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U.S. DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA


10 **UNITED STATES DISTRICT COURT**
11 **FOR THE CENTRAL DISTRICT OF CALIFORNIA**

12 H. RAY LAHR,) Case No. 03-08023-AHM (RZx)
13)
14 Plaintiff,) NOTICE OF FILING AND
15) FILING OF SUPPLEMENTAL
16 v.) AFFIDAVIT OF BRETT M.
17 NATIONAL TRANSPORTATION)
18 SAFETY BOARD, *et al.*)
19)
20 Defendants.)
21)
22)

23 PLEASE TAKE NOTICE that plaintiff is hereby filing the supplemental
24 affidavit of Brett M. Hoffstadt.

25 Dated: October 25, 2004.

26 H. Ray Lahr
27 By Counsel

28 

John H. Clarke

PROOF OF SERVICE – BY HAND

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES

I am and was at all times herein mentioned a resident of the State of California, over the age of 18 years. My address is 18254 Coastline Drive, Malibu, CA 90265-5702.

On October 25, 2004, I served a true copy of NOTICE OF FILING AND FILING OF SUPPLEMENTAL AFFIDAVIT OF BRETT M. HOFFSTADT on the interested parties in this action by hand delivery in envelopes addressed and delivered to defendants' attorney:

Jan L. Luymes, Esquire
Assistant United States Attorney
300 North Los Angeles Street, Room 7516
Los Angeles, California 90012

I declare under penalty of perjury that the foregoing is correct and that this Proof of Service was executed on October 25, 2004.

H. Ray Lahr

1. This affidavit supplements the ones I signed on October 20, 2002 and June 16, 2004. I have reviewed Dennis Crider's August 13, 2004 declaration and Richard S. Breuhaus' October 11, 2004 declaration. Statements contained herein refer to these declarations unless otherwise noted.
2. Breuhaus states in Paragraphs 4, 28, 34, and 36 that the baseline lift, drag, and pitching moment coefficients in NTSB Records 6 and 8 are Boeing proprietary data.
3. However, these are precisely the parameters that can be obtained for the 747-200 using the computational fluid dynamics (CFD) software available from Analytical Methods, Incorporated (AMI). I understand that the geometry of the 747-200 CFD model from AMI is aerodynamically identical to the baseline configuration described by Breuhaus and described in NTSB Records 5-9 and 12.
4. The fact that a CFD model of the 747-200 is available to the public makes it certain that any aerodynamic data about this configuration could be obtained independently, with a very high degree of precision.
5. Breuhaus states in Paragraphs 28 and 34 that the baseline lift, drag, and pitching moment coefficients in NTSB Records 6 and 8 are marked "Boeing Proprietary." Notwithstanding that these data may be labeled "Proprietary" or may have been proprietary in the past, the fact that Boeing has consented to the public sale of a CFD model of a 747-200 aircraft directly contradicts this claim.
6. Breuhaus states in Paragraph 28 that the aerodynamic information contained in NTSB Record 6 regarding a second hypothetical configuration with the aircraft's forward fuselage removed is Proprietary. The existence of many visual representations of this configuration in addition to the availability of the aforementioned software provided by AMI directly contradicts this claim. A competent engineer would be able to reproduce this configuration using the 747 CFD model available from AMI in conjunction with the many visual representations of this configuration.
7. Breuhaus states in Paragraph 28 that the aerodynamic information contained in NTSB Record 6 regarding a second hypothetical configuration with the aircraft's forward fuselage removed is marked "Boeing Proprietary." The fact that Boeing has consented to the public sale of a CFD model of a 747-200 aircraft and that many visual representations of this hypothetical configuration are available to the public directly contradicts this claim.
8. Breuhaus states in Paragraph 34 that the aerodynamic information contained in NTSB Record 8 regarding a second hypothetical configuration with the aircraft's forward fuselage removed is Proprietary. The existence of many visual representations of this configuration as understood by the NTSB in addition to the availability of the aforementioned software provided by AMI directly contradicts this claim. A competent engineer would be able to reproduce this configuration using the 747 CFD model available from AMI in conjunction with the many visual representations of this configuration
9. Breuhaus states in Paragraph 34 that the aerodynamic information contained in NTSB Record 8 regarding a second hypothetical configuration with the aircraft's forward fuselage removed is marked "Boeing Proprietary." The fact that Boeing has consented to the public sale of a CFD model of a 747-200 aircraft and that many visual representations of this hypothetical configuration are available to the public directly contradicts this claim.

10. Breuhaus states in Paragraphs 14, 29, 30, 36, and 37 that the aerodynamic information provided to the NTSB would result in competitive harm to Boeing or the reduction in market value of Boeing's proprietary products and services if released to the public. The fact that Boeing has consented to the public sale of a CFD model of a 747-200 aircraft directly contradicts these claims.

11. Breuhaus states in Paragraph 8 that the aerodynamic information provided to the NTSB involved "great expense" by Boeing. Breuhaus further states in Paragraph 12 that Boeing "invested enormous resources" in the 1960's to create aerodynamic data for the 747-100.

12. While I am not in a position to dispute his statements, it is also true that the advancement of technology, computing, and engineering knowledge have dramatically reduced the expense of obtaining previous knowledge if it were to be repeated today.

13. For example, the Data General Nova was a computer first released in 1968. It handled 16-bit word lengths, had 4K of memory, and had a 1.5Mhz processing speed. Its cost was \$8,000. (Source: http://www.fact-index.com/d/da/data_general_nova.html) Today, the PMC-Sierra RM5231A is a popular microprocessor used in automotive and home entertainment applications. It is 64-bit, 400 Mhz, and has 32KB memory. Its cost is \$15. When compared to the Nova, its bit size has increased four-fold, its speed has increased 266-fold, its memory has increased eight-fold, while its price has reduced 533-fold. (Source: http://techlibrary.networkcomputing.com/detail/RES/1093027149_246.html?src=nwc)

14. The facts in Paragraph 13 above combined with the fact that Boeing has consented to the public sale of a 747-200 CFD model directly contradict the relevance of the statements by Breuhaus in his Paragraphs 8 and 12.

15. In Paragraph 9, Breuhaus states that state-of-the-art CFD programs cannot reproduce aircraft aerodynamics data to the level of accuracy reflected in the data presented in or derivable from NTSB Records 5-9 and 12.

16. As a full-time salaried CFD engineer, I have personal knowledge of CFD results that are a substitute for and have replaced physical tests of large vehicles. One of our well-known automotive clients has eliminated an entire phase of automobile vehicle construction and testing due to the accuracy and precision of our CFD analyses. I understand that the accuracy of our CFD results are typically within 1% of experimental data which has allowed for the elimination of this testing. While every CFD application has its own accuracies and limitations, the calculation of large vehicle aerodynamics such as automobiles and aircraft are very similar and can be expected to have comparable accuracy with experimental data. These facts contradict Breuhaus' claim in Paragraph 9.

17. I am personally aware of at least four major wind tunnel test facilities in the United States that have been permanently closed in the last ten years. Three of these were resources in The Boeing Company. The increasing capability, accuracy, and use of modern CFD tools are widely acknowledged to be a major reason for these closures. The increasing efficiencies and corresponding decreases in cost of computing hardware, when combined with modern CFD tools, are widely acknowledged to be a second major reason for these closures. The increasing

use of CFD tools in the aerospace industry combined with the closure of many wind tunnel test facilities contradict Breuhaus' claim in Paragraph 9.

18. In Paragraph 27, Breuhaus states that Boeing consented to releasing the proprietary information in the Main Wreckage Flight Path Study. Breuhaus also states that Boeing did not consent to releasing the information in NTSB Record 5. However, his description of this information given to the NTSB in Paragraph 26 appears to be identical to the information in the Main Wreckage Flight Path Study.

19. In Paragraph 29, Breuhaus describes NTSB Record 6 as containing baseline lift and pitching moment coefficient data. The fact that a CFD model of the 747-200 is now available to the public makes it certain that this data could be obtained independently, with a very high degree of precision.

20. In Paragraph 30, Breuhaus states that access to the information in NTSB Record 6 by a competent engineer would reduce the market value of Boeing's proprietary products and services. The fact that Boeing has consented to the public sale of a CFD model of a 747-200 aircraft directly contradicts this claim.

21. In Paragraph 3, Crider states that executable files also contain proprietary Boeing data on the 737-200 and 737-300. While I am not in a position to make a statement regarding the truth of this claim, I understand that this claim has not been made previously.

22. In Paragraph 5, Crider states that source codes and source files used for his simulation were not preserved, and there is no way to reproduce these source files. I am not in a position to make a statement regarding the truth of these claims. However, I find it unusual and highly unlikely for two reasons.

23. First, it impedes learning, comparisons, and validation for future work by allowing review of these files for use in future aircraft investigations.

24. Second, it prevents full and comprehensive documentation for the purposes of archiving, restoration, duplication of effort, validation, and other related purposes that are standard practices in the engineering community.

25. In Paragraph 6, Crider states that the two source files that are available should not be released to the public because they "contain considerable deliberative, analytical judgments." I am not in a position to make a statement regarding the truth of this claim. However, I find it without merit for three reasons.

26. First, Crider states repeatedly that his "deliberative analysis" (Paragraph 9) and "engineering knowledge and professional judgment" (Paragraphs 8 and 10) were an essential part of the process to create his simulation. Therefore they are not only appropriate for disclosure but essential to explain his simulation program.

27. Second, as a public servant within a federal agency tasked to serve the general public, the inner workings of essential tools, processes, and organizations tasked to perform this service are imminently qualified for public disclosure to allow for review and discussion.

28. Third, such disclosure is customary, expected, and usually required in the engineering community when notably significant, influential, and controversial technical conclusions are published.

29. In Paragraph 9, Crider states his process was "iterative" and "deliberative," and he "repeated this process until the simulation output reflected as best as possible the radar data." Since all known radar data of Flight 800 after the fuselage separation is significantly inconsistent with the trajectory described by Mr. Crider's simulation (see affidavits of Dr. Thomas Stalcup and Robert Donaldson), the claims made by Crider in Paragraph 9 cannot be accepted as accurate and true without further disclosure of the methods and data behind his statement.

30. In Paragraph 10, Crider states that the withheld input and output files should remain so because the NTSB staff "must be free to adjust and experiment without fear that staff work at whatever stage will be released and compared to the Safety Board's ultimate conclusions." I find this claim without merit for four reasons.

31. First, it is unusual and highly unlikely for the absence of suitable historical records to be available which would preclude the need for these intermediate or evolving files.

32. Second, as a public servant within a federal agency tasked to serve the general public, the inner workings of essential tools, processes, and organizations tasked to perform this service are imminently qualified for public disclosure to allow for review and discussion.

33. Third, such disclosure is customary, expected, and usually required in the engineering community when notably significant, influential, and controversial technical conclusions are published.

34. Fourth, Crider's simulation was an essential and widely acknowledged tool in support of the Safety Board's ultimate conclusions. Thus any comparison between the two items should not present a significant discrepancy or objection.

I declare under penalty of perjury that the foregoing is true.

Dated on this day of 25 October 2004.



Brett M. Hoffstadt