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NACA - Langley

Transonic Tunnel

~~Slotted Tunnel~~
~~Mattson, A. T.~~

Langley Field, Va.
May 11, 1948

MEMORANDUM For Chief of Research

Subject: The development of a slotted supersonic test section with particular consideration to its application to the Langley 8-foot high-speed tunnel

Reference: (a) Memo. for Ch. of Res. regarding some problems involved in the development of a slotted supersonic wind tunnel, with particular consideration of its application to the NACA Langley 8-foot high-speed tunnel. RHW.bar ATM CHD, ~~Jan. 1, 1948~~. e. 1, 1948

per LH King 4/1/48

(b) Memo. for Ch. of Res. regarding a proposal concerning the construction of a 9- by 12-inch wind tunnel for the investigation of the effects of the use of mechanical sinks, or sources and sinks, along the entrance nozzle to achieve the effects of a supersonic nozzle which will have a variable Mach-number range of 1- to 1.4. CWM.elb RHW CHD, October 17, 1947.

per LH Mattson 10/17/47

1. It is my opinion that the work currently being undertaken to investigate the suitability of a slotted test section to achieve continuous transonic flow is insufficient with regard to application to the Langley 8-foot high-speed tunnel by January 1949. This opinion is supported by a survey of the slotted-wind-tunnel work being conducted at the Laboratory, as reported recently by the Langley Committee on Aerodynamics.

2. The purpose of reference (a), which is transmitted with this memorandum, is to summarize the problems that should be investigated in order to satisfactorily design a test section for the Langley 8-foot high-speed tunnel. It is therefore recommended that immediate consideration be given to increasing the amount of work with regard to slotted wind tunnels, and to the initiation of a systematic investigation of the problem.

~~→ slotted test section (supersonic)~~

~~→ Mattson, A. T.~~

3. In connection with this recommendation, it is proposed that a committee be appointed to consider the possibility of increasing the work load and research facilities required to investigate the problems outlined in reference (a). The work currently being undertaken on slotted wind tunnels, with the possible exception of the work being done by the Langley induction aerodynamics laboratory, has been one of trial and error, interested only in a general solution to the problem and not concerned with a specific solution for the 8-foot high-speed tunnel.

4. The increased work could be handled rather expeditiously by using the equipment already designed, and approximately completed, under the proposal outlined in reference (b). However, instead of considering the use of the induction aerodynamics laboratory, this research could possibly be undertaken in the 16-foot-tunnel area, using the available 2,000-horsepower propeller dynamometers. It is my opinion that the above-recommended committee will find that this project could be completed within approximately two months and with a minimum amount of expenditure.

Axel T. Mattson
Aeronautical Research Scientist

Enc. copy of ref. (a)

ATM
pcc

CHD