

Office Memorandum • UNITED STATES GOVERNMENT CONFIDENTIAL

TO : The Files

DATE: 9 August 1955

FROM :

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SUBJECT: Support Status - Project - Infrared Transceivers

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1. Background - The Chief, requested that an infrared communications system capable of a one mile plus operating range be made available to that August 1955 to support the Project. The equipment was to be powered by secondary cells, and a battery charger to operate from 220 volt 50 cycle mains was to be self-contained. One unit of the system was to be small enough to be transported in a briefcase with an additional provision for wire or tape recorder input.

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2. Equipment - Two prototype infrared transceivers were available from the TSS/ development, which met the range and power supply requirements; it was decided that one of the units would be supplied "as is" to function as the base station and that the second unit would be repackaged by the laboratory on a crash basis for reduced dimensions and recorder input. Additionally, TSS requested to repackage one of the twenty sets for ultimate delivery to OC as backup equipment. Repackaging principally consists of removing the viewer used in alignment and modifying the bulky tripod mounting.

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3. Delivery - The base station and laboratory modified Agent sets were shipped by pouch on schedule. The modified unit was shipped by air parcel post and picked up at the airport on 27 July 1955. Upon advice that the Agent unit had been damaged by leaking electrolyte, the modified unit was delivered to O&T (see below) to be hand-carried by Agency personnel departing for Saturday, 6 August 1955, as replacement equipment for the damaged unit.

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4. Equipment Damage - Upon arrival of the equipment in , it was opened in the presence of OC-E, and it was found that one of the four Yardney Silvercells in the agent set had leaked electrolyte (potassium hydroxide), and the extent of damage was believed to be considerable. (The unit is being returned for repair.) The shipment of the

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No -
Pouched Unit*

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equipment with wet cells installed was not an oversight. It was discussed with the TSS technical people who monitored the [] development work, and they interposed no objection. The manufacturer's literature claims that the High-rate cells have passed tests involving 250 g shock in a plane perpendicular to the plates, and 10 g in any plane during discharge, and further, that the Yardney Silvercells perform efficiently at high altitudes and that with proper packing, they have been used at altitudes as high as 85 miles (guided missiles). The equipment with charged wet cells has been shipped between Chicago and Washington several times and, in addition, has received somewhat rough treatment in field tests. The above and the need for expeditious handling resulted in releasing the equipment with the charged cells in place.

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5. [] Repackaged Unit - Prior to releasing the [] modified unit for replacement of the damaged unit, the manufacturer advised that the battery charger was erroneously set at 8.2 volts instead of 8.0 volts and that the lamp (tungsten source) type GE 1045 heated excessively and should be replaced with a type GE 1021. The schematic lists either a type 1045 or a 1029. [] advised that the type 1029 should read 1021 and a jumper across a .8 ohm resistor in series with the filament should be removed when the type GE 1021 lamp is used. Corrections were noted on the schematic, new lamps were purchased and tested (because of a reported 20% rejection due to manufacturing tolerances in filament point placement), and the jumper across the .8 ohm resistor was removed.

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6. Recalibration of the Charging Cutoff Voltage - An unsuccessful attempt was made to calibrate the battery charger cutoff voltage at exactly 8.0 volts. The equipment was due O&T by 2 p.m.; and although an hour extension was obtained, the cells could not be brought to full charge (1.84 volts plus or minus 1.5% open circuited or 2.0 volts per cell charging voltage). A precision DC voltmeter was made available by the laboratory, and battery charging commenced upon its arrival. The batteries were down slightly due to demonstration of the equipment and testing of the new lamps. As the charging rate levelled off as full charge was approached, it became apparent that sufficient time did not remain to bring the cells to the exact 8.0 charging voltage cutoff necessary to prohibit overcharging. (Yardney Silvercells cannot be overcharged.) This information was relayed to O&T who felt that the charging cutoff adjustment could be

If this is the case, why worry?

--- will be damaged by overcharging

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accomplished by []. Accordingly, the undersigned delivered the unit to O&T and wrote calibration instructions to be incorporated in a cable to []. Prior to delivery, masking tape was placed over the Silvercell vent caps as a precautionary measure although it was understood that the unit would be hand-carried in an upright position and in the pressurized cabin of the aircraft.

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7. Security - Insofar as this office is concerned, the equipment is classified SECRET. There have been several discussions with TSS regarding the declassification of the equipment, and a declassification board convened to consider its downgrading. Although TSS is anxious that the equipment be made available in support of the [] Project, documentation to such an end is not available.

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One paper resulting from the declassification board's action was viewed and considered unsatisfactory (at least by the undersigned), and the problem is currently to be resolved through liaison between []

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