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NASA TECH BRIEF

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Computer Program Performs Aerothermodynamic Flight Test Data Correlation

The problem:

To develop a computer program that plots flight test data (stored on magnetic tape during the flight) with comparative data from other tapes (design and post-flight predictions). Previous plotting was done by hand, which is time consuming and costly.

The solution:

Measured data is supplied on one or more tapes, each containing the full entry time written binary file. Each record consists of time and a selected number of data measurements. The last record preceding the End of File gap is filled with values of $+10^{20}$. Information as to which measurements are on each tape, the order in which they appear, and the exact time span is supplied by the source of the data.

How it's done:

Data to be plotted is supplied to the program on high density, magnetic tape. Information concerning the data sources present, correspondence among body locations, selection of the curves to be plotted, and the format of the graphs is supplied by the user on BCD cards. The data supplied by the user falls into two categories: run data and case data. Run data is that information which is constant for the entire job. This includes the data source flags, the number of channels on the tape, and the correspondence table. Case data is made up of that information pertaining to CRT formats, data limits, and variable types.

The time limit will vary depending on whether or not a measured data tape is mounted. Because of the large number of samples on this tape, reading it consumes a good portion of the execution time. For cases without a flight test tape, the program produces about eight graphs per minute. For cases with a flight test tape, the time limit depends on the number of graphs, the sample rate for the measured data, and the rate at which the tape is read.

Notes:

1. This program is written in Fortran IV for use on IBM 7094 computer.
2. Inquiries concerning this program may be directed to:

   COSMIC
   Computer Center
   University of Georgia
   Athens, Georgia 30601
   Reference: B67-10494

Patent status:

No patent action is contemplated by NASA.

Source: D. A. Sowers and F. Schmus
of North American Aviation, Inc.
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