

Office Memorandum • UNITED STATES GOVERNMENT

TO : R. T. Harbo *RT*

DATE: December 19, 1952

FROM : I. W. Conrad *IWC*

JUNE

SUBJECT: MICROPHONE AND TECHNICAL
INSTALLATIONS FOUND IN
U. S. EMBASSIES ABROAD
ESPIONAGE - R.
105-10581
19581

- Tolson _____
- Ladd _____
- Nichols _____
- Belmont
- Clegg _____
- Glavin _____
- Harbo _____
- Rosen _____
- Tracy _____
- Laughlin _____
- Mohr _____
- Winterrowd _____
- Tele. Rm. _____
- Holloman _____
- Gandy _____

Tracy
Rosen
J.F. [unclear]

SYNOPSIS:

Per Bureau instructions, R. W. Swartz of this Section returned the four-watt microwave transmitter to Signal Corps Engineering Laboratories at Fort Monmouth, New Jersey, on December 15, 1952. A successful microphone device had been built there from a drawing furnished them and they have concentrated on "positive" military application for "front line" use to communicate with rear military positions. Countermeasures development was left to NRL to avoid duplicate effort. Suggest Liaison Section borrow AN/PRR-4 receiver which they found suitable.

BACKGROUND:

Mr. Parsons' memorandum to you dated December 8, 1952, set out the cooperation of Signal Corps Engineering Laboratories with the Bureau in loaning the badly needed transmitter to us and delivering it promptly at their expense. It was pointed out that they may have done developmental work which would be of interest to us.

DETAILS:

Accordingly, Mr. Swartz returned the borrowed microwave transmitter, the most powerful obtainable for our purpose, on December 15, 1952, and discussed the Navy Research Laboratories report and general aspects of the problem with those men cleared for it and working on it at Signal Corps Engineering Laboratories (SCEL).

Dr. E. G. Witting, civilian head of development work at SCEL, discussed the inherent problems of such a device, stating that they were glad to be of assistance and wanted to help in any

cc Liaison

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matter that the Bureau presented to them. Bureau appreciation of their assistance was expressed and discussions of technical details were referred to Evans Laboratories, a subdivision of SCEL.

Mr. Samuel Stiber, Mr. Russel Schmidt and Mr. Swartz discussed technical aspects of the microphone device at some length. In order to dispense any misgivings on the technical level about the project on countermeasures being carried on at Navy Research Laboratories, Mr. Swartz pointed out that duplication of effort and expense was thereby eliminated. All the men mentioned above indicated that their work had proceeded to the positive applications with some success, thereby proving that the elimination of duplicate countermeasure study was the best course of action.

They plan to examine further the use of such a microphone at front-line posts since no wires or batteries would be required for its operation. Since the microphone operates on a specific frequency, a large number of units could be operated from a single variable frequency transmitter at a rear command post.

Based on the FBI drawing furnished them, a unit was made which was claimed to have excellent audio sensitivity. Using a fraction of a watt of power and a AN/PRR-4 receiver the device was operated through a thin plywood wall. Positioning was very critical which compares with test results at the Bureau.

Using a spectrum analyzer they determined the modulation to be nearly 50 per cent as shown by oscillograms in their report. Frequency modulation was not apparent in the photographs and it was noted that side bands of such modulation would be greatly attenuated due to the high Q of the device.

The optimum frequency for their unit was about 1100 megacycles with a disc-diaphragm separation in the order of one mil rather than nine mils as with the Russian unit. No cross-hatching of the disc surface was used which probably caused shorting and audio distortion at high volume levels. This was discounted since they presumed that most uses of the device would be at low volume levels.

The AN/PRR-4 receiver is aperiodic over the frequency range we are interested in, is battery operated, has good sensitivity with frequency rejection and was inferred to be more applicable than the Navy Research Laboratories receiver. Mr. Stiber urged that the Bureau borrow one and try it out.

It was mentioned that Bell Telephone Laboratories had developed a device for modulation of a microwave carrier by changing the physical size of a wave guide section. No capacity effect was used and it did not appear applicable to the immediate Bureau studies.

A short report was shown to Mr. Swartz which had general discussion of the Signal Corps development without much detail. It would be desirable to have a copy which is being requested separately.

Mr. Swartz was very courteously received and a spirit of full cooperation pervaded all discussions. Appreciation of the Bureau was expressed to the men contacted.

RECOMMENDATION:

It is recommended that Liaison Section obtain one AN/PRR-4 receiver through G-2 on a one-month loan basis for experiments in the FBI Laboratory.

12-30-52

COL. RENWANZ, G2,
WILL FOLLOW THIS

RR.