

Background: The electroencephalogram (EEG) has become ~~such~~ ^{universally} so widely used in neurology in such a variety of brain conditions that not to use it in a case of an unknown syndrome which causes ^{vomiting} ~~nausea~~, lethargy ^{and} ~~+~~ malaise will be considered an omission by many. ^{However,} there are more cogent reasons than a 'fishing expedition' for the use of EEG in SMS. At the very least there might be objective confirmation of the lethargy ^{and} ~~+~~ desire for sleep, which for the various levels of sleep ^(Fig 1) ~~and~~ ^{to} a lesser extent of arousal, ^{these} are normally easily detectable in the EEG waveforms. Should there be some general effect on the ^{central nervous system} ~~CNS~~ by ^{also} ~~endocrine~~ hormones or other substances this might be reflected ⁱⁿ the EEG. ~~At~~

While equipment for such recording was flown on STS 7 ^{and} 8 there was no opportunity to use it; ~~so~~ this was a welcome chance.

The

Procedures: Hardware consisted of the Fig. 2 standard two-channel instrumentation recorder, D.C. to ≥ 100 Hz. See technical appendix - A. LESLE dual-channel autoreset ^{direct current amplifier} ~~D.C. Amp.~~ ^{with} a gain of 2.5×10^3 was used as a preamplifier.

The standard or noise of the recording system is low enough to allow a slight increase in replay gain to ^{produce} the standard 50 ~~μ V~~ ^{micro}V cm^{-1} system gain. On replay a band pass filter is inserted to achieve the ^{usual EEG} necessary recording characteristics of 1-50 Hz or less, from the originally recorded DC-100 Hz ~~record~~ signal response.

In addition, a fast Fourier transform analysis of the signals were to be done and the resulting spectrum summated and displayed each minute ~~be~~ in a conventional fashion but also ~~with~~ ^{with} each minute's record placed slightly above the preceding such ^{that} ~~a long~~ ^{short} EEG record ^{Fig 3} could be ~~sum~~ compactly summarized. This ^{has been} ~~is~~ a widely used technique for some decades but the contractor tasked to accomplish this ~~never~~ apparently never ^{fully} grasped the concept ~~and~~ or was unable to accomplish it fully - (Fig 4)

Results / Analysis Electrode configuration is shown in Fig. 5. Preflight Recordings were routinely obtained as part of training. Inflight recordings were made on ~~mission days~~ ^{and} after the subjects' SMS had resolved, ~~thus losing the~~ The recordings were replayed and showed only the normal patterns of

100 mm
50 μ V cm^{-1}

5 V $\times 10^3$
2.5
 2×10^3 FS
2 200

50 SHEETS 3 SQUARE
42-381 100 SHEETS 3 SQUARE
42-382 200 SHEETS 3 SQUARE
Made in U.S.A.

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normal levels of consciousness ^{with} eyes open.

Conclusions: ~~EEG~~ ^{electroencephalogram} is a relatively simple ~~mass~~ procedure and the technical aspects of the recordings ^{are} ~~were~~ nominal. However, the major purpose, ~~see~~ EEG recording during SMS, was defeated by the absence of recordings during this period. The recordings made after SMS ~~there~~ was over were normal which is consistent ^{with} ~~the~~ both previous EEG studies made on normals in weightlessness.

This study should be done ~~and~~ ^{and} ~~when~~ ^{once} the next attempt ~~two changes made~~ ^{if} the subject ^{should} be backed up technically by someone else who can install the gear if for any reason the chosen subjects ~~is~~ ^{are} unable ^{to do so} ~~and in the subjects~~. Also, an ~~period of~~ ^{and an} eyes closed ^{but} awake period should be included. Some comments on hardware are included in the technical appendix.

Figs. - Biblio - Gavn -

- 1 - wake vs sleeping EEG
 - 2 - block diagram of recorder
 - 3 - analyzed EEG
 - 4 - T.I. EEG analysis
 - 5 - Electrode configuration
 - 6 - ? Gavn pix & EEG
- Tech.
appendix ?