The undersigned visited the Commercial Airplane Division of the Boeing Company on May 20-21, 1971, to discuss various aspects of the systems study of the Advanced Technology Transport Program. During the two days, he discussed many subjects - ranging from the basic philosophy of the next generation of transports to minute design details - with many people in a continuing series of numerous meetings. Some of the more pertinent subjects of discussion are listed below.

In the discussions with the configurators and structures people, it was indicated that for the landing gear location picked by the Boeing Company, the depth of the wing at the landing gear location still may not be great enough for an installation without a structural weight penalty. The undersigned indicated that if the other two contractors find a similar problem wind-tunnel tests will be made on a configuration with the trailing edge near the root extended even further rearward than for the present configuration. In this same discussion, the methods for handling the fuselage shaping to account for more engine spillage was discussed briefly.

In the meetings with the aerodynamics staff, a number of ideas were discussed. Boeing indicated that the A.C. location for the Langley High Performance configuration appeared to be too far forward when compared to results obtained by Boeing on a similar configuration. The undersigned indicated that the reference for the pitching moment would be checked upon his return to Langley. This check, made on May 24, indicated that the reference center for the wind-tunnel results should be increased from 31.06 inches to 31.68 inches. This information has been transmitted to all organizations involved with this systems study. With this new reference location, the A.C. location for the Langley configuration agrees quite well with that for the Boeing configuration. The methods and numbers involved with extrapolating the wind-tunnel data to full scale were discussed. The approaches for obtaining a low drag pilot canopy or cab and flap track fairings were discussed. Considerable discussion of the methods for handling the aerodynamics of the third engine installation occurred throughout the visit. Also, all meetings on aerodynamics
involved substantial discussions on the undersigned's part as to the nature of aerodynamic flow near Mach 1.

As agreed before the undersigned made the trip to Boeing, he was shown the wind-tunnel data obtained by Boeing on their Advanced Transport configurations. Boeing, as usual, is doing an excellent job aerodynamically; however, the results indicate that they still have a lot to learn about aerodynamics near Mach 1. As yet, they have not developed a configuration competitive with the Langley High Performance configuration in spite of un-verified claims made in discussions with them prior to the subject visit.

The Boeing Company has developed a unique method for supporting the model without a sting to obtain wind-tunnel results for an aft end similar to a real airplane. This method involves a long thin plate extending upward to the bottom of the model and attached to the model. This installation was in the tunnel during the undersigned's visit. The Boeing Company discussed with the undersigned an unsolicited proposal that they intend to make to the NASA to investigate the aft end shape of the Langley High Performance configuration using this wind-tunnel setup. The undersigned indicated a strong interest in such an investigation but informed the Boeing people that the money pot on the program has been fairly well committed.

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