

UNITED STATES GOVERNMENT

Memorandum

MED 075
Medical Support Branch
Attention: G. Kelly

EC/Chief, Crew Systems Division

DATE:

To reply enter to:
EC961DD2481

SUBJECT: Bioinstrumentation ground electrode

In response to an action item from our meeting of June 19, 1967, the following information is supplied:

An Spacecraft 101 was being checked out at North American Aviation, Downey, Astronaut Scott received an electrical shock through the bioinstrumentation ground system. A failure analysis of this problem is described in detail by the attached memo.

In addition to the failure modes that caused Astronaut Scott to be shocked, there is the situation which allows the astronaut to service various equipment that has either 115 volts, 400 CPS, or 28 volts DC open to the service area. With the ground electrode attached he would receive a shock if he touched any of the exposed wires.

Tests have been conducted that show the signal is of good quality and the ECG wave form is not affected adversely. The impedance pneumograph does show a small shift in base line when the test subject touches spacecraft ground; however, the ability to determine rate is not affected. The cardiometer functions properly with or without a ground electrode being attached to the test subject.

It is for the above mentioned reasons that the Crew Systems Division is of the opinion that the ground electrode is a potential hazard and the improvement in signal with its use does not justify its use.

Crew Systems Division has drawings already made to build hardware either with or without the ground electrode. When your office has evaluated all the inputs you requested June 19, 1967, please advise Crew Systems Division as to your decision by July 10, 1967, via memo with concurrences by Flight Safety Office so hardware production can proceed.

Richard S. Johnston

Enclosure

cc:

See attached list

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Enclosure 1