CONFIDENTIAL

1 April 1959

MEMORANDUM TO THE FILE

FROM : [redacted] 25X1A

SUBJECT: Report on TDY Trip to [redacted], Cedar Rapids, Iowa 25X1

1. A visit was made to the [redacted] on 5, 6, and 7 March 1959 by [redacted] for the purpose of discussing the following: 25X1A 25X1A

a) Development progress of the logarithmic periodic AN-21 high frequency (3 - 30 Mc.) antenna.

b) Inspect a full scale 237A-1 antenna.

c) Inspect the AST-201 Tropo-Scatter Shelter.

d) Procurement status of the 32RS-1 HF SSB Transceiver.

e) Price and availability of the Monopole Billboard antenna (4 - 10 Mc.) and the Billboard antenna (9 - 27 Mc.).

2. Company officials contacted were:

25X1A5a1 [redacted] Chief, Research and Design Group
- Antenna Design Group
tenna Design Group
ontracts Estimating Department

3. We departed Washington 1640 and arrived Cedar Rapids at 2200, 4 March. On arrival the weather was clear; however, during the night a snowstorm enveloped the area and the next day it was difficult to obtain transportation to the plant as snow removal operations were suspended due to poor visibility. We managed to secure transportation and arrived at the plant at 0930, 5 March.

a) The AN-21 development program is proceeding favorably and experimental and theoretical studies have been made varying the various design parameter. In conjunction with this, the antenna design group has constructed several scale models and tabulated pattern measurements. Refer to Attachment No. 1 for a description of the antenna. It is expected that the program

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will be completed by midyear, and at that time the [redacted] 25X1A5a
Company will erect a full scale array at Cedar Rapids for operational tests. From the tabulated data it will be possible to design an AN-21 antenna for different types of circuits where the vertical angle of radiation may be optimized. Dependent upon the various factors concerning a specific circuit, main tower heights will vary from 75' to 150' and the length of the catenary may approach 300'.

b) In regards to the inspection of the full scale 237A-1 antenna it was not possible to inspect the array for the following reason:

The array collapsed during erection and the 105' tower sheared two of the three legs on each of the supporting towers. The entire supporting assembly requires further mechanical design work to simplify the installation. Refer to Attachment No. 2 for a description of a smaller type array (237A-2) which is similar to the 237A-1, except for physical size and the supporting structure is two wooden telephone poles. It was not possible to view the wreckage due to the snow drifts which covered the antenna range. Two full scale 237A-1 antennas have been erected at Offut AFB, Nebraska, and when properly installed have sucessfully weathered severe winter storms.

c) A request was made to investigate the procurement status of two 32RS-1 SSB Transceivers with associated Antenna Couplers and delivery was promised in May 1959. This equipment is described in Attachment No. 3. Procurement action for this equipment was initiated 29 September 1958.

d) In regards to requests from the field regarding the Monopole Billboard (4 - 10 Mc.) antenna and the Billboard (9 - 27 Mc.) antenna, the company officials stated that no full scale Monopole Billboard antenna has ever been erected, although theoretical studies have been made. Slight development work is also required prior to erecting a full scale array. Design work on this antenna has been temporarily suspended due to the work load of the Antenna Design Group. This antenna has been described in [redacted] technical publications 25X1A5
and the reports are misleading in that the impression is made that this antenna is readily available. The Billboard (9 - 27 Mc.) antenna is available upon placement of order with delivery time of approximately six months and the price quoted is approximately $15,000 each in quantities of six.

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4. At the conclusion of the day arrangements were made to return to the city. Transportation was difficult, and as it had not stopped snowing, some streets were impassable. The following day, Friday - 6 March, the major portion of industry in
25X1A5a1 Cedar Rapids, including the [redacted] plant, closed down pending snow removal on major highways and streets. Fortunately, it stopped snowing Friday afternoon.

5. On 7 March we were able to secure transportation to the plant and inspect an AST-201 air transportable tropo-scatter terminal. Refer to Attachment 4. The [redacted] also manu- 25X1A5
factures a similar ground transportable terminal, which is housed in a van type trailer, however no ground transportable systems were available at the plant at that time. The tropo-scatter system is capable of reliable operation on obstacle type paths from 30 to 150 miles and will provide a maximum capability of 24 voice channels with each voice channel capable of accommodating up to 18 teletype circuits. The frequency range of the equipment is approximately 1750 - 2050 Mc. with a maximum power output of 1 KW. Design work on equipment in the 900 - 1000 Mc. frequency range has been suspended as the FCC may allocate this spectrum to the television services, therefore any descriptive literature describing equipment in this frequency range is in error. No prices were readily available for the ground transportable terminal, however the cost of an AST-201 terminal will approximate $100,000 per terminal.

6. Air transportation was available that afternoon and we departed Cedar Rapids at 1500 and arrived Washington at 2035, 7 March 1959.

[redacted] 25X1A

Attachments:
1. AS-21 L. P. Antenna - 1 each
2. 237A-2 L. P. Antenna - 1 each
3. 100 Watt SSB HF Transceiver - 1 each
4. AST-201 Tropo-Scatter Shelter - 1 each

Distribution: Original - Project File, w/att. 1 - SDS Chrono, w/o att.
1 - Memo to File, w/o att. 2 - Monthly Report, w/o att.
1 - Extra, w/o att. - OC-T

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