Notes from 6-6-02 WG4 Telecon

Participants check with Jonathan

Lee Etnyre (UPSAT)
Dave Spencer (MIT LL)
Michael Petri (FAA)
Steve Koczo (Collins)
Jonathan Hammer (CAASD)
Ganghuai Wang (CAASD)
Stan Jones (CAASD)
Bob Manning
Greg Stayton (ACSS)
FAA Person from Seattle ???

Action Items in RED.

Discussion

Michael P had a comment on the document formats. E.g., CSPA document format versus our outline don't match. Dave Spenser's outline is conforming. Apps description outline versus Analysis description outline. Outlines need to be consistent.

Jonathan to send Rose's CSPA to Michael P (and the group?)

Update on future meetings

1) Enhanced Visual Acquisition by Dave Spencer

General Overview:

One of the major enhancements is the addition of the Operational Performance Assessment in addition to the previous Safety Assessment.

CDTI affects only Event 3.

Dave started a fault tree analysis (section 2.3)

Fault trees turned out to map well to diagram.

Section 3 – some portions still in rough draft form, but gives the thread of the arguments to be made there. Still requires some reinforcement

Comments:

Lee: Do meteorological conditions factor in (desert states versus hazy conditions on East Coast)

Lee: Human factors numbers are difficult to come up with

Dave Spencer: ~1 arc second visual discernable to some range

Jonathan: Really appreciates the work that Dave contributed and things are coming together well. Dave incorporated many of the comments made previously.

Detailed Review:

Figure 1 on page 3.

Greg Stayton: Can E3 really transfer to E5 ? (determine traffic not a factor based on just the CDTI)

Discussion ensued (what about 40 mile and diverging traffic on CDTI).

Jonathan suggests to leave arrow in (Stan agreed) or we could miss aspects of CDTI interpretation in the Safety Table.

Document Change Action of Dave: Change text to "traffic not currently a factor" in E5 in Figure 1.

Jonathan – Page 5 concerning traffic alerts (add reference Lee E's Conflict Detection document)

Fault Tree Analysis (Section 2.3)

Figure 2 Review: Induced collision rate due to EVAcq (C4) is considerably smaller than the benefit of EVAcq preventing a collision that would have otherwise occurred without EVAcq.

Jonathan: Need text at bottom of page 5 to better explain the balance effect of induced collisions versus saved collisions.

Figure 3: Should C7 be included in diagram? Yes, but give it a small number; explain better in text.

Figure 4: C12 ties back to Hazard 4.1.

Jonathan: We have pretty well decided the CD is an adjunct to EVAcq; it would be nice to make them look similar. Lee may choose to enter Dave's fault tree using the fault tree program. (Dave: his Word Table format is more readable for large trees (especially with a lot of text description), but can't be analyzed using the tool).

Jonathan: Should C22 be included? While it's a real concern, should this really be in the safety analysis (its more of a training issue)? We should capture it our narrative, but note specifically that that there are no system requirements we can put on this, and that it's a training issue.

Concerning C23: Probably shouldn't be included here (they are too detailed for MASPS and MOPS), but should be covered in the installation.

Figure 5: C15 discussion (EVAcq induced crew to do something). Change to C20 to include crew maneuvers incorrectly due to incorrect EVAcq state information (bearing, altitude, etc.)

Dave's comment: Bearing is calculated by differencing two absolute positions and is sensitive to errors. Large NICs are particularly a problem.

Jonathan on C25: Eliminate "or else crew maneuvers incorrectly without visual acquisition of the other aircraft".

Jonathan: Wants to make sure that the leaves of the tree are such that we can tie requirements to them.

Jonathan – Put an upper bound on the data integrity level that would cause crew to maneuver incorrectly.

Dave – Altitude is a special data integrity issue.

Greg: - There is data available on altitude integrity from the MITRE TCAS safety study.

Lee - What types of numbers are we looking for altitude integrity?

Dave - This is end of fault tree analysis work to this point.

Break

Section 3 discussion:

Discussion about whether a display is assumed in EVAcq or if aural call out is an option (Dave leaves aural option but doesn't dwell on it). The same question arose for CD aural alerts, where we decided to assume a CDTI.

Bob Manning to Dave: Training program or training school could provide additional info on visual crosscheck to clock positions. Dave uses clock positions as the minimum required bearing resolution.

Dave: Small position errors could result in large bearing errors. Notion of highlighting targets with insufficient NIC.

Dave: Using a 747 with full length visible, a 2 arc minutes circle is visible to 65 nmi, 2 arc minute for the 25 ft cross section would be 7 nmi visible (acuity)

Bob M.: Almost too many variables here.

Stan: ADS-B applications group determined that 4 miles is visual range, suggested displaying traffic out to 10 miles. Gives cueing time for visual acquisition.

Michael – TCAS TISI-VISI display range of 6 nmi was not viewed as adequate.

Section 4 Requirements Summary

The system should not adversely affect TCAS (this should be elevated to the ASA MASPS and not be part of the individual application appendices, e.g., EVAcq). Dave is adding an editorial note in his document so we don't forget to elevate this to ASA chapters 2,3.

Section is a discussion. Requires 'shall's to identify requirements.

Discussing Table 1:

End of Notes from 6/6/02 Telecon