

# NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT

NBS REPORT

0201-20-2304

October 1, 1954

3748

Development, Testing, and Evaluation of  
Visual Landing Aids

Consolidated Progress Report

to the

Airborne Equipment Division  
Bureau of Aeronautics  
Department of the Navy

For the Period  
July 1 to September 30, 1954

for  
Bureau of Aeronautics Projects

TED No. NBS-AE-10001

TED No. NBS-AE-10003

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TED No. NBS-AE-10005



**U. S. DEPARTMENT OF COMMERCE**  
**NATIONAL BUREAU OF STANDARDS**

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Development, Testing, and Evaluation of Visual Landing Aids

Quarter Ending September 30, 1954

Laboratory Tests

Test No.

Requested

Study of the life characteristics of 36 seadrome-light batteries.

21A-3/54

In conference 2-12-54  
Letter dated 3-16-54

Status: Final life test has been completed and report is in preparation.

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Photometric and colorimetric characteristics  
of two approach-angle lights.

21A-5/54

In conference 3-31-54

Status: Test completed, report in preparation.

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Performance tests on airfield lighting control panel.

21A-9/54

Letter dated 5-29-53  
Notified 8-4-54 that panel  
was ready for inspection

Status: Factory inspection completed and delivery accepted,  
laboratory tests in progress.

Consultation Services

Seadrome Light Development - Assistance has been furnished in the preparation of drafts for discussion by a symposium on requirements for seadrome lights. The symposium formulated technical requirements for seadrome lights and brought out the fundamental difference between the seadrome lighting problem and the airfield lighting problem.

Specification for Colors of Lights - A draft for converting Specification AN-C-56, "Colors, Aeronautical Lights and Lighting Equipment", into a military specification has been prepared within the Defense Services. At the request of the Bureau of Aeronautics, this



draft has been reviewed and it was found that numerous errors had been introduced in the conversion process. These have been brought to the attention of the Bureau of Aeronautics and it is understood that a revised draft is in preparation. The military specification is intended to serve the needs of the Defense Services until the proposed U. S. Standard has been adopted.

#### Approach-angle lights

An experimental model of an improved approach-angle indicator has been constructed and subjected to visibility tests on a 900-foot range. The new light was found to be superior in intensity and sharpness of color transition to either of the approach-angle indicators which had been submitted to this Bureau for tests. A duplicate of the model has been furnished to the Marine Corps for flight testing.

#### Kinorama research

During the previous quarter attempts to validate the kinorama had encountered difficulties due to extraneous cues which enabled the pilot to give a better performance than could be accounted for by the lights visible to him. Preliminary tests indicate that these cues can be eliminated through the use of dyed tracing cloth or dark-colored rubber for the belt. The use of tracing cloth had to be given up when it was found that such cloth warped during the humid weather and in consequence it wrinkled on the kinorama table. Although the wrinkling was slight, nevertheless since 0.01" of belt represents 1.0' of approach, even a slight wrinkle is undesirable. Experiments have been made using a rubber belt attached to a tow bar which is held at right angles to the direction of motion by two sprocket-driven tow chains, one on each side of the belt. These were found to give the required restraint to the forward end of the belt but the central portion of the belt continued to drift to the side causing a bowing of the light configuration. This difficulty has been overcome by cementing zipper strips to the sides of the belt and passing these through guides just ahead of one of the cylinders. By this means satisfactory operation has been obtained with a single belt but it was found that the use of two belts, one as a tow belt and the other carrying the configuration of lights, again introduced wrinkling. It is believed this can be avoided by improving the equipment for handling and installing belts on the kinorama table so that it will not be necessary to use a separate tow belt.

#### Seadrome lights

Progress with the life-testing the seadrome-light batteries has been described under Tests. The symposium described under Consultation Services has resulted in the drafting of technical requirements for these lights.



Airfield lighting control panel

The airfield lighting control panel built by the Federal Electric Co. was inspected on 18 August 1954. The panel was found to be in accordance with the contract except for some minor deficiencies which were corrected during the course of inspection. The panel has been shipped to this Bureau and the contract approved for payment. Tests here indicate that the system for dimming the panel illumination is not satisfactory because the control rheostat overheats under some conditions. It was impossible to specify a definite lighting system for the panel until the experimental panel had been made, hence the contract could not be specific on this item. The problem will be studied to determine first the wattage of the lamps necessary to produce satisfactory illumination and then it will be possible to select a transformer and rheostat for controlling the lights without overheating. Another difficulty has arisen in the breakage of the plastic buttons in the switch actuators. These were made in accordance with the sketch but some modification appears desirable.



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