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[redacted] July 10, 1953

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Dr. Thomas L. Shipman
Los Alamos Scientific Laboratory
P. O. Box 1663
Los Alamos, New Mexico

BEST COPY AVAILABLE

Dear Tom:

I have delayed answering your letter of May 26, 1953 until I could give you more specific information. In the meantime, Al's letter of June 29 and yours to him of June 30 seem to take care of the matter of recommendations for a medical officer for Castle. I certainly agree with both of you that Clint Maupin would be a splendid person to undertake this assignment. I have been very much impressed with the effective work he has done at Nevada.

The main point of your letter is the possibility of utilizing telemetering equipment which we have developed for such needs as may be encountered during Operation Castle. We have had this in mind, and although John Servis has informed me that there is no plan to make use of this equipment, I have considered it wise to proceed with the development in any case. Since the system is not specifically intended for any one operation, the justifications do not depend on the requirements of any single programmsuch as Castle, however, as we both know from previous experience, there is very likely to be a sudden demand for such assistance, and I hope to have the equipment available in case of need.

The present situation is this. We have in existence the system under field test this Spring. We are now engaged with the Bureau of Standards and Motorola Company in certain minor modifications of the system and relocation of the components of the individual units to permit more economical manufacture and servicing of the equipment by changing the sub-carrier frequency from 6,000 cycles to 2,500 cycles per second in order to permit telemetering of ordinary telephone and signal lines. A further requirement is that the cases be hermetically sealed with silica gel driers placed within so that satisfactory operation in the tropics may be anticipated. Additional repeater stations are being constructed to permit experiments with the cascading of repeaters to maintain line-of-sight transmission in broken and mountainous country.

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MILITARY RESEARCH & APPL. 7-1

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As soon as Dick Johnston's report is available I will send you a copy. The performance of the system under field conditions was excellent despite the quarter-watt power. No interference was encountered even with transmission over 70 miles. The system was also used with radiotelephone with beautiful results. In principle, the system will accept any measurement where the transducer can convert the phenomena observed to a voltage signal of the proper magnitude. This signal is simply admitted to the input of the system and after proper calibration the values may be obtained in permanent record form at the receiving station.

For use at Eniwetok it would be necessary to put the data station in a small bunker, or, if desired, within one of the large bunkers with the detector presenting to the exterior under an aluminum dome. The signal could then be conducted by wire underground a sufficient distance for the repeater station antenna to withstand any damage. From this point the transmission would be line-of-sight by radio. The data stations as well as the repeater are self-powered as are self-contained units.

I will keep you informed of any new developments in this field.

Sincerely yours,

John C. Bugher, M.D.
Director, Division of
Biology & Medicine

cc: Dr. A. C.Graves, LASL

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