STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 30 April 1956

25X1

FROM : [redacted]

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SUBJECT: RS-11A/B, Contract XG-1355 and Contract RD-85 T.O. 2, Trip Report

1. General - A visit was made to the [redacted] on 2 April 1956 to monitor the subject contracts, which concern the RS-11A/B and the AC power supply and hand crank generator for the RS-11A/B. Present were:

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[redacted]

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2. Equipment Status - The Laboratory had completed tests of the initial sample RT-11B with corrective action indicated. The first sample RR-11A was ready for delivery with the second sample to be air mailed next week. The contractor has phoned that initial progress was being made on the RS-11A/B Power System. Two RR-11B receivers are scheduled for delivery on 15 April 1956.

3. Harmonic Radiation - Initial discussions concerned excessive 3rd and 4th harmonic radiation reported by the Laboratory. Harmonic radiation below 70 megacycles was considered satisfactory; however, when the 3rd or 4th harmonic fell above 70 megacycles (TV band), laboratory tests, while not positive, indicate that the 4th harmonic might be greater than the 2nd or that the 3rd was only 12 db down from the fundamental indicating an unwanted series resonance, parasitic oscillation or faulty test equipment. Causes, remedies, and test procedure was discussed. [redacted] is without adequate test equipment (Stoddart field intensity meter), but agreed to make tests with a receiver having a signal strength meter and a television set and to telephone corrective action. It was stressed that further efforts to minimize harmonic radiation by transmitter circuitry adjustments should be made prior to resorting to the installation of a low pass filter in the antenna circuit.

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4. RF output with crystal removed - The Laboratory reported that there was some RF output at the low end of the band of RT-11B Serial No. 1. None for Serial No. 2. This was a problem with the initial RT-11A samples and the subject of an earlier report. A very simple modification involving a compartment change of the oscillator - amplifier coupling condenser completely corrected the RT-11A deficiency. [redacted] was asked to investigate the RT-11B in the same manner.

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5. Dial Calibration - A second sample RR-11A was available to take back to Washington, and a trial RR-11B dial scale was available for inspection. Neither the RR-11A or tentative RR-11B scale have sufficient graduations for the scale length. To demonstrate this, random frequencies were selected between graduation marks with [redacted] engineers doing the tuning. 25X1
A crystal frequency meter was then tuned to the selected frequency to check tuning accuracy. Although tuning accuracy was satisfactory, this test demonstrated the need for additional dial calibration marks. The addition of more calibration marks is complicated on the B receiver because of insufficient tape width for both numerical presentation and additional calibration marks. The contractor was authorized to delete fractional megacycle figures at the high end of scale in favor of additional calibration points. A better solution to the problem would be to increase the scale width which does not appear possible without major redesign.

6. Frequency Shift Due to Handling - When the RR-11A sample was handled, a frequency shift occured when pressure was exerted on the case cover. The frequency shift (maximum of 2500 cycles was measured) is proportional to the mechanical movement of the case cover which lies directly over the oscillator stage. [redacted] advised that this sample did not have 25X1
the latest correction which consisted of the simple addition of a screw securing the case cover to the condenser mount at a point adjacent to the oscillator stage. Since this screw could become loose, it is felt that frequency shift due to handling can be completely and permanently eliminated with a more rigid case cover as evidenced in the RR-11AA. [redacted] 25X1
has been so advised.

7. The 3B4 oscillator of the RT-11A does not provide sufficient drive for the RT-11B; the redesigned oscillator of the RT-11B consists of two 1AK4's with series filament and parallel plates with increased drive at a saving of 65 ma. Printed circuitry is also provided. The RT-11B oscillator circuitry thus represents improved design by simplifying production (printed circuitry in the oscillator stage), reduction of a tube type, reduction in current drain, and increased drive. It is felt that these advantages justify the additional tube. [redacted] said he would 25X1
substitute such circuitry in the next RT-11A (first formal prototype).

8. AC Power Supply - Power transformer design has been completed and fabrication has commenced. An output of 8 watts RF nominal is planned for the 2 5A6 output tubes. A 30 watt input is planned to deliver 24.8 watts output as follows:

225 volts at 90 ma
2.25 volts at 1 amp.
125 volts at 15 ma
1.25 volts at 500 ma

9. Hand Crank Generator - The contractors proposal for the RS-11A/B hand crank generator suggests a unit having the dimensions of the receiver and transmitter combined (without batteries) and a cubic volume of 70 cubic inches. The principal component size-wise is the generator itself. The additional circuitry including filters, regulators, etc., may be quite compact. The contractor advised that the [redacted] 25X1 [redacted] New Hampshire, have indicated that they can design a 25X1 satisfactory generator of such dimensions that the complete equipment can be housed in a volume of 35 cubic inches (or the dimensions of a single RS-11A/B component). Such is [redacted] aim, and this would mean that a 25X1 single RS-11A/B carrying case could contain an RS-11A/B with two batteries, the AC power supply and the hand crank generator. There would be no room for accessories. [redacted] will seek authority from the Contracting Officer 25X1 to increase the amount of funds which may be used for sub-contracting. The present limitation is $1,000 without approval, and it is estimated that hand crank development will cost between $3,000 and $4,000.

10. Additional Equipment for AF - The Contracting Officer plans that the additional RS-11A and RS-11B units will be procured as an extension of XG-1355 and that the RS-11C units and engineering services will constitute a new Task Order to Contract RD-85. [redacted] proposal 25X1 as submitted by the former management was $920.00 per prototype, plus $7,250.00 for engineering services for C or D units. This Office feels that reasonable engineering services, per C or D unit might approximate $3,000.00 without condenser redesign, or the full $7,250.00 with condenser redesign. The former management planned new condenser design. The new management feels that specifications can be met without condenser redesign for the C unit (sought by the AF) and is required for the D unit (not sought by the AF). Consequently, the Contracting Officer has requested [redacted] to submit a cost breakdown of engineering services. 25X1 The above was explained to the company and a cost reduction should be reflected in the cost breakdown.

11. [redacted] - the company - Contractual performance seems to be 25X1 borderline satisfactory. Management is tardy in reports to the contracting officer. The lack of senior engineering supervision is becoming more apparent, and it was stated that [redacted] is absent a good deal of 25X1 the time. Rumors at the IRE show and at [redacted] are that they were 25X1 low bidder on a 3 to 4 million dollar contract with the Weather Bureau. [redacted] the Treasurer under the old management who was later dropped 25X1 by [redacted] has been reinstated by [redacted] said he 25X1 was forwarding a request for partial payment on XG-1355 for $26,000, which would bring the total to around $100,000. The undersigned expressed the opinion that it was doubtful that the Contracting Officer would

authorize such a payment until such time as formal acceptance of the sample prototypes is received.

[redacted] 25X1