

NATIONAL BUREAU OF STANDARDS REPORT

9440

TESTING OF CODED HELIPORT BEACONS

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

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NBS PROJECT

NBS REPORT

2120411

November 1966

9440

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Prepared for
Naval Air Systems Command
Department of the Navy
Washington, D. C. 20360
Project No. TED NBS SI-5005

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Approved for public release by the director of the National Institute of Standards and Technology (NIST) on October 9, 2015

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TESTING OF CODED HELIPORT BEACONS

This report describes a method used in the laboratory for the subjective evaluation of Coded Heliport Beacons as well as the construction and operation of a full-scale Field Test Beacon.

1. INTRODUCTION

In response to a need for some method of studying various sequences of flashing lights for use in coded heliport beacons a demonstration model beacon was designed and constructed for use in the laboratory. This model provided means of studying combinations of various colors and rate and duration of flashes.

Observations of the codes provided by the model beacon were made by representatives of the Federal Aviation Agency, Navy, Air Force, Army and other interested personnel. The optimum flash rate appeared to be 120 flashes per minute. With respect to a suitable code for a heliport beacon the following sequence of colored flashes (developed by an Ad Hoc Group of Federal Aviation Agency, Army, Navy, and NBS personnel) was found adequate and acceptable: white, green, green, white, blank, followed by a combination of up to 4 yellow flashes and blanks, then blank to complete the cycle of 10 intervals.

2. FIELD-TEST BEACON

A full-scale operating unit was then constructed. This light is not intended for use as a prototype heliport beacon, but rather as a framework for the field testing of codes. The unit, as equipped, contains the lamps and filters necessary for a coded heliport beacon as observed on the demonstration model.

The base, an airway beacon base, rotates a four-foot diameter turntable at 12 rmp. Ten PAR-56 lamps, with filters (where needed), are mounted in type MB-2 lampholders spaced at 36° intervals near the periphery of the turntable. Provision is made for operating the unit with either of two types of lamps; type 250PAR lamps rated at 12.5 V with a 35° horizontal and 7° vertical beam spread (to 10% of maximum intensity), and type 399PAR lamps rated at 115 V with a 50° horizontal and 20° vertical beam spread. In order to provide shorter flashes and greater vertical coverage, the lampholders were modified to provide for rotation of the lamps 90° in the holders. The beam spreads then become 35° vertical, 7° horizontal for the type 250PAR lamp which gives a short flash, and 50° vertical, 20° horizontal for the type 399PAR lamp which gives a longer flash.

A photograph of the beacon, equipped with type 250PAR lamps, is shown in figure 1. The lampholders are numbered 1 through 10 clockwise when viewed from above. Lamps 1 through 4 are equipped with yellow filters, and lamps 5 and 10 are "dummy" lamps (the leads are not connected to the lamp terminals inside the lampholders).

3. OPERATING INSTRUCTIONS

Removal of the cover of the box on the turntable exposes 4 switch boxes, numbered 1 through 4, and 2 pair of terminal strips. The switches control the operation of the correspondingly numbered yellow lights. The terminal strips provide the means for using either the 12.5V or 115V lamps. The power for the 115V lamps comes directly from the line, that for the 12.5V lamps comes from a 115:12 volt transformer in the lower portion of the box. If the 115 volt lamps are used it will be necessary to change the 2 bundles of leads marked "load" from the pair of terminal strips which are connected to the 2 bundles of leads marked "12V secondary do not change" to the other pair of terminal strips which are connected to the 2 heavy leads marked "115V line do not change". Those bundles of leads marked "do not change" should be left fixed permanently to their respective terminal strips.

Two pair of power leads, each terminating in a male plug are connected to the beacon base. The pair marked "motor" should be connected to a 115-volt, 60-cycle source. The pair marked "lamps" should be connected to a 115-volt, 60-cycle, 3.2 kilowatt supply (through an adjustable autotransformer if desired).





