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20 April 1959

MEMORANDUM TO THE FILE

SUBJECT: Report of Trip to [REDACTED], Cedar Rapids, Iowa

25X1A5a

1. On 2 April 1959, I arrived at the [REDACTED] plant in Cedar Rapids, Iowa, to observe the erection of a 237A-1 Logarithmic Periodic Antenna to obtain practical experience which will be used when installing future antennas of this type.

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2. The 70 ft. steel supporting towers had been erected before my arrival, so that I was unable to learn much about that phase of the erection. However, I was thoroughly briefed by the erection crew on the procedures that they had employed in the assembly and erection of the towers.

3. The remainder of the first day was spent in attaching the rotor assembly to the main mast and lifting it into its supporting trunnion. This proved to be a time consuming and dangerous operation, due to the fact that in this case the assembly was being accomplished in a manner which was directly opposite to usual procedures. The reversal of assembly procedures was mandatory because the boom and antenna array had been previously assembled and partially erected. However, during the first erection, a high gust of wind twisted the mast sections and the main boom was dropped, damaging only certain sections of the elements and towers which were replaced, leaving the main center boom in one piece. Under normal conditions the rotor assembly would be placed into its trunnion first; the 20 ft. sections of the boom then being attached, one at a time. This procedure makes assembly of the boom and rotor a relatively simple operation. However, attempting to attach the rotor last and then raise the entire 105 ft. length of boom into its trunnion proved impractical.

4. The following day was utilized in attaching the elements to the boom and preparing the winches and lifting assemblies that would finally pull the entire boom and antenna array into its upright position between the towers and against its upper bearing.

5. On 6 April, the actual raising of the entire array was initiated. A winch mounted on a 10 ton wrecker was utilized for the lift. A 5/8" steel cable was used, passing from the wrecker, over the top of the two 70ft. towers, and attached to the boom, which was lying on the ground, at a point approximately 35 ft. from the outer end. In order to prevent side sway and provide a means of guiding the boom between the towers during the raising process, two trucks (one placed on each side of the towers) were utilized. Attached to each truck was a guy line, which in turn was attached to the boom at the lifting point. By controlling the movement of the vehicles, the centering of the boom was accomplished during the lifting procedure. However, precise coordination between the two truck drivers and the winch operator presented some very tense moments. Despite these obstacles all went well and the boom was bolted into its bearing by about 1900 that night.

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6. 7 April 1959, was spent in making final guy adjustments and discussing the do's and don'ts that should be followed in future erections.

7. In conclusion, I recommend the following items which I think will facilitate the erection of this size and type antenna, and improve the safety of the lifting operation.

- A. Expansion or screw type guy anchors should not be utilized unless ground conditions are definitely very hard and dry at all times.
- B. Two extra anchors (whether earth or concrete) should be placed in position that guys attached to each will steady the boom during the lifting process. This will eliminate the difficulties experienced with trucks.
- C. The stresses being applied while raising the boom and rotor assembly should be removed from the supporting towers. This can be accomplished by pouring concrete bases for the towers of such a size that the supports for the rotor assembly trunnion are made part of the tower foundation. In this manner the stresses imposed during the lifting operation would be applied to the foundation rather than to the legs of the supporting towers.

8. Photographs of the described operation are on file in the Field Engineering Section/SEB/OC-E.

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