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Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: JUL 29 1957

FROM :

*File
Lt. Col. Sig* 50X1

SUBJECT: SigC Demonstration of the AN/PAC-2

1. General - The Research and Development Division, Office of the Chief Signal Officer, gave a demonstration of the AN/PAC-2 Military Infrared Telephone in Room 3-E-234, the Pentagon, on the afternoon of 23 July 1957. A breadboard model of an Infrared/Microwave Communications System was also demonstrated. The meeting was UNCLASSIFIED, and various interested Offices of the DOD were represented (about 50 people). Among those present were:

SigC.

Agency

Col. Meyer - Chief, R&D Division
Mr. N. Stulman - Chief, Applied Physics
Mr. H. Dauber (Ft. Monmouth)
Mr. W. Drevneek (Ft. Monmouth)



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2. AN/PAC-2 - A two-way voice communication channel between two infrared telephone was demonstrated. One set was mounted on a 12-inch tripod and placed in a window facing the highway. The second set was located just off the highway approximately 600 yards distant. The signal strength and the quality of reception were considered satisfactory, despite a light rain over the transmission path. The prototype was designed for a 500-yard range, but a 1000-yard range is now claimed. The infrared source is a PR-9 lamp (flashlight bulb) with a life of five hours. The lamps are pre-focused at the factory, and ten lamps are provided as spares. The beamwidth was said to be approximately 3° in both the horizontal and vertical dimensions, and operation with the equipment hand-held was possible. The weight of the AN/PAC-2 is 10.5 pounds.

3. Delivery - We are to receive 10 units from the SigC. Production has been tentatively scheduled for September; however, Mr. Stulman indicated that production planning may be revised to consider modifying the units to incorporate the IS-5 galvanometer modulator. At the present time our two sets are being examined by Ft. Belvoir engineers, and a copy of their evaluation report will be sent to us. With respect to our release of information on the IS-5 last Friday, the Ft. Monmouth technical people felt slighted because they has not been "cut in" on the early development. The undersigned stated that such feelings were unqualified since complete data on the new Infrared Modulator was released to Ft. Monmouth over a year ago.

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4. IR/Microwave - A breadboard model of the infrared/microwave voice communication channel was demonstrated over the same range as the AN/PAC-2. The "agent" set located in the Pentagon provided infrared transmission and microwave reception, and the "base station" provided infrared reception and microwave transmission. The "agent" set consisted of identical circuitry of the AN/PAC-2 IR source and transistorized microphone amplifier/modulator, and a 10 kmc cavity, diode detector, and audio amplifier. The complete unit weighs less than 2 pounds and could easily be transported in a coat pocket. The "base station" consisted of an 18-inch diameter dish mounted above a 12-inch searchlight housing which was used as the infrared optical system. The fidelity of the microwave reception from the base station was greater than that from the AN/PAC-2, as was to be expected. Microwave beamwidth measurements were not available.

5. [redacted] - The SigC has plans for the development of additional infrared/microwave "agent type" communications equipment. Such equipment includes a "Master Station" similar to the IS-1 and the [redacted] repackaged version (which was on exhibit), but dual optics for duplex operation are to be incorporated. The SigC also would like to re-package their infrared/microwave system into a smaller package having an 8-inch parabolic antenna with a grid coating for infrared radiation, (50 per cent efficiency). The SigC indicated that they were not happy about RCA's work on the AN/PAC-2, and were deeply impressed with the IS-5 packaging and consequently asked for an introduction to [redacted]. The undersigned referred such queries to [redacted] [redacted] since it was their division that established the IS-5 sterility.

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6. It is believed that the modulating principle incorporated in the IS-1, IS-4, and IS-5 remain important insofar as infrared technological development is concerned. TSS/APD seeks to consult with Northwestern University on this subject. Should certain security aspects be adjusted, full technical liaison will be established between the Agency, SigC, Northwestern, and [redacted].

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