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The Files - RD-110, T.O. 9 31 March 1959

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Trip Report - DS-1 Display System

1. On 12 March 1959 a visit was made to [redacted] Chicago, Illinois, to monitor progress in the development of the DS-1, Visual Display System. Persons participating in the discussions were: 25X1A

25X1A5a1 [redacted]

25X1A9a [redacted] - OC-E/R&D-EP

2. Packaging of the readout equipment has been completed. The transmitter adapter is a rack-mounted device 19 x 10 x 3 inches. The readout unit is 6 x 4 x 2-1/2 inches. [redacted] stated that this equipment (including the battery) will operate satisfactorily over a temperature range of -30°C to 60°C. The readout unit uses two batteries, a 1.2-volt battery at 0.5 amperehours and a 6-volt battery at 1 amperehour. These batteries are nickel-cadmium rechargeable vented cells and will provide up to 28 hours of operation. 25X1A

3. The equipment to be delivered is an engineering model, and its construction, design and assembly consists of parts and components normally found on-the-shelf. Upon viewing this equipment, it was realized by the writer that miniaturization techniques could reduce the present size of the readout device to about 2/3 of its present size. There is no reason to decrease the size of the rack-mounted transmitter adapter.

4. Transmitter Adapter - This unit converts a teletype baudot code into a binary code which in turn triggers one of two audio oscillators (1800/2500 cps). These two tones sequentially transmit according to the combinations of the binary code which are fed into the modulator section of a communications transmitter. In A-3 mode of operation, the transmitter in turn radiates this intelligence to the air. It is to be noted that the transmitter adapter output signal may be fed over a subcarrier channel of a microwave system such as is employed by this Agency. This capability then allows complete control to be maintained at the receiver site by Operation's personnel. If this is not desired, the Operations people will have to transmit a teletype message over normal key lines to a tape reperforator located at the transmitter station. The output tape of this perforator in turn will then be fed into the transmitter adapter through a keying head.

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5. Readout Unit - This device is connected to the audio output of a standard agent receiver and converts the binary code combination to numerical information by flashing one of ten lights located on top of the unit. A possible difficulty in the design of this equipment is that of the frequency of the two audio tones, f_1=2500 cps and f_2=1800 cps, being slightly high for agent receivers. The bandpass of the receivers may be such as to place these two tones in a poor position relative to the frequency response of the IF. On some receivers the overall frequency response may be such as to place these tones near the high end of the response curve far down on the slope thus creating more noise than signal. However, two features aid in overcoming this interference: (1) the fact that the visual readout device cannot be triggered by noise according to tests conducted by [redacted] and (2) the fact that the filter and dector circuitry of the visual readout device operates at a -2 db signal-to-noise level.

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6. The complete system will be ready for delivery on 1 April 1959. [redacted] stated that the final report will require an additional 6 to 8 weeks to complete. This report is the only one requested on the six month study program. [redacted] also stated that it was possible they may require more funds to complete the writing of the report. However, he didn't know how much would be required. [redacted] was instructed to determine the time and funds needed to finish the job and to submit his request as soon as possible.

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7. [redacted] and the writer discussed methods of testing this equipment and concluded that operational tests should first be undertaken to demonstrate the feasibility of the equipment for agent communications. Following operational evaluation testing, a full laboratory evaluation would be undertaken.

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