

SUGGESTED REPLACEMENT FOR NOTE 7 OF TABLE 3-4
Stephen Heppel/ADSI

The 99th percentile received report update period is normative. The nominal update period (95th percentile) is a point solution considered to satisfy nominal update period requirements; however other combinations of shorter update period / lower receipt probability or longer update period / higher receipt probability would be acceptable subject to an appropriate analysis demonstrating that: a) the 99th percentile received report update period can be satisfied; and b) an equivalent level of operational suitability is maintained for the application being evaluated. For example, in the case of Aid to Visual Acquisition, an equivalent level of operational suitability is maintained with a longer update period (assuming 99th percentile received report update period can be satisfied) since there is no effective reduction in the pilot's ability to correlate aircraft locations indicated on the electronic display with their true locations as viewed through the windscreen.

SUGGESTED REVISION OF SECTION 3.3.3.1 (DELETES NOTE 7 ENTIRELY)
Jonathan Hammer/Mitre

3.3.3.1 Report Accuracy, Update Period, and Acquisition Range

Report accuracy, update period and acquisition range requirements are derived from the sample scenarios of Chapter 2, and are specified in Table 3-4. The state vector report shall (R3.9) meet the update period and 99 percentile update period requirements for each application listed. The rationale for these values is given in Appendix J. The formulation in Appendix J examines the loss of alert time resulting from data inaccuracies, report update interval, and probability of reception. **Note that a) the scope of the analysis was not sufficient to guarantee that the specific operations considered will be supported; b) other system designs may be acceptable if an equivalent level of operational suitability can be demonstrated for the application being evaluated.**

-----Original Message-----

From: SteveHeppe@aol.com
Sent: Saturday, August 04, 2001 9:24 AM
To: Stuart Searight
Cc: jhammer@mitre.org; pn@adsi-m4.com; steve@adsi-m4.com
Subject: MASPS Table 3-4 note 7

Dear Stuart,

I had some good discussions with Jonathan at Mitre, but we were not able to reach agreement on wording despite a close correspondence of technical views. I think we both recognize that the requirements in the Table are a little soft and minor changes are probably acceptable. My goal is to ensure that this perspective is reflected in the MASPS. Jonathan is also concerned that the underlying analysis may be incomplete, and therefore further work may be needed for operational certification regardless of the numbers cited.

We also recognized that any effort expended at this time could be moot if the table is restructured (as was suggested by several participants at the last meeting). So we came to the conclusion that the best approach would be to capture the various ideas in the minutes and defer further work until the fate of the Table as a whole is determined.

I've attached a one-page Word document that contains our latest two proposals (one from me and one from Jonathan). Please insert these in the minutes, as a way to capture our current thoughts, and we will revisit the issue later.

Thanks!

Sincerely,
Steve Heppe

-----Original Message-----

From: SteveHeppe@aol.com
Sent: Friday, August 03, 2001 10:56 AM
To: jhammer@mitre.org
Cc: Stuart Searight
Subject: Completed email

Dear Jonathan,

I can agree to move the ideas into the main body but I have a concern with your suggested wording. The italics indicate that each designer must do his/her own analysis even if he/she meets the numbers in the table. This is contrary to the sense of a MASPS which is supposed to specify the requirement and not a best-guess (i.e., the MASPS should take the onus away from the designer and manufacturer).

I understand your concern regarding the level of fidelity of the analysis in App. J. However, I don't think a table of requirements plus a command to do further study is the right approach. I also continue to hold the belief that if N seconds (95%) is considered acceptable, than $N + \epsilon$ seconds (95 + σ %) is probably also acceptable. This thought does not come through if the values are indicated as normative. Also, there is a dislocation because App. J is really focused on threat probes based on SV extrapolation (no

consideration of TCPs). So App. J is somewhat irrelevant for Aid to Visual Acquisition and Flight Path Deconfliction Planning. Newer capabilities, such as the short-term intent message, may also change the analysis and technical capability of ADS-B systems. The analysis becomes less relevant, and more pessimistic and conservative, as time goes on and the systems evolve. So the goal should be to provide avenues for relief, instead of admonitions that further study is needed for validation.

If you are concerned about the possible need for further analysis and tightening in some cases, but possible relaxation in others, a more radical approach would be preferable -- remove the shall (R3.9) and make the table merely guidance, with a note that the numbers are approximate and further studies are needed to refine and validate a set of requirements for any particular application. However, I do not like this because it leaves people really guessing (and my gut feel is that the numbers in the table are fairly good in most cases involving threat prediction from SVs alone).

Considering the political nature of the debate (which favors a small change to text rather than a big one) and the difficulty of projecting future requirements, I think I still favor a note in the table along the lines I suggested. This still leaves a fairly strong homework assignment for any developer since he/she must show that "an equivalent level of operational suitability is maintained for the application being evaluated."

Sincerely,
Steve Heppe