

Notes from 9-12-02 WG4 Telecon

Participants - check list with Jonathan

Jonathan Hammer (CAASD)
Jim Maynard (UPS-AT)
Gene Wong (FAA)
Dave Spencer (MIT-LL)
Bob Grappel (MIT-LL)
Bob Passman (FAA)
Steve Koczo (Collins)
Bob Manning (DoD)
Bill Morris (Raytheon)
Robert Duffer (FAA Certification)

Action Items in RED.

Introductory Material

WG4 Meeting next week:

Tuesday, Sept. 17 at NBAA; Wed and Thur Sept. 18-19 at Rockwell Collins facility near Rosslyn Metro.

I) Enhanced Visual Acquisition Review – By Dave Spencer

Dave summarized the major revisions since last review:

His analysis is now addressing only VFR, rather than something that goes beyond VFR, e.g., IFR.

For VFR, Dave reduced the Target Level of Safety from 10-9 to 10-6 VFR.

Jonathan asked Bob Passman for guidance on reduction of this number (he cited AC 23-1309 to see if this change is reasonable). **Bob indicated that he thought this was reasonable, and took an action to confirm that the requirement should be 10-6.**

Fault tree has been simplified; with some merging/consolidation of branches.

In his analysis, Dave separated position errors and altitude errors.

He merged the rows originally for range and bearing into a single row that indicates horizontal position accuracy requirements.

Detailed Review:

Starting with Fault Tree in Figure 2 (section 2.3).

Dave cited NTSB report statistics of mid-air collisions for general aviation to be in the range of 10-6. Dave then walked us through the fault tree (Figure 2) explaining the allocations for branches C1, C2 and C3; and talked through the sub-trees.

Jonathan asked a question on “rules of the air” in VFR to avoid threatening traffic: Are there any maneuvering protocols, rules-of-the-road? Dave – maneuvers are not limited to any direction, but he wasn’t clear (not being a pilot) what the maneuver protocols are.

Jonathan - Does the standard avoidance maneuver have an altitude component to it? There is probably not a standard altitude maneuver.

Bob Passman (concerning the display of wrong altitude) - when on a collision course, the traffic that is a threat typically stays constant on the wind screen. This will mitigate the impact of wrong information.

Training, good design, and other mitigations and avoidances should be included in the text to address / cover the hazards and events related to C23, C24 and C25 in the fault tree. This will keep us from having to decompose these branches further. **Dave indicated that there is some discussion why these events are different from the others on page 9, but also agreed to add text and make sure that C23 should be addressed by training; C25 is addressed by generic tests of interference; c24 is basic human factors; make sure the screen is clear and doesn’t require a lot of fiddling. There needs to be discussion of these three in the write-up and in the requirements tables. Dave agreed to put this in.**

Dave – EVAcq should not require horizontal velocity.

Requirements should also include non-altitude reporting aircraft.

Jonathan – How will we determine update rate requirements, etc that are still TBDs in the table? Dave had a notion of just calling it 1 sec updates, although he noted that others may argue that a lower update rate would suffice (e.g., 5 sec). More thought is required here.

Dave – False tracks create a workload issue, and could lead to EVA not being accepted if not properly addressed in the requirements and design.

Jonathan Q: How close to completion is this task (the EV Acquisition application)? How much effort? Dave indicated that the Table in section 4 reflects the completion, by the number of TBDs that remain.

Jim Maynard: Should the DO-259 text be incorporated in the ASA MASPS? Jonathan – it will be.

Dave asked the group if they had any ideas how to treat the altitude accuracy and its associated integrity requirements (vertical position accuracy and integrity)?

Jim M. indicated that DO-242A tried to address this by using 2 bits, which gave indications of altitude quality / accuracy (e.g., 25 or 100 ft altitudes, altitude that supports RVSM). Dave – we could use a SIL (either explicit or some default value) for altitude containment, which doesn’t currently exist. Dave noted a difficulty in transitioning the results from the Safety Analysis to the requirements table.

Jim M. - Barometric altitude quality note was added into the ADS-B MASPS concerning accuracy and integrity codes are given in the ADS-B MASPS. Quality codes (IFR certified, 25 or 100 ft resolution, or RVSM capable). The ASA MASPS can provide guidance to the ADS-B MASPS in this area.

Jonathan – Most visual applications or surface applications will not require altitude; ASIA also does not require altitude.

Jonathan Q to Steve K. – In ACM, is there an altitude requirement? Steve wasn't sure and needs to check ACM analysis work to determine what requirements are needed pertaining to altitude data?

Bob Grappel will be taking over Dave's work. Bob will continue to work in determining the TBDs in the table.

End of Notes from 9/12/02 Telecon