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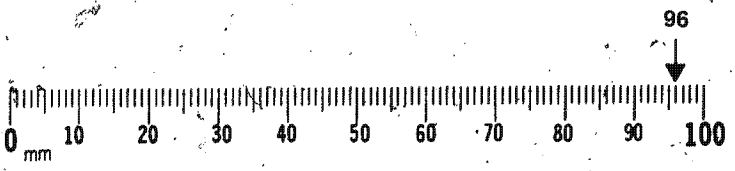
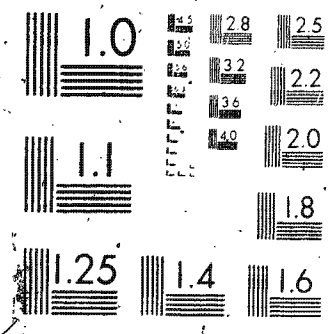
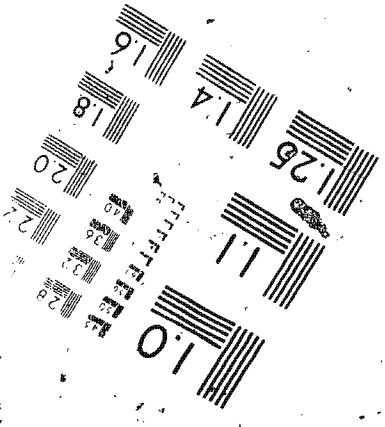




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1961-A



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INTRODUCTION

This technical memorandum discusses the Reversible Line Targets which are being developed for use on the CORN Program. Certain considerations concerning design, application, and use in the field environment are discussed. As a result of these discussions, recommendations are offered for a slightly modified design which would overcome some of the major problems in the present target design.

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BACKGROUND

Basic design requirements for the Reversible Line Targets were specified in a memorandum and sketch provided by AFSPPF to customer's representatives on 12 January 1971. The design portrayed in this sketch evolved as a result of general requirements associated with data reduction and analysis. Further, this design was presented in greater detail in Data Corporation drawing 0039-37-162-30 which was subsequently approved by AFSPPF and used as a part of the requirements for the target fabrication.

At the time of the January meeting, it was mutually recognized both by AFSPPF and contractor representatives that the design then presented reflected the basic requirements but that the target, per se, might necessarily have to be modified. At this time there was mutual agreement that the 150' length would probably pose handling problems during deployment. Further, at this time, there was some discussion as to whether or not the line could be properly aligned to the required accuracy under adverse field conditions. Also, during this meeting there was mutual recognition of the problem of coating uniformity.

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GENERAL

It was determined that only two of the nine Reversible Line Targets required would be fabricated, deployed operationally, and evaluated by AFSPPF. If the targets prove to be satisfactory, the remaining seven targets will be fabricated and deployed.

As a collateral effort, two RLTs were deployed with other standard CORN targets and photographed to provide additional basic data for the evaluation of the target and technique. Based on experience in these several deployments, several shortcomings have been discovered in the present design of the RLT.

1. It is extremely difficult to deploy the target and align the white line to the desired accuracy. The line is distorted at positions nearest the edge grommets; the effect is a scalloped line with variation of approximately 2 inches. When the target is laid over 10 to 12 inch high grass this condition is aggravated.

2. The 150' length of the panels causes considerable handling problems even in moderate wind.

3. The center flap, intended to cover grommets and pegs where the 2 panels join, creates a hump and a shadow parallel to the white line.

4. The target billows in moderate wind due to formation of lifting surfaces when the material is spread over uneven ground or high grass.

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RECOMMENDATIONS

It has not been possible to make a complete objective evaluation of the target from film images due to other problems. However, we feel that the problems enumerated above are significant and recommend the following modifications of the basic design.

1. The background panels should consist of 3 separate 50' x 50' pieces for each leg as shown in the sketch in Figure 1. This would present a background area equivalent to that of the present target. Panels would be joined by pegs through black anodized grommets so that the seam would not be discernible nor degrade the data.

2. Velcro pads of sufficient size sewn to the background panel on the center line would receive matching velcro material attached to the back of the separate white line. They would be of sufficient size to permit lateral movement of the line to achieve optimum alignment. This arrangement would permit greater alignment accuracy of the 150' white line, because alignment would not be dependent upon positioning the larger target panel. Both the 3 and 12 inch lines would have a background of common width which matches reflectance of the larger background panels.

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CONCLUSIONS

1. The lightweight nylon material is the best available for this purpose due to the size of the target. Penalties incurred with the use of heavier base materials, such as canvas, would impose intolerable burdens on the operation.

2. Reduction to 50' x 50' panels would reduce them to a more manageable size for both deployment and post mission maintenance.

3. When lines are removable, the higher reflectance of the white line material will be better preserved since it can be rolled and stored in a sealed container.

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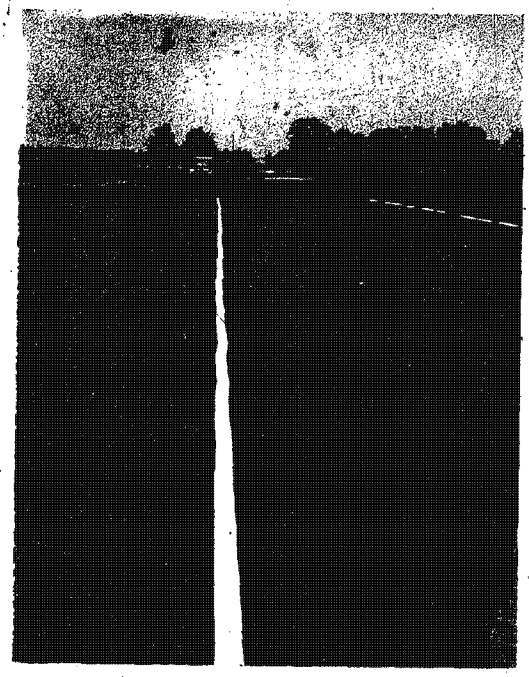

Figure 1. Line distortion caused by its proximity to target edge.

Figure 2. Undulating line results from high grass beneath target.

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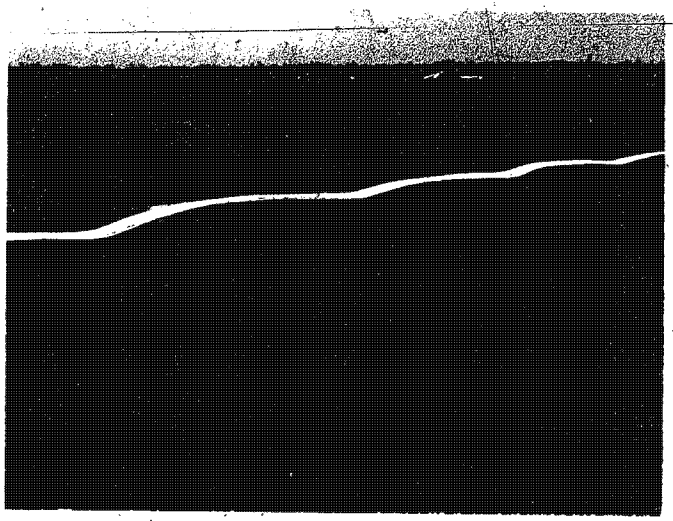

Figure 3 . Irregular target surface and cover flap shadow

Figure 4. Shadow adjacent to line caused by cover flap

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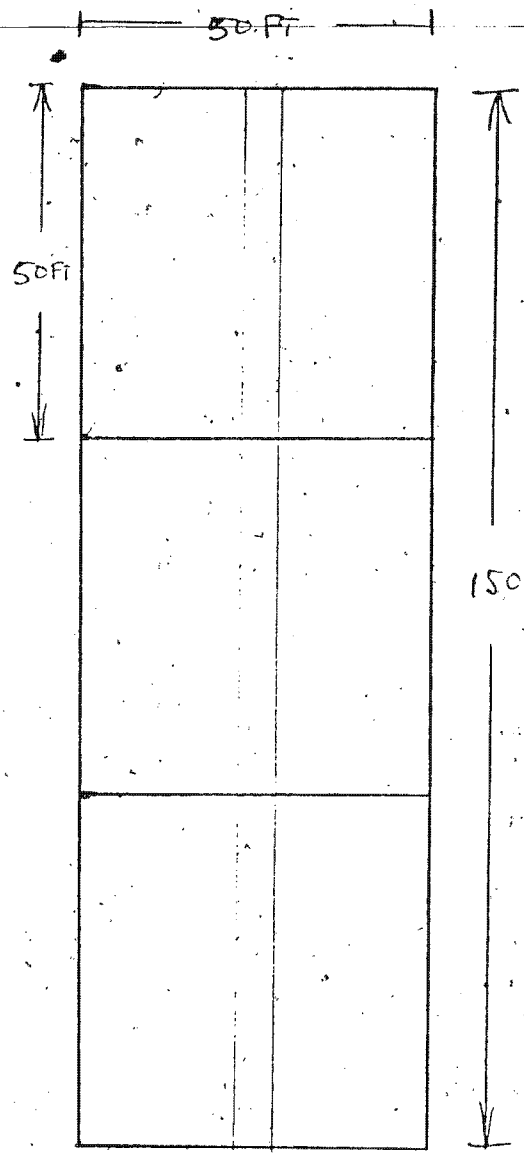

FIGURE 5

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