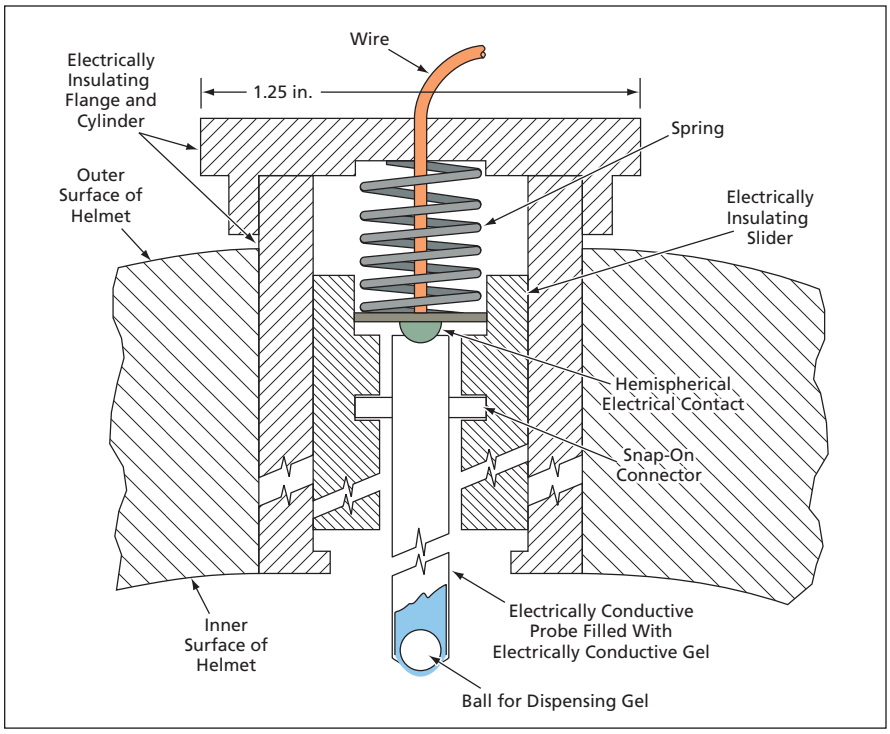
Mobile Collection and Automated Interpretation of EEG Data

Diagnoses could be performed while subjects engaged in ordinary activities.

NASA's Jet Propulsion Laboratory, Pasadena, California

A system that would comprise mobile and stationary electronic hardware and software subsystems has been proposed for collection and automated interpretation of electroencephalographic (EEG) data from subjects in everyday activities in a variety of environments. By enabling collection of EEG data from mobile subjects engaged in ordinary activities (in contradistinction to collection from immobilized subjects in clinical settings), the system would expand the range of options and capabilities for performing diagnoses.

Each subject would be equipped with one of the mobile subsystems, which would include a helmet that would hold "floating electrodes" (see figure) in those positions on the patient's head that are required in classical EEG data-collection techniques. A bundle of wires would couple the EEG signals from the electrodes to a multi-channel transmitter also located in the helmet. Electronic circuitry in the helmet transmitter would digitize the EEG signals and transmit the resulting data via a multidirectional RF patch antenna to a remote location.



This **Probe Assembly** would be one of several mounted in a helmet. Each such assembly would hold an EEG electrode in one of the required positions on the wearer's head.

At the remote location, the subject's EEG data would be processed and stored in a database that would be auto-administered by a newly designed relational database management system (RDBMS). In this RDBMS, in nearly real time, the newly stored data would be subjected to automated interpretation that would involve comparison with other EEG data and concomitant peer-reviewed diagnoses stored in international brain data bases administered by other similar RDBMSs.

This work was done by Frederick Mintz and Philip Moynihan of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:

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System for Secure Integration of Aviation Data

Data can be analyzed without compromising security or anonymity.

Ames Research Center, Moffett Field, California

The Aviation Data Integration System (ADIS) of Ames Research Center has been established to promote analysis of aviation data by airlines and other interested users for purposes of enhancing the quality (especially safety) of flight operations. The ADIS is a system of computer hardware and software for collecting, integrating, and disseminating aviation data pertaining to flights and specified flight events that involve one or more airline(s). The ADIS is secure in the sense that care is taken to ensure the integrity of sources of collected data and to verify the authorizations of requesters to receive data. Most importantly, the ADIS removes a disincentive to collection and exchange of useful data by providing for automatic removal of information that could be used to identify specific flights and crewmembers. Such information, denoted sensitive information, includes flight data (here signifying data collected by sensors aboard an aircraft during flight), weather data for a specified route on a specified date, date and time, and any other information traceable to a specific flight. The removal of information that could be used to perform such tracing is called "de-identification."

Airlines are often reluctant to keep flight data in identifiable form because