

*WakeNet2-Europe Workshop on "How can Wake Vortex Separation Standards be revised?", 29/30 November 2005, Eurocontrol Experimental Centre, Brétigny, France*

## **Summary of Comments made by the Stakeholders Panel**

*Prepared: Bram Elsenaar*

*Date: December 16 2005*

*Uwe Kroeger (Capt., pilot, Vereinigung Cockpit / IFALPA)*

Pilots are very hesitant to accept additional risks close to the ground, so the message is that separation distances should not be reduced prematurely. IFALPA has its 'No Encounter' policy, though one could add here: not more than we are used to presently. It is similar to the situation with wind-shear: we want to avoid but we train for it in case we do meet it. A bit of regret that the important topic of onboard wake detection was not addressed.

*Isa Alkalay (Skyguide, Switzerland)*

This workshop was different from the London-Heathrow one (November 2003) in the sense that there is a clear convergence towards operational use. The time to merge research and operations has come and we should start moving into that direction more aggressively. The initiative to establish a European CONOPS team is very important in this respect. Although it should be remembered that ICAO is 'all of us' it is essential to be provided with enough guidance on "how safe is safe enough"! ANSPs have to deliver "the rules of the game" – namely to apply the separation while achieving the efficiency and meeting target levels of safety – without the appropriate quantitative guidance – it is almost an impossible mission. It is to be noted that the ICAO guidance on the A380 is opening more questions than providing answers both at the level of operational application and the legal responsibility. Again the responsibility to make decision has been put on the shoulders of the ANSP, while all the research work didn't deliver clear guidance.

*Tim Fowler (Principal Scientist, Det Norske Veritas, UK)*

There has been some discussion on the use of relative and absolute safety arguments and I want to clarify that.

Suppose we have an existing, operational heavy aircraft that generates, for example, a wake strength of 400m<sup>2</sup>/s at today's separation standards of 4nm upon approach (for a heavy follower). This situation is currently operated and we can assume this to be acceptably safe (if we are concerned that it is not acceptably safe then someone should be doing something about it!). Using the relative safety argument we can

argue that a wake of 400m<sup>2</sup>/s can be encountered by a heavy aircraft with acceptable levels of safety (400m<sup>2</sup>/s is our safety criterion).

Suppose we have another, probably smaller, heavy aircraft (current or new) that we predict generates a wake strength of 300m<sup>2</sup>/s at 4nm of separation upon approach. From the above, we have an acceptably safe reference point of 400m<sup>2</sup>/s, thus we could estimate at what separation the wake strength would be 400m<sup>2</sup>/s (at 3nm for example) and we could use this estimate for arguing what the wake separation standard should be for the new aircraft. This would be a relaxation of the separation standard (from 4nm to 3nm) but is not a relaxation of the safety criteria (a wake strength of 400m<sup>2</sup>/s is still assumed to be acceptably safe).

Similarly if the new aircraft has a wake strength of greater than 400m<sup>2</sup>/s at 4nm, a circulation of 400m<sup>2</sup>/s will be reached at some distance greater than 4nm and the relative argument will always predict that the separation standard should be greater than the current separation standard through the application of the relative safety criterion of 400m<sup>2</sup>/s.

However, if one wants to show that an aircraft with a wake strength greater than 400m<sup>2</sup>/s at 4nm separation is still acceptably safe at 4nm, one has to use an absolute argument.

Of course, the above is only an illustrative example - in practice, there are many complications to be taken into account.

*Paul Johnson (Development Manager , National Air Traffic Services Ltd., UK)*

The excellent research and development undertaken has demonstrated the potential benefits, so we have to go on and win the benefits. We plan to start work on this in the UK in the near future. We need a safety case, particularly for the basic operational situations such as Medium behind Heavy on final and 2minutes departure separation and we should do this as a European effort. We also need a simple system with a green / red light to indicate to the controller the separation to be used. Before we can start day-to-day operations we need to know how to build the black box and the sensors to provide this.

*Laurence Mutuel (Surveillance Research Programs Manager, Thales - Aerospace Division, France)*

In 4 years time we have seen clear progress. Ground instrumentation exists, first results of airborne instrumentation have been obtained in I-Wake, a road map for the airborne equipment has been made. It's time for a decision and we should plan for field trials. The 7<sup>th</sup> Frame Work Program will be the nice spot for that. The Research Needs Document (as discussed on Monday between the WN2E partners) has to be more market, outside oriented. And I am saying that, because we started to work in this area 14 years ago and hoped for implementation but so far nothing is introduced. How long can I still make a case for support from my management? So we need consensus on what to do and we need to move on. All interested partners have to be gathered and we need a strong shepherd. I have been pessimistic many times but it is clear to me now that we can either provide the technology to support operational changes on the ground or we can provide and assist in gathering the necessary background information.

*Paul E. Cassel (Capt., Managing Director Flight Operations, FedEx Express, Memphis, USA)*

Capacity is a true issue! There is a strong support from the air transport industry. One further remark. In the US there is a company that flies two Learjets, designed for upset training. We use these for our pilot training and I think that it is worthwhile to make use of that.

*Fabrice Valloton (International Federation of Air Traffic Controller's Associations, Montreal, Canada)*

If you make new rules we will apply them. We are open for change. But realise that with the actual wake vortex separation, pilots have already had some encounters and so that any changes have to be done in a really safe way. In the aspect of wake turbulences as well as in any other aspect in aviation, IFATCA believes that safety has to remain the first priority.

*Greg Winckelmans (Professor, Université Catholique de Louvain, Belgium)*

It is nice for Universities to be involved and I believe we can help. Operational models are available and we should use them, also for safety cases. With regards to the PDF business it was argued that we need  $10^5$  to  $10^9$  cases (depending on the 'tails') to define them properly. This is impossible. May be we have to accept that we cannot fill the tails. But we can still run our models for a base line and evaluate changes and see if we can improve. And we have to push for more field trials, that should include (all required information for) modelling. One last remark. It was noted that estimating the core size was a problem in the wake vortex modelling. But actually, the core size follows directly from energy requirements and can be established unambiguously (for a given 'vortex profile family').

*Jean Jezequel (Manager ATC Facilities Charles de Gaulle, Aéroports de Paris, France)*

I just wondered if the ICAO matrix is optimal for the future. For the case of Closely Spaced parallel Runways (CSPR), we need to simplify the procedures in the short term. To accommodate more arrivals at the inner runway's we need cross wind studies at CDG.