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NASA TECH BRIEF

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Biomedical Bulk Data Processing Program

The problem:

To devise a computer program to reduce raw, physiological flight data to a form which can be easily used by investigators.

The solution:

A computer program which accepts three different analog signals as input and plots as output: the heart rate, respiration rate, acceleration, and mean autocorrelation versus time.

How it's done:

The program converts to digital signals and writes on magnetic tape the three analog input signals: the ECG signal; the flowmeter signal which is a respiration monitor; and the accelerometer signal which measures the normal g-load on the subject. The data are in four files. The first three are calibration files, while the fourth is the actual data.

The entire program is governed by an executive routine called the control program, CNTR. This program performs input and output procedures and serves as a coordinator. CNTR calls on various subroutines and integrates their output with the rest of the program.

When all computations have been performed, control is passed to the plotter subroutines. These subroutines generate the plotter data for the graphs of heart rate, respiration rate, acceleration and mean autocorrelation versus time. This is the last major function of the bulk data processing program. Here, it can either terminate or process a new data run.

Notes:

1. This program should be useful in chemical-biomedical monitoring programs and in pilot training schools and test pilot installations.
2. This program is written in two different languages for use on IBM 360 and IBM 7094 computers:
   - (a) For use on the IBM 360 computer, this program is written in Assembler.
   - (b) The IBM 7094 version is written in MAP (5%) and FORTRAN IV, pressed deck form (95%).

   Users must specify their interest, either (a) or (b), when requesting additional information.
3. Inquiries should be made to:
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   Barrow Hall
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   Reference: B69-10720

Patent status:

No patent action is contemplated by NASA.

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Biomedical Program Office
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Category 06