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Instructions
for Operation
of

Landing Signal Officer
Lighted Suit Equipment

by

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Instructions for Operation
of
Landing Signal Officer (LSO)
Lighted Suit Equipment

1. INTRODUCTION

The equipment described in this report was developed at the National Bureau of Standards in collaboration with Naval personnel to facilitate night landings of aircraft on carriers. It provides the LSO with a set of lights for his suit and paddles so designed that the signals presented to the pilot of an approaching aircraft are conspicuous, easily interpreted, and as nearly like daytime signals as possible. The equipment replaces the standard equipment consisting of fluorescent strips attached to the LSO's suit and irradiated by ultra-violet projectors placed on the deck in front of the LSO. The development of the equipment was an outgrowth of several previous experimental efforts to improve night landing operations through the use of lighted wands, mechanical lighting devices, and miscellaneous lights attached to the suits and paddles.

The equipment consists of a set of lighted strips and paddles, a control box, and interconnecting cables. The strips are designed to be snapped on to the LSO's suit. The light is provided by small light fixtures, each employing a type 327 aircraft lamp, that are clamped on to rubber strips, on the periphery of the paddles as well as on the suit. The control box has a master switch for turning the equipment on and off and two selector switches for adjusting the intensity of the lights to suit the prevailing conditions.

Figure 1 is a photograph of the complete equipment assembled for use. Figure 2 is a photograph showing the appearance of the lighted equipment at night.

2. INSTRUCTIONS FOR OPERATION OF THE EQUIPMENT

The equipment as delivered is assembled as follows:

1) The control box is located at any convenient point behind or at the deck edge side of the LSO platform.

2) The 10-foot power cord is connected to the control box at one end and to any convenient source of 28-volt power, AC or DC, at the other end. The installation activity must provide the necessary connecting device for attachment to the 28-volt supply. Both the connector and the supply must be capable of supplying 8 to 9 amperes to the equipment. The power cord may be cut short if desired.

3) Each paddle is furnished with a 14-foot length of connecting cord permanently attached to it, and the cords are equipped with connectors which are plugged into the control box as indicated.

4) A twelve-foot connecting cord, with connectors at both ends, is used to provide power to the light strips on the suit. One end of this cord is plugged into the control box as indicated.

5) A branch connecting cord consisting of an input connector to be attached to one end of the cord mentioned in 4), and four output connectors to be attached to the four lighted strips on the suit is snapped onto the right shoulder of the suit so that the input connector points rearward over the shoulder and the output connectors point down over the chest. Two snaps (male) of the type used for the fluorescent strips on the present suit must be installed on the suit to accommodate the branch connecting cord.

6) The four lighted strips are snapped onto the suit in the same manner as the fluorescent strips, the two long strips vertically on either side of the chest and down the legs, and the two short strips horizontally on the upper chest and along the sleeves. All the strips are 3 inches wide, and are thus wider than the vertical fluorescent strips and narrower than the horizontal fluorescent strips. However, the horizontal strips can be snapped to the suit with the fasteners already attached to the suit. It will be necessary to install an extra row of snaps (male) on the suit for each vertical strip. For each vertical strip the extra row should be 3 inches on centers outward from the inner existing row of snaps. The lighted strip sets are furnished in one size only. It will be found that with medium to large LSO suits the strips may not reach to the ends of the legs or sleeves. It is recommended that they be installed from the chest out or down so that the ends of the legs or the sleeves are unlighted. The strips should be installed so that the ends with the pigtailed and connectors are on the chest. The connectors at the end of the pigtailed are plugged into the output connectors of the branch connecting cord. The excess length of pigtailed should be tucked under the strips as indicated in Fig. 1. The equipment is now ready for operation.

7) All the light fixtures are furnished with yellow filters except those mounted in reverse in the corners of the paddles, which have green filters. The green-filter fixtures serve to insure identification of the "cut" signal by the pilot.

8) The light fixtures consist of two parts, an upper part containing the lamp and the color filter, yellow or green, and a lower part containing the lamp socket and two chisel-pointed prongs which puncture the rubberized strip and make contact with the power lead wires imbedded in the strips. The lower part also has two bosses which mate with matching notches cut in the strips, serving to insure proper contact between the prongs and the imbedded wires and proper entry of the upper half of the fixture into the lower half. In disassembling a fixture from the strip, the lower half is held firmly while the upper half with the filter is unscrewed from it. In assembling a fixture to a strip, the lower half is first set in place, using the bosses and notches for correct location, and then the upper half is screwed into it. To determine when adequate contact has been established, it is desirable to install fixtures with power connected.

9) The lamp is held in place in the upper half of the fixture by friction. While it is possible to remove the lamp from the fixture this will be found difficult. Since the lamp costs 80% or more of the cost of the lamp-fixture assembly, it is recommended in general that the entire fixture with lamp installed be replaced when necessary rather than the lamp alone. All light fixtures, including spares, are furnished with lamps ready for installation.



FIG. 1

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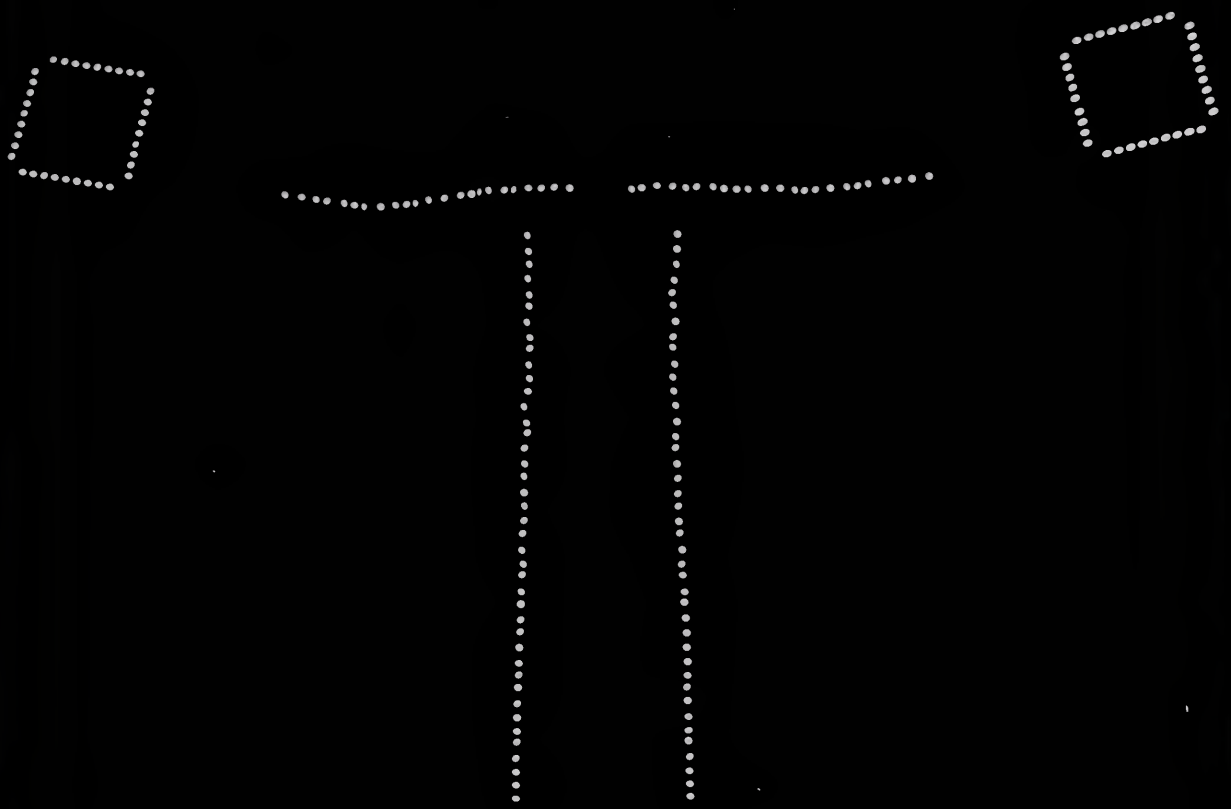


FIG. 2

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