – It was agreed to reject this IP as out of scope of the MASPS. (See item #14a of these minutes.)
17. The group next began reviewing all Issue Papers to determine the final list of which IPs will be addressed in DO-242A.
- IP01: Turn Indicator should not be required - It was felt that Jonathan needs to better define Turn Indicators and to submit some analysis or other rationale to keep them as a required message element. [AI 5-10] This IP will be included in Rev. A.
  - IP02: Altitude Rate should not be required - It has been agreed that this IP will be addressed in Revision A. Tony Warren's submission as per AI 5-2 will be the starting point for this IPs resolution. Steve Heppe will be asked to organize a telecon to discuss Tony's proposed approach to an alternate resolution for this IP. [AI 5-11]

**Thursday, May 24, 2001**

17. (continued)

- IP03: Update Rates - Some of this work will be done by Jim Maynard's attempt to rework some of the SV and MS report elements and their required minimum transmit rates for A3 aircraft (IP33). It was agreed to address the rates for A0 equipped aircraft. However, if it is concluded that some rates are too high, analysis will be needed to determine exactly what rates will be sufficient. It was agreed that this Issue Paper needs to be presented to WG4 at their June meeting. Richard Barhydt will write an addendum to IP03 reflecting our discussions and ask them for any guidance or feedback on this topic. [AI 5-12] Steve Heppe will be asked to perform and present the necessary analysis needed to determine minimum required rates. [AI 5-13] This Issue Paper will be considered for Revision A based on the feedback from WG4 and analysis results presented by Steve Heppe.
- IP04: Make/Model - While this Issue Paper was originally deferred, it was agreed to reopen this Issue Paper, re-title it as "Aircraft size Characteristic" and reference the work presented by Ken Staub in 242A-WP-5-04. This IP will be addressed in Revision A.

- IP05: Anonymity Protection – 242A-WP-5-03, presented by Ron Jones, will be appended to this IP. This IP will be addressed in Revision A. Ron Jones and Bill Flathers will be asked to develop specific language for the MASPS that would enable an anonymous mode based on 242A-WP-5-03. [AI 5-14]
- IP06: Moving and Stationary Obstacles – It was agreed to change the wording of “fixed obstructions” to “fixed obstacles” in the MASPS. Gary agreed to examine section 2.1.2.1.3 and propose additional aircraft/vehicle categories. [AI 5-15] Any additions of new message or report elements to better describe various obstructions, however, will be deferred to a future revision.
- IP07: Broadcast of Additional Message Sets - This IP was rejected at a previous meeting.
- IP08: NIC/NAC - This IP will be addressed in Revision A. No new action items were given on this IP since there is a number of outstanding AI’s on this topic.
- IP09: Velocity Subtypes 3&4 - This IP was closed when it was consolidated into IP37, which will be addressed in Revision A.
- IP10: VFR/IFR Data Source Requirements - The IP was REJECTED because the group felt the MASPS is already adequate in this regard and that it is an air-worthiness issue.
- IP11: TCP Data Valid bit – It was agreed to close this IP and integrate the specific proposal into IP21.
- IP12: TCAS/CDTI Capability and RA information – It was agreed that the capability part of this Issue Paper will be addressed, but that the RA information being broadcast will be deferred unless it can be demonstrated that a mature Operational Concept can be shown. Bob Hilb will be asked to brief the group on the work being done on the ACM system. [AI 5-16]
- IP13: Low/High Update Rates – It was agreed that this will be addressed in Revision A. Gary Livack will coordinate with the SF-21 people and present pertinent analysis to this group on the necessary broadcast rates needed to support runway incursion. [AI 5-17]
- IP14: Certified Navigation Center – It was agreed that the wording on this topic needs to be changed in the MASPS. (“Common Navigation Center” was proposed.) Further work on this topic is being considered by WG4, and we will get them the briefing given by Ken Staub (242A-WP-5-05). It was agreed that this will be addressed in Revision A.
- IP15: Consider Altitude Differential When Determining Effective Received Update Rate – This IP was REJECTED at meeting #3.
- IP16: State Vector Reporting Rate when Broadcasting TCPs – This IP was DEFERRED at meeting #3.
- IP17: Use of TIS-B for Integrity Enhancement – This IP was REJECTED at meeting #3.
- IP18: Heading at Vstop - It was agreed that this will be addressed in Revision A. This will be addressed by Jim Maynard in his work on IP33. [AI 5-6]
- IP19: Brake On/Off - It was agreed that this will be addressed in Revision A. The title will be changed to “Runway Incursion Alerting”
- IP20: Velocity Subtypes - This IP was CLOSED at meeting #3 since the text in DO-260 to which this Issue Paper originated has since been deleted.

- IP21: TCP Types - It was agreed that this will be addressed in Revision A. It was proposed to move the current TCP material from the body into an appendix and in its place will be a commentary that the original material on this topic was insufficient and will be more fully addressed in a future revision of the MASPS. Tony Warren will produce the appendices which will capture the original material and discuss the work being done on TCPs and Long-term Intent. [AI 5-19] IPs 11 and 31 are to be merged into this IP
- IP22: Backwards Compatibility - It was agreed that this will be addressed in Revision A.
- IP23: Broadcasting of Aircraft Functionalities - It was agreed to CLOSE this IP and merge it with IP32. Gary Livack will coordinate with Jim Maynard on a way to map capabilities, applications, features, and intended functions to the draft Advisory Circular on Guidelines to the Operational Approval for ADS-B Avionics. [AI 5-20]
- IP24: NAC for Surface Functions - It was suggested that this IP should be rejected, since tighter NAC categories will not be of use due to the uncertainty of aircraft size, as presented in 242A-WP-5-04. It was agreed to CLOSE this IP and incorporate it into IP8, which will be addressed in Revision A.
- IP25: Military Formations and Operations - It was agreed that this IP will be DEFERRED, due to a lack of any mature concept of operations for this message set. The group will, however, notify John Gonda of this decision and give him the opportunity to respond with any specific requirements or recommendations for the MASPS which might have the group reconsider this IP's status. Tom Foster will notify John Gonda and Pedro Rivas of the agreed upon deferral of this IP. [AI 5-21]
- IP26: Short and Long-Term Intent - This IP will be edited so that it only addresses short-term intent issues and flight mode indicators. (The long-term intent aspects of this IP will be addressed by Tony Warren in the Appendix produced for IP21.) It was agreed that this will be addressed in Revision A.
- IP27: Heading and Airspeed in State Vector Report - This IP was closed when it was consolidated into IP37, which will be addressed in Revision A.
- IP28: Air-Referenced Parameters - This IP was closed when it was consolidated into IP37, which will be addressed in Revision A.
- IP29: Reporting of Both Geometric and Barometric Altitudes - This IP will be considered for addressing in Revision A. (It was agreed that a proper resolution might not be attainable in a time frame that allows inclusion in Revision A.)
- IP30: Definition of ADS-B - It was agreed that this IP be submitted to the plenary since it requests a change to fundamental definition of ADS-B. The final status of this IP will be based on the plenary discussion on this topic.
- IP31: TCP Update Rates - It was agreed earlier in the week to CLOSE this IP and merge it with IP21.
- IP32: Capability Class Codes - It was agreed earlier in the week that this will be addressed in Revision A.
- IP33: State Vector and Mode Status Report Organization - It was agreed earlier in the week that this will be addressed in Revision A.
- IP34: Standardized Report Structure - It was agreed earlier in the week that this will be addressed in Revision A, however it has a low priority.

- IP35: Note 7 of Table 3-4 - It was agreed earlier in the week that this will be addressed in Revision A.
- IP36: Ranges for Parallel Approaches - It was agreed earlier in the week that this will be addressed in Revision A.
- IP37: Air-Reference Velocity Vector - It was agreed earlier in the week that this will be addressed in Revision A.
- IP38: On-Ground Detection for Helicopters - It was agreed earlier in the week that this IP is DEFFERED due to a lack of mature operational concept that requires this information.
- IP39: Vertical NIC - It was agreed earlier in the week that this will be addressed in Revision A.
- IP40: Modularization of Applications - It was agreed earlier in the week that this IP is to be REJECTED as out of scope of the MASPS document.

18. The next activity was a review of outstanding action items. (Changes to the status of Action Items from this week's meeting are marked in red in the table below.)

- 2-7: Propose MASPS changes to IP18 – Closed as it is superceded by AI 5-6
- 2-11: Closed by presentation at this meeting.
- 2-12: Closed. Action Item 5-14 will produce specific MASPS changes for Anonymity.
- 2-13: Since the part of IP06 which would have altered Table 3-9 is deferred, this action item is considered closed.
- 2-14: Since the part of IP06 which would have added new ADS-B message elements is deferred, this action item is considered closed.
- 2-15: Change “Assigned “ to Tom Foster.
- 2-16: Open
- 2-18: Closed. IP9 has been consolidated with IP37.
- 2-20: Closed.
- 2-21: Closed, and incorporated into AI 5-6.
- 2-22: Closed.
- 2-24: Closed with rejection of IP10.
- 2-26: Closed with Jonathan's presentation at this meeting. (See AI 3-8, also.)
- 3-1: Open, awaiting the next iteration of Jim's NIC/NAC paper.
- 3-4: Closed with IP32.
- 3-6: Open
- 3-7: More people need to be assigned to this activity.
- 3-8: Closed with Jonathan's presentation at this meeting. (See AI 2-26, also.)
- 3-9: Open
- 4-1: Closed with IP32.
- 4-2: Close and combine with AI 3-1.
- 4-3: Closed: Overcome by Events (OBE)
- 4-4: Open
- 4-5: Closed (OBE)
- 4-6: Open
- 4-7: Open (See AI 5-21, also)
- 4-8: Closed with Christos briefing

- 4-9: Closed with Staub briefing.
- 4-10: Closed with Staub briefing
- 4-11: Closed, no longer applicable
- 4-12: Closed at meeting 5 by Richard.
- 4-13: Closed, superceded by AI-10
- 4-14: Closed with IP37.

19. Upcoming Meetings

- July 16-19; Meeting extended to Monday, July 16. Start at 9:00AM, July 16 through 3:00 July 19. (Near SEATAC airport.)
- August 28-30, Washington D.C. area.
- September 25-27, Washington D.C. area.
- October 23-26, Washington D.C. area.

Action Number	Action Item Description	Assigned to	Status
5-1	Write an Issue Paper documenting the issues and concerns related to passive ranging. This Issue Paper will <u>not</u> be addressed in Rev A.	Jim Maynard	
5-2	Summarize our discussions on IP2 and propose alternate resolution for using "best source" for altitude rate.	Tony Warren	Closed. (242A-WP-5-09)
5-3	Author a proposed footnote to the definition of ADS-B which talks to the link flexibility and protocol issues in response to the groups discussion on IP30.	Dan Castleberry	
5-4	Verify that the update to the formula in note 7 of Table 3-4 proposed in IP35 is consistent with the requirements defined in the table.	Jonathan Hammer	
5-5	Write an issue paper calling for an appendix describing the various data sources needed to support different levels of ADS-B functionality	Tony Warren	
5-6	Develop possible straw-man resolutions for IP33	Richard Barhydt Jim Maynard Dan Castleberry	
5-7	Formally pass on Issue Paper "New Livack 3" to WG4 for consideration and safety analysis.	Stuart Searight	
5-8	Copy ALL information from IPs 9, 27, and 28 into IP37 and close IPs 9, 27, and 28 with a reference to IP37.	Richard Barhydt Stuart Searight	Completed 6/27
5-9	Add references to "New Livack 2" of 242A-WP-5-02 within IPs 4, 6, 7, 13, 18, and 19.	Stuart Searight	Completed 6/27
5-10	Provided a better definition and justification for keeping Turn Indicators as required message element (IP01)	Jonathan Hammer	
5-11	Organize a telecon to discuss Tony Warren's proposed alternate resolution for IP02 (AI 5-2)	Steve Heppe	
5-12	Present summary of groups discussions of IP03 and present them to WG4 at their June meeting	Richard Barhydt	
5-13	Perform and present analysis needed to determine minimum required rates requested in IP03.	Steve Heppe	

Action Number	Action Item Description	Assigned to	Status
5-14	Develop specific MOPS language to resolve IP05 based on paper presented by Ron Jones (242A-WP-5-03)	Ron Jones Bill Flathers	
5-15	Propose any needed additional aircraft/vehicle categories listed in 2.1.2.1.3. (IP06)	Gary Livack	
5-16	Provide briefing to group on current status of ACM work and its ConOps, in particular the planned use of broadcast TCAS RA information requested in IP12	Bob Hilb	
5-17	Coordinate with SF-21 group to develop and present pertinent analysis on the necessary broadcast rates needed to support runway incursion. (IP13)	Gary Livack	
5-18	Rework titles of IPs to not include "Comments from 1090" or authors names.	Stuart Searight	Completed 6/27
5-19	For IP21, produce appendices that will capture original TCP MASPS material and discuss work envisioned with TCPs and Long-term Intent information.	Tony Warren	
5-20	Coordinate about work being done to resolve IP23 and IP32 regarding a way to map ADS-B capabilities, applications, features, and intended functions to the draft Advisory Circular on Guidelines to the Operational Approval for ADS-B Avionics.	Gary Livack Jim Maynard	
5-21	Notify John Gonda and Pedro Rivas of the agreed upon deferral of IP25.	Tom Foster	
1-1	Develop template for "Issue Paper" form to be used for submitted issues to be addressed by MASPS	Steve Heppe	Completed
1-2	Transcribe all submitted issues into our Issue Tracking Matrix and Change Issue Forms (where necessary)	Stuart Searight	Issue Papers: Done. Tracking Matrix: <b>Pending</b>
1-3	Give a preliminary evaluation on submitted comments as to whether those comments should be included in DO-242A or be deferred to later revisions of the MASPS.	Jim Maynard	Completed
2-1	Ask plenary for guidance regarding to what degree the ASA and/or ADS-B MASPS needs to address security /spoofing issues.	Tom Foster	Completed
2-2	Request WG1 to address Ops Concept on the use of Intent information. <b>Result:</b> WG1 Chair reported he did not foresee this activity in near-term.	Tom Foster	Completed
2-3	Produce Issue Papers that address four major conclusions of Intent briefing. (242A-WP-2-02)	Tony Warren	Closed. (IP26, IP27, & IP3Y)
2-4	Ask WG#3 to provide analysis for which 1.7 sec TCP update rate was based.	Stuart Searight	Completed
2-5	Produce an Issue Paper proposing specific clarifications on the material in Section 3.4.3.1 regarding the Air Reference State Vector and required information in the SV	Jim Maynard	Closed (IP3X)
2-6	Break Issue Paper #4 into four separate Issue Papers	Stuart Searight	Completed
2-7	Propose MASPS Change to address IP 4b (now IP18)	Jim Maynard	Completed
2-8	Report on the military's stance on IP 14 (center of navigation)	John Gonda	Completed
2-9	Report on SC-193's stance on IP 14 (center of navigation)	Gary Livack	Completed
2-10	Bring IP14 up during WG4 telcon on 1/29 and report back to our group on that discussion (center of navigation)	Tony Warren	Completed (see above minutes)
2-11	Provide further detail on information sources and specific requirements to better focus IP 4c. (now IP19)	Gary Livack	Completed

Action Number	Action Item Description	Assigned to	Status
2-12	Review and assess if section 2.1.2.1.2 of the MASPS needs clarification. (IP 5)	Dan Castleberry	Closed. (Overcome by Events)
2-13	Propose editorial clarifications for Table 3-9.	Gary Livack	Closed (Part of IP06 related to this is deferred.)
2-14	Provide specific proposal on what clarifications or changes in requirements is needed in the MASPS to address item #2 of IP 6. (centenary and other continuous obstacles)	Gary Livack	Closed. (Part of IP06 related to this is deferred.)
2-15	Produce IP on protecting ADS-B services from other services provided by a shared data link	Tom Foster	
2-16	Write ad hoc group's response to issue #3 of IP7 that will put issue in broader context and serve as proposal to WG#4 for consideration in the ASA MASPS.	Dan Castleberry	
2-17	Write proposals specific MASPS changes to split Integrity and Accuracy into separate components.	Jim Maynard, Tony Warren, Jonathan Hammer	Closed. (Presented at Feb. meeting.)
2-18	Draft initial recommendations on IP9.	Jim Maynard Christos Rekkas	Closed. (IP09 is now consolidated with 37.)
2-19	Prepare briefing on trajectory leg types for ad hoc group consideration	Tony Warren	Closed. (2/14 telecon)
2-20	Request more specificity from Capt. Hilb on IP 12	Jerry Anderson	Closed
2-21	Write and Issue Paper on items 11 and 12 from Table 3-6 of DO-242	Dan Castleberry	Closed (Incorporated into AI 5-6)
2-22	Propose language that clarifies MASPS regarding update rates and stationary/movement thresholds. (IP13)	Steve Heppe	Closed.
2-23	Combine Gary Livack's comments on certified navigation center into IP14.	Stuart Searight	Completed
2-24	Provide comments and preliminary recommendations from FAA Certification on IP10.	Jerry Anderson	Closed. (IP10 rejected.)
2-25	Determine if there are strong feelings in Europe about having Turn Indicators (IP01) and altitude rate (IP02) as required message elements.	Christos Rekkas	Completed
2-26	Provide expertise/thoughts/concerns regarding the necessity of requiring altitude rate as message elements.	Jonathan Hammer	Closed. (242A-WP-5-10)
2-27	Communicate newly proposed requirement specified in IP3 to WG4.	Tony Warren	Completed
3-1	Formulate proposed requests of SC-181 regarding placing requirements on DO-236 (RNP) to provide inputs for ADS-B as it relates to NIC/NAC.	Tony Warren	
3-2	Submit Issue Paper that proposes explicit operational requirements for TCP and TCP+1 update rates (even if TBDs must be used in DO-242A).	Tony Warren	Closed. (IP3Y)
3-3	Write an Issue Paper discussing the use of air-reference data, how often must it be transmitted and when, and perhaps suggesting this can be On Condition data.	Steve Heppe	Closed. (IP28)
3-4	Write an Issue Paper to rework section 2.1.2.4, "Class Codes", in particularly making it less specific.	Jim Maynard	Closed (IP32)
3-5	Propose changes to Section 2.1.2.2.4 of the MASPS and coordinate telecon to review	Jim Maynard	Completed
3-6	Write White Paper on backward compatibility subject	Tom Foster	

Action Number	Action Item Description	Assigned to	Status
3-7	Develop an initial draft of a normative appendix defining report data elements	Dan Castleberry	More people to be assigned.
3-8	Draft a response to IP2 (altitude rate issue)	Jonathan Hammer/Tony Warren	Closed. (242A-WP-5-10)
3-9	Write comments to IP15 explaining rationale for rejecting	Dan Castleberry	
4-1	Propose revised capability code definition that addresses basic equipage capability class codes and initial unique capability codes	Jim Maynard	Closed (IP32)
4-2	Create note to Table 2-1 to define meaning of "Probability of Exceeding Containment" column values.	Tom Foster	Closed. (Combined with AI 3-1)
4-3	Write paper on basis for eliminating NIC 4.5	Jim Maynard	Closed. (Overcome by Events)
4-4	Write a note for Table 2-1a and 2-1b to address the independence of the accuracy and integrity values and to clarify the reference to DO-236A	Tony Warren	
4-5	Write an Issue Paper to address the issues between containment values and the integrity associated with the assessment and reporting of the value.	Jim Maynard	Closed. (Overcome by Events)
4-6	Consult with Boeing navigation experts to obtain inputs on the MASPS definitions of navigation containment and integrity for consistency with RNP and GNSS standards	Tony Warren	
4-7	Provide IP on proposal for ADS-B requirements to address formation flight characteristics	John Gonda	Also see AI 5-21
4-8	Report on the results of the ICAO SCRSP panel definition of Selected Altitude for Mode S DAP	Christos Rekkas	Closed. (242A-WP-5-14)
4-9	Provide SC-193 recommendations for the minimum number of aircraft types needed to support airport surveillance applications	Jens Schiefele	Closed. (242A-WP-5-04)
4-10	Provide a proposal for a definition of common reference location and accuracy of this location	Ken Staub	Closed. (242A-WP-5-05)
4-11	Provide a briefing on recent work with runway incursion detection algorithms	Ken Staub	Closed. (Determined no longer applicable.)
4-12	Provide addendum to IP26 to address issues associated with flight mode indicators	Richard Barhydt	Closed. (242A-WP-5-12)
4-13	Write rationale for elimination of Turn Indication as addendum to IP1	Tom Foster	Closed. (Superseded by AI 5-10.)
4-14	Review air referenced parameter IPs for potential consolidation and provide a proposal to resolve	Richard Barhydt	Closed. (IP37)