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NASA TECH BRIEF

Biomedical Recording System

A new Biomedical Recording System which collects medical data directly from the patients incorporates a means for permanently recording and displaying the following parameters: electrocardiograph (ECG) and electroencephalograph (EEG); heart rate; respiration rate and approximate depth by impedance pneumography (ZPG); auscultatory blood pressure; leg circumference changes; body temperature; and time (IRIG-B code). Because the system is designed for easy operation, the operators need not be technically skilled, and the system is electrically grounded to avoid endangering the patient.

The recording and readout units, designed for compatability, are packed in three carrying cases resembling personal baggage. The time required for setting up and checking the instruments is less than 30 min. Data are recorded on magnetic tape for machine analysis.

Readily available components are incorporated into the system wherever possible. Specific system units are as follows: the three carrying cases for signal conditioning and data monitoring equipment, plus accessories; complete case-interconnecting harnesses; special-subject harnesses and four normal-subject harnesses; two blood-pressure cuffs with microphones; one audio microphone-speaker set, with cable; sufficient recording supplies for more than 12 hr operation; and several plug-in modules for the signal-conditioner case.

The plug-in modules include one signal conditioner each for the ZPG, blood pressure, and cardiotachometer; one vector (VCG) resistor network; two signal conditioners each for the leg circumference, EEG, and body temperature; and three blank plug-in units.

A magnetic-tape recorder-reproducer can record or reproduce at least seven data channels continuously, and can handle 1 hr of vocal annotation without changing tape. Magnetic tape is the primary recording medium, but a graphic recorder can be used simultaneously to record four channels of data with two mark channels.

An IRIG-B time-code generator and display unit provides a time code for both recording systems, as well as a digital display of hours, minutes, and seconds. An output from the generator initiates the cuff-inflation system.

Specific parameters for the tape-recorder channels are determined by the location of the signal conditioners in the signal-conditioner case. The output from any signal conditioner can be connected to the signal input circuits of any graphic-recorder channel. Taped data can be reproduced on the graphic recorder in the field without adjusting the amplifier gain in either the tape-recorder-reproducer or the graphic-recorder-drive amplifier.

Note:

Further documentation may be obtained from:
National Technical Information Service
Springfield, Virginia 22151
Single document price $3.00
(or microfiche $0.65)

Reference:
NASA-CR-101978 (N70-10044), Biomedical Recording System

Patent status:

No patent action is contemplated by NASA.

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