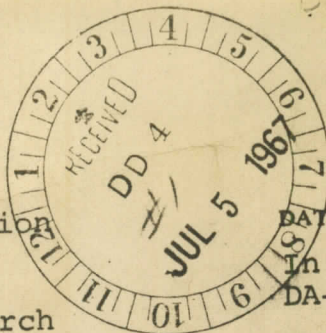


UNITED STATES GOVERNMENT

Memorandum



DATE July 5, 1967

In reply refer to:
DA-67-M328

TO : EC/Chief, Crew Systems Division

FROM : DA/Director of Medical Research
and Operations

SUBJECT: Removal of the Ground Electrode from the Bioinstrumentation
System

This is in reply to your memorandum EC961DA2336, dated June 8, 1967 and EC961DD2481, written at a later date to Dr. G. F. Kelly of the Medical Operations Office.

A complete review of the problem posed by the existence of a ground electrode in the Apollo bioinstrumentation system has been accomplished by members of my staff working in conjunction with personnel of your Division and technical advisers from the Instrumentation and Electronics Systems Division and the Flight Safety Office. A copy of the report resulting from this review is enclosed for your information.

Based on the findings of this review, I concur with your position that the presence of the ground electrode poses an unacceptable safety hazard in the bioinstrumentation system as configured for Apollo. I concur with the removal of the ground electrode from all harnesses being used in current test activities.

I view this biomedical sensor harness modification as a necessary but undesirable expedient measure which I must accept in the interest of enabling essential test and checkout activities to proceed in support of the Apollo Program. I hope that you will initiate prompt engineering design efforts to provide a solution to the problem which does not carry the penalty of degrading the stability of the electrocardiogram and impedance pneumogram signals. I am emphasizing our continuing requirement for development of bioinstrumentation capability to monitor physiological parameters from people engaged in complex activities, not only in Apollo but in the Apollo Applications Program and any future manned space efforts we may be called upon to support, in a separate memorandum to the Director of Engineering and Development.

The courtesy and understanding which you and your Division staff have shown in assisting us in this matter is sincerely appreciated. I hope that together we can work out a more satisfactory solution to the bioinstrumentation requirement prior to the Apollo lunar mission.

Charles A. Berry, M.D.
Charles A. Berry, M. D.



Enclosure

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

cc:

(w/enclosures)

CA/D. K. Slayton
DD/D. O. Coons, M. D.
DC/E. L. Beckman, M. D.
DC2/W. R. Hawkins, M. D.

(w/o enclosures)

DD/G. F. Kelly, M. D.
✓DD4/K. N. Beers, M. D.
DC2/G. F. Humbert, M. D.
EE2/D. Hickman
FS3/P. Westerfield
EC9/B. Burton
EC7/M. Lippitt
J. Day
B. Lamont
EC4/L. Casey

DA:ADCatterson:fm 7-5-67