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RTCA Special Committee 186, Working Group 3

ADS-B 1090 MOPS

Meeting 2

TIS-B SERVICE VOLUME ID (SVID)

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SUMMARY

This briefing is intended to focus a discussion at the Melbourne meeting on the requirement for and use of SVID in TIS-B on 1090 MHz.

TIS-B SERVICE VOLUME ID (SVID)

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Topics

- **Need for Service Volume ID**
 - Track stability
 - TIS-B management
- **Incorporating the ID in the TIS-B Formats**
 - Fine formats
 - Coarse formats
- **Summary**



SVID Use for Track Stability

- **Airborne aircraft may receive TIS-B messages from more than one SVID**
- **Coarse formats are normally based on surveillance from a rotating beam sensor. Unless adjacent sensor data is merged:**
 - **Messages from different SVIDs should not be mixed**
 - **Different biases will cause track to be unstable**
- **Airborne user should select data from only one SVID for coarse format**
- **SVID not essential for fine format**
 - **Data quality will be similar to GPS (e.g., time difference multilateration surveillance system)**



SVID Use for TIS-B Management

- **User needs to know limit of TIS-B coverage of an SVID**
 - To switch to new SVID if available
 - Otherwise to alert pilot that TIS-B service is terminating
- **TIS-B station should broadcast management message**
 - Provides station SVID, and service area limits
 - Limits would include 2D area and minimum altitude at the limits of coverage
- **Overlap between adjacent SVIDs would be the minimum needed to ensure continuity of service across a boundary**
 - Avoids unnecessary channel activity
- **User could select SVID based on own position and broadcast service volume**
- **TIS-B management necessary for coarse formats**
 - Broad area coverage by terminal or enroute radars
- **TIS-B management not essential for fine formats**
 - Limited coverage area (surface or approach)
 - Could be defined by operating procedure



SVID in Fine TIS-B Formats

- **No message bits for SVID are available unless formats are modified**
 - Fine TIS-B formats are the same as 1090 MHz ADS-B formats except that certain fields are unused
 - Very desirable since TIS-B can use the same decoding software as developed for ADS-B
- **Better approach is to incorporate the SVID as an overlay to the DF=17 PI Field**
 - Same approach as used for II code with Mode S All-Call reply
- **User receives management messages with zero PI overlay**
 - Same as for DF=17 squitters
- **Based on service volume, user selects appropriate SVID**
 - This SVID is used in the decoding of TIS-B formats
 - DF and CF Field need to be interpreted before CRC check



SVID in Coarse TIS-B Formats

- **Coarse TIS-B format currently includes a 4-bit SVID**
- **SVID could be moved to PI Field as for the fine format**
 - **Would add coding space to the coarse message**



Summary

- **SVID needed for coarse formats for track stability and TIS-B management**
- **SVID not essential for fine formats but may be useful**
- **PI approach exists for including SVID in TIS-B while retaining the same formats as 1090 MHz ADS-B for position, velocity and ID**
- **Need feedback from manufacturers on whether PI approach can be accommodated**