

NATIONAL BUREAU OF STANDARDS REPORT

9350 SUPPLEMENTARY

PHOTOMETRIC CHARACTERISTICS OF U. S. CARRIER DECK LIGHTS



U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

NATIONAL BUREAU OF STANDARDS

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The Bureau comprises the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, and the Center for Radiation Research.

THE INSTITUTE FOR BASIC STANDARDS provides the central basis within the United States of a complete and consistent system of physical measurement, coordinates that system with the measurement systems of other nations, and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce. The Institute consists of an Office of Standard Reference Data and a group of divisions organized by the following areas of science and engineering:

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² Located at Boulder, Colorado 80302.

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NBS PROJECT

2120414

June 1968

NBS REPORT

9350 Supplementary

PHOTOMETRIC CHARACTERISTICS OF U. S. CARRIER DECK LIGHTS

by

A. C. Wall

For

Naval Air Systems Command
Department of the Navy
Washington, D. C.

IMPORTANT NOTICE

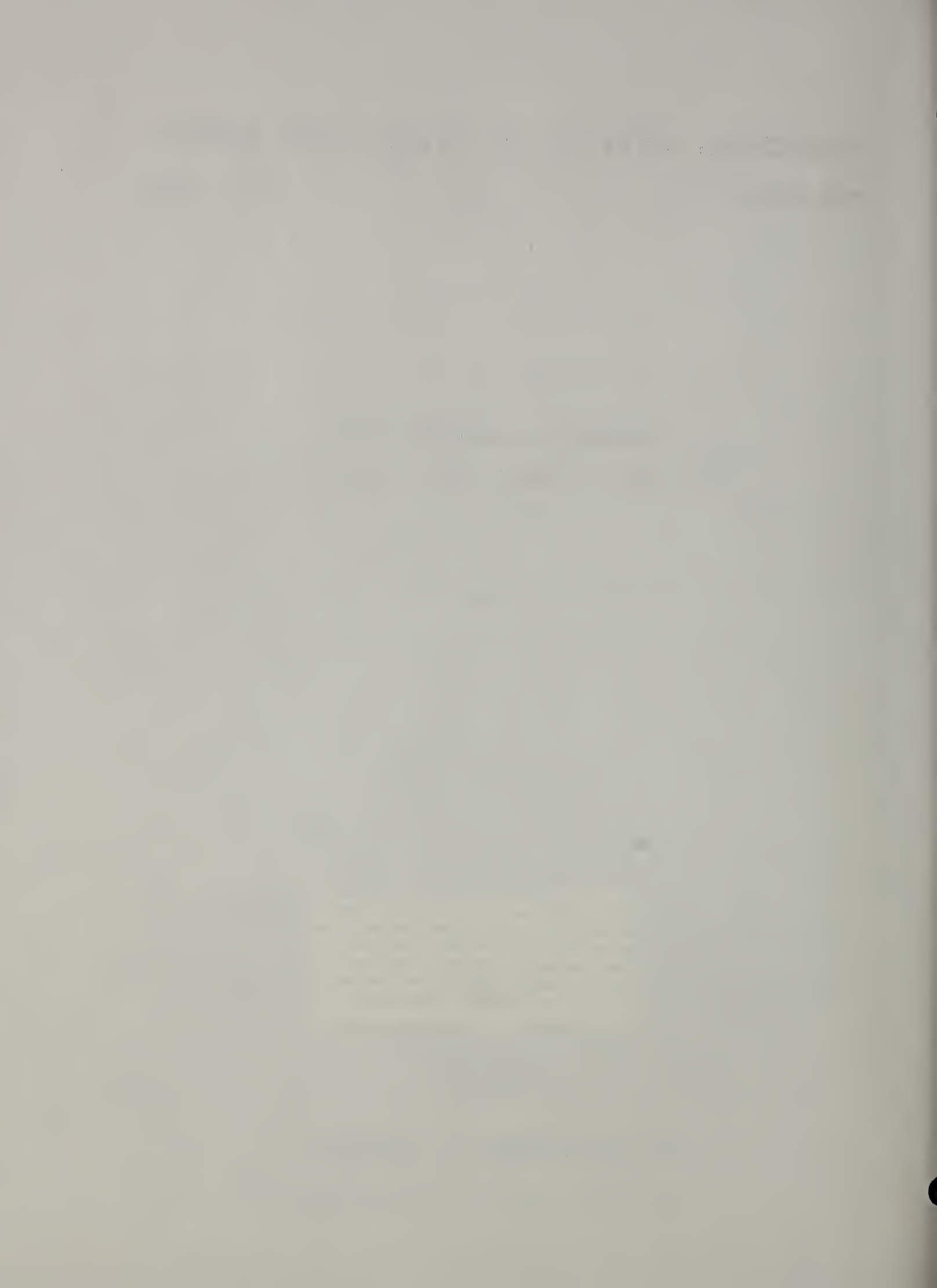
NATIONAL BUREAU OF STANDARDS
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U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS



Photometric Characteristics
of U. S. Carrier Deck Lights

By
A. C. Wall

1. INTRODUCTION

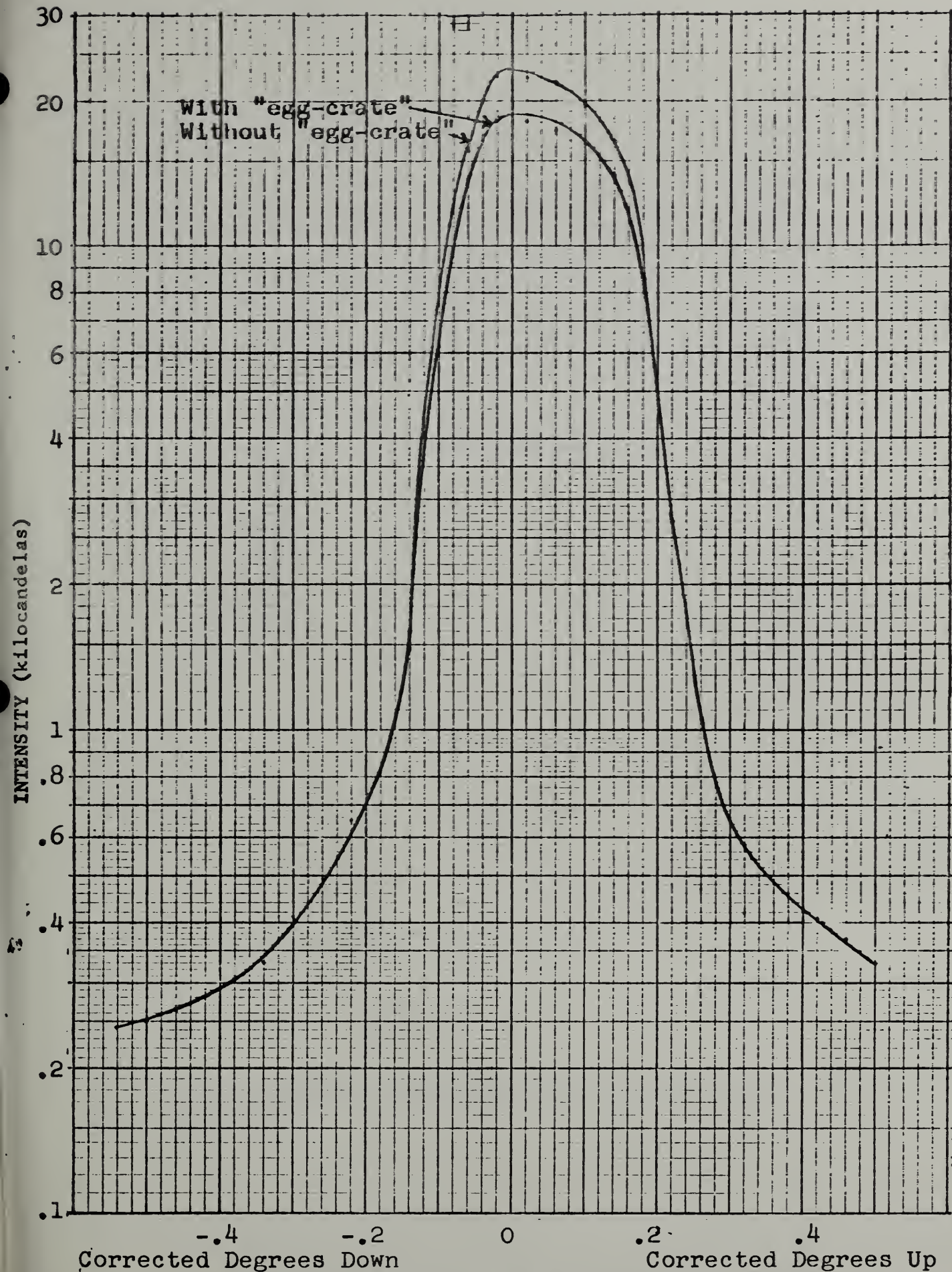
The Photometry Section of the National Bureau of Standards has made photometric measurements of carrier deck lights since the early days of night flying. The results of these tests have usually been reported in NBS test reports. Many of these reports are no longer readily available although the lights described are still in service. This report has been prepared to present in readily available form intensity distributions of the carrier deck lights currently in use. Photographs of many of these lights have been included to assist in identification.

Index of Figures

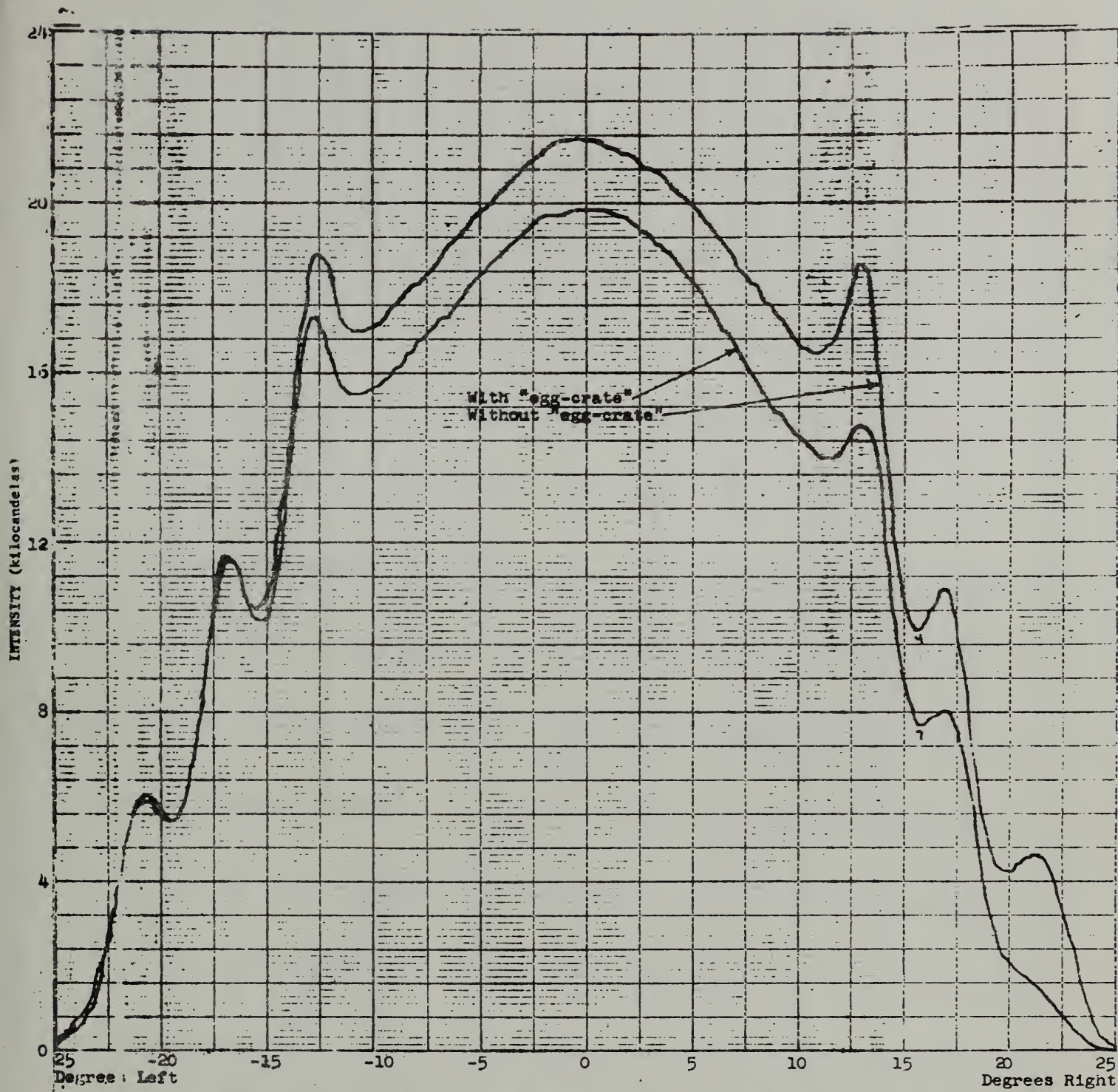
<u>Light Type</u>	<u>Figure Number</u>		NBS Test Report Number
	<u>Intensity Distribution</u>	<u>Photograph</u>	
Fresnel Lens Optical Landing System (one cell)	1, 2	16	212. 11P-27/65
Carrier Homing Beacon	3	17	-
Night Vision Flood Light			
14-inch hood, clear window			
Specular reflector, Type 328A	4	19	21P-49/63
Specular reflector, Type 325A	10	18	21P-49/63
14-inch hood, spread lens			
Corrugated reflector, Type 325A	7	18	21P-49/63
Corrugated reflector, Type 328A	9	19	21P-49/63
24-inch hood, clear window			
Specular reflector, Type 326A	6	18	21P-49/63
Specular reflector, Type 329A	8	19	21P-49/63
24-inch hood, spread lens			
Specular reflector, Type 326A	5	18	21P-49/63
Corrugated reflector, Type 329A	11	19	21P-49/63
AA-1 Glide Slope Indicator	12, 13	20	21P-4/59
Deck Guide Light 45-watt	14	21	21P-65/61
100-watt	15	21	21P-65/61

<u>Light Type</u>	<u>Operating Volts or Amperes</u>	<u>Power (watts)</u>	<u>Flash Frequency and Duration</u>	<u>Design Location of Peak Horizontal (degrees)</u>	<u>Vertical (degrees)</u>	<u>Peak Intensity (kilocandelas)</u>	<u>Beam Sp Horizont (degree</u>
Fresnel Lens Optical Landing System (one cell)	21.5 V	3 at 150	---	0.0	Adjustable	20	32
Carrier Homing Beacon	32 V	150	80. fpm/50ms	---	0.0	3	---
Night Vision Flood Light 14-inch hood, clear window							
Specular reflector, Type 328A	6.6 A	2 at 250	---	---	Adjustable	84	7.4
Specular reflector, Type 325A	6.6 A	200	---	---	Adjustable	36	7
14-inch hood, spread lens							
Corrugated reflector, Type 325A	6.6 A	200	---	---	Adjustable	38	43
Corrugated reflector, Type 328A	6.6 A	2 at 250	---	---	Adjustable	14	42
24-inch hood, clear window							
Specular reflector, Type 326A	6.6 A	200	---	---	Adjustable	38	7
Specular reflector, Type 329A	6.6 A	2 at 250	---	---	Adjustable	83	7.4
24-inch hood, spread lens							
Specular reflector, Type 326A	6.6 A	200	---	---	Adjustable	8	43
Corrugated reflector, Type 329A	6.6 A	2 at 250	---	---	Adjustable	15	43
Type AA-1 Glide Slope Indicator	5.95 V	3	---	0.0	Adjustable	.047	yellow 14 green 15
Deck Guide Light							
	6.6 A	45	---	0.0	4°	.180	red 15.5
	6.6 A	100	---	0.0	4°	.650	30 27

<u>Beam Spread (50% of peak)</u>		<u>Beam Spread (10% of peak)</u>		<u>Beam Shape</u>	<u>Lamp Used</u>	<u>Lamp Life (Hours)</u>	<u>Figure Numbers</u>
<u>Horizontal (degrees)</u>	<u>Vertical (degrees)</u>	<u>Horizontal (degrees)</u>	<u>Vertical (degrees)</u>				
32	0.26	43	0.38	Rectangle	DCA	10	1, 2, 16
---	8	---	---	360° fan	150PAR46/1	800	3, 17
7.4	3.5	15	7.5	Rectangle	6.6A/PAR56/4	1000	4, 19
7	3	13	6	Rectangle	200PAR46/6.6	500	10, 18
43	3.7	53	6.5	Rectangle	200PAR46/6.6	500	7, 18
42	4	52	7	Rectangle	6.6A/PAR56/4	1000	9, 19
7	3	13	5	Rectangle	200PAR46/6.6	500	6, 18
7.4	3.2	15	7	Rectangle	6.6A/PAR56/4	1000	8, 19
43	3	53	6	Rectangle	200PAR46/6.6	500	5, 18
43	3.3	55	7.4	Rectangle	6.6A/PAR56/4	1000	11, 19
yellow 14	2.5	15.5	3	Oval	PR12	15	12, 13, 20
green 15	4.7	16	5				
red 15.5	7.5	15.5	8				
30	9	34	31	Oval	Q6.6A/T2 ₁ /CL	1000	14, 21
27	7.5	31	22.5	Oval	Q6.6A/T3/CL	1000	15, 21



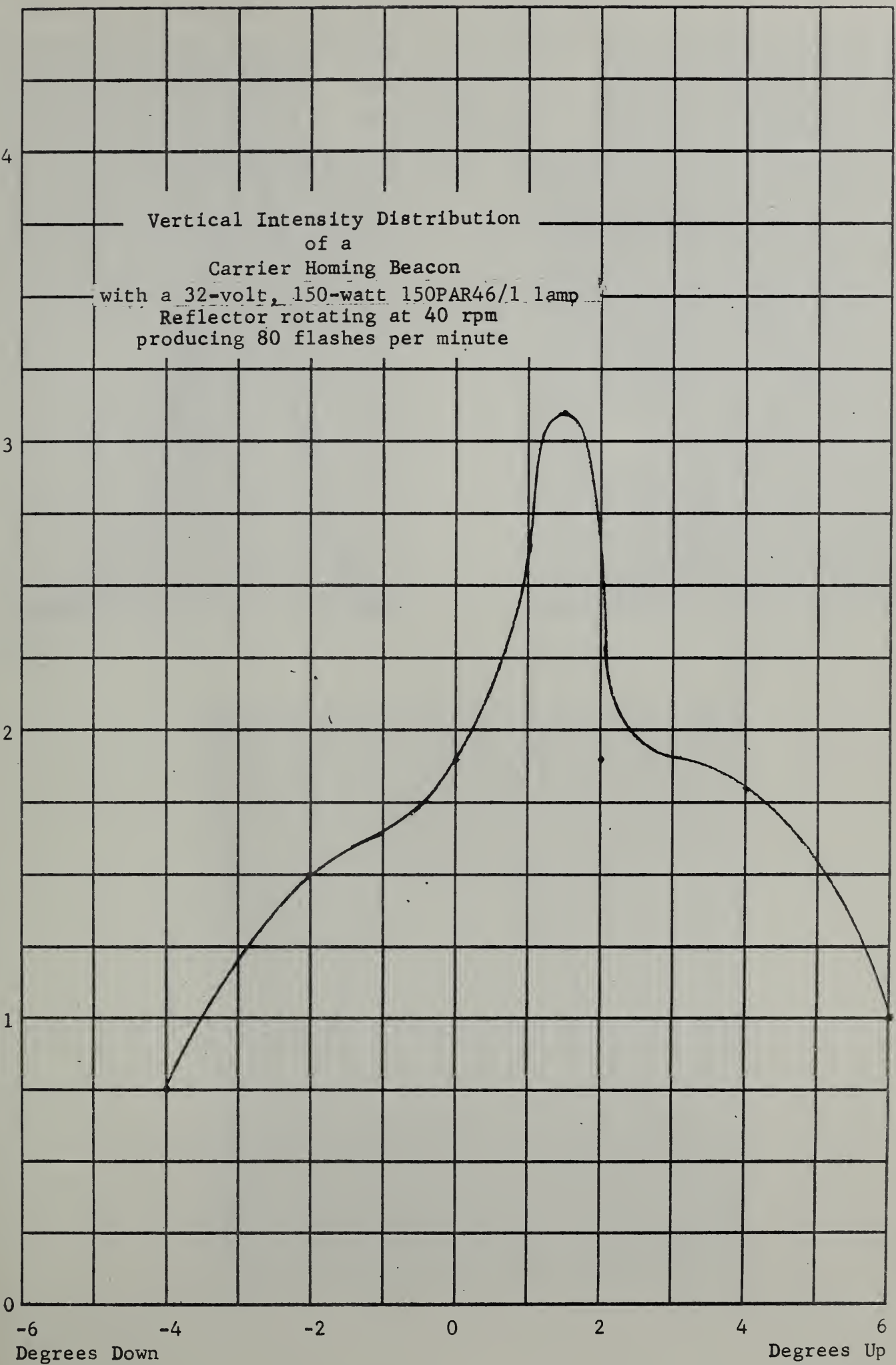
Vertical intensity distributions through 0 degrees horizontal of one cell of a Source-Light Indicator System Assembly of the Mark 6 Fresnel-Lens Optical Landing System.



Horizontal intensity distributions through the vertical peak of one cell of a Source-Light Indicator System Assembly of the Mark 6 Fresnel-Lens Optical Landing System.

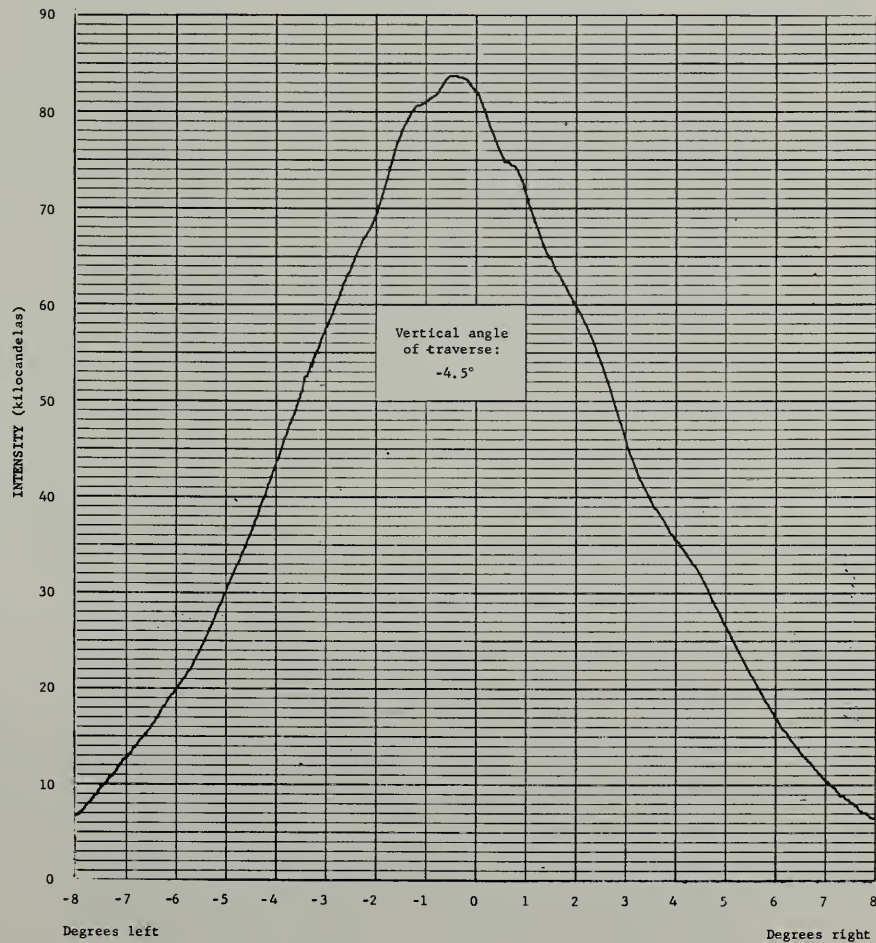
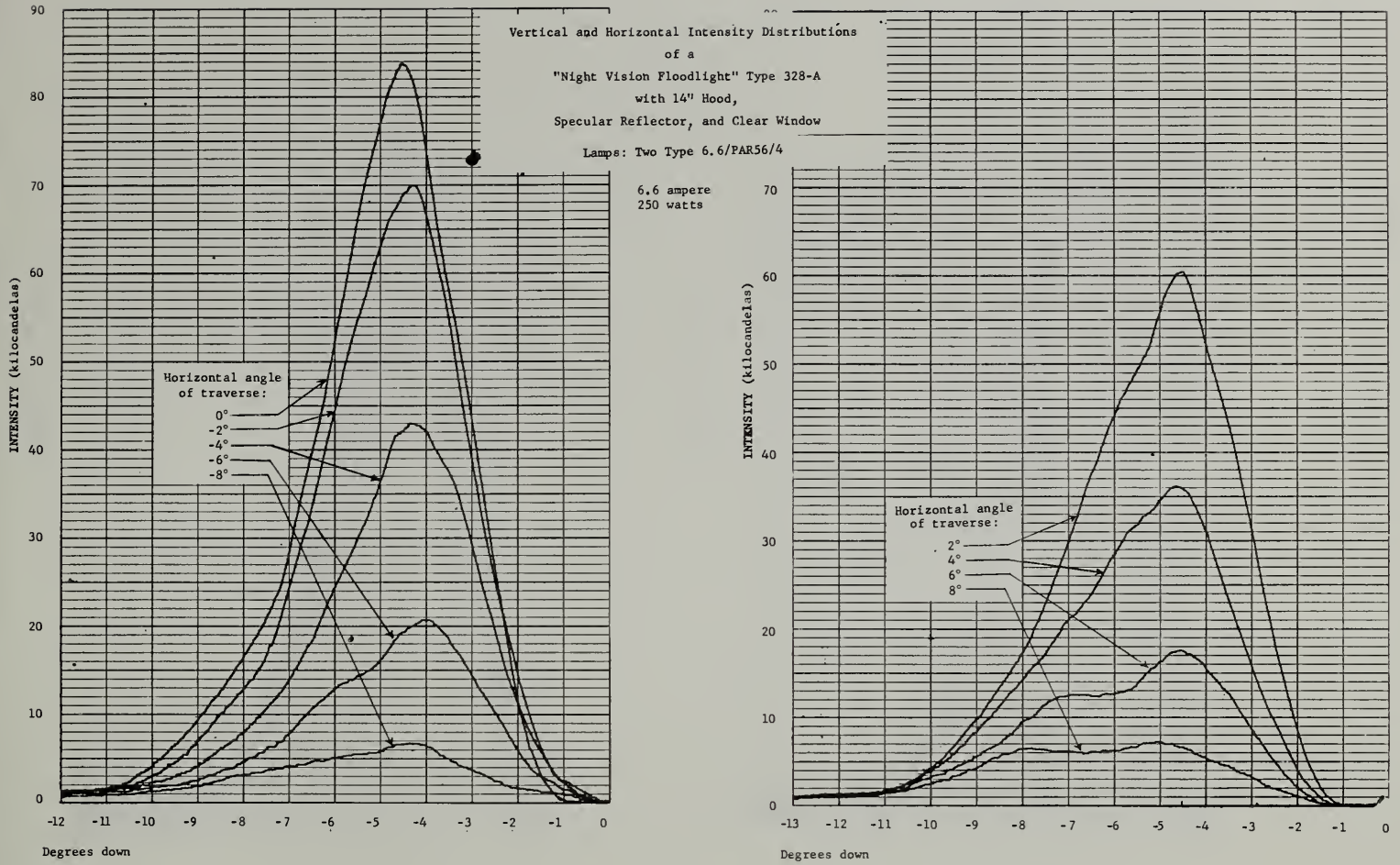
Vertical Intensity Distribution
of a
Carrier Homing Beacon
with a 32-volt, 150-watt 150PAR46/1 lamp
Reflector rotating at 40 rpm
producing 80 flashes per minute

EFFECTIVE INTENSITY (kilocandelas)



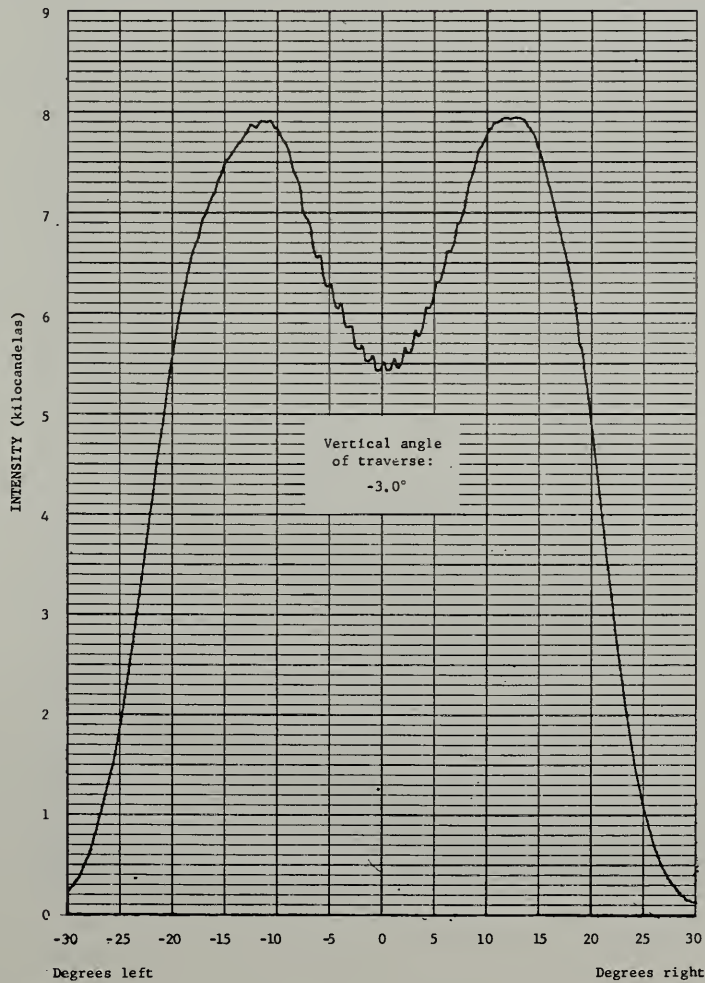
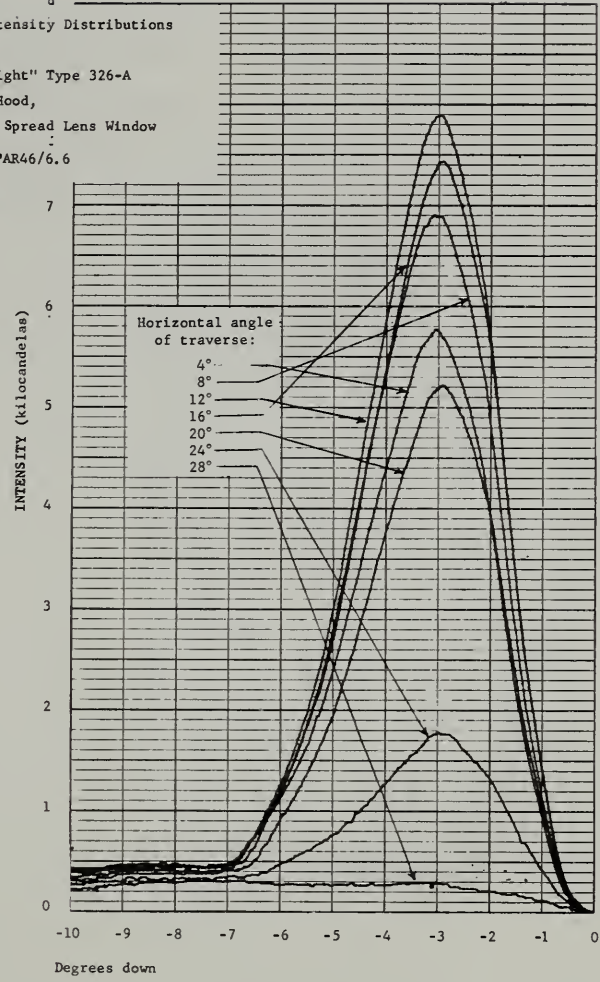
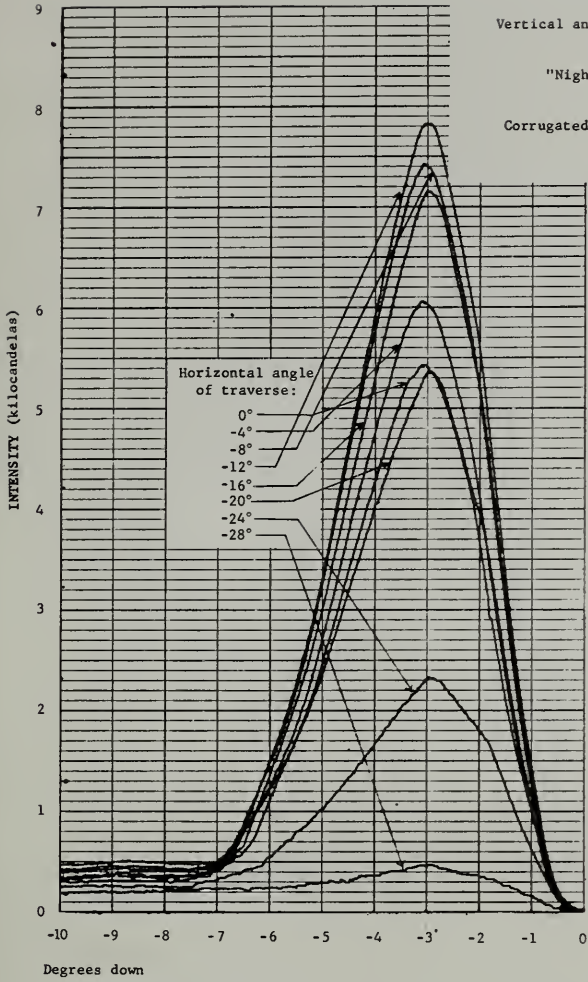
Degrees Down

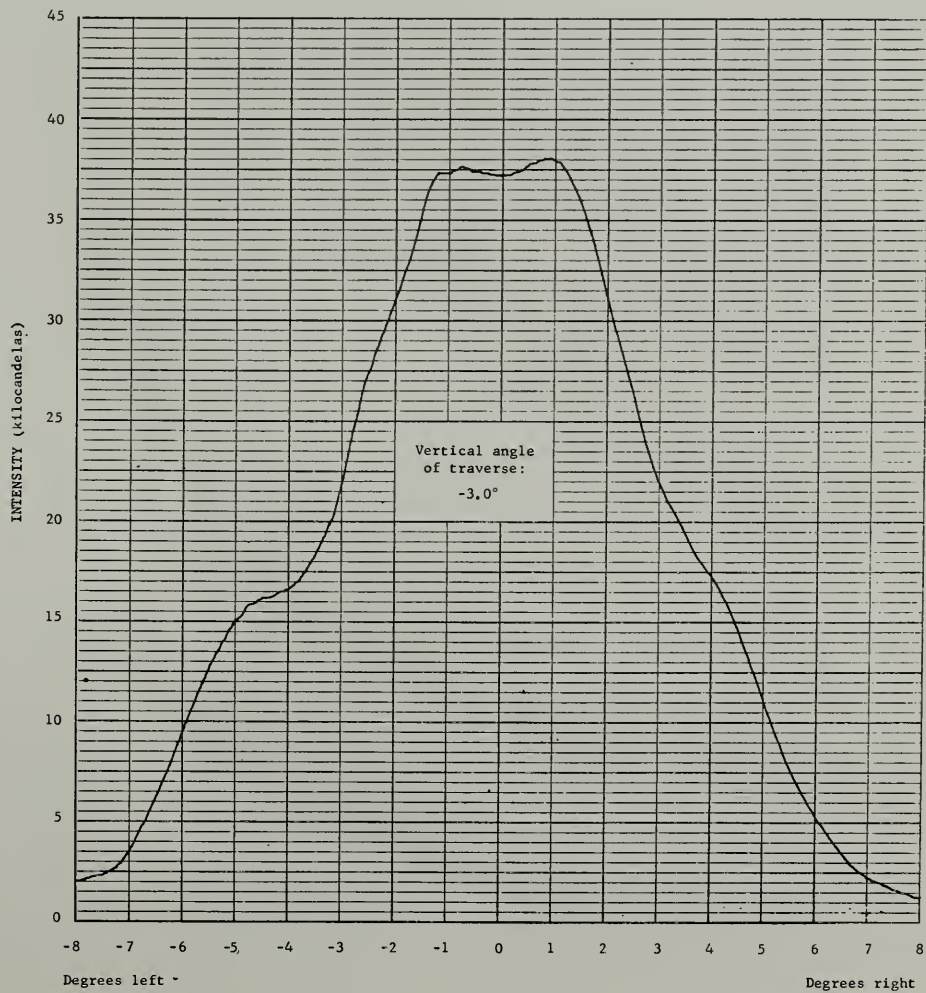
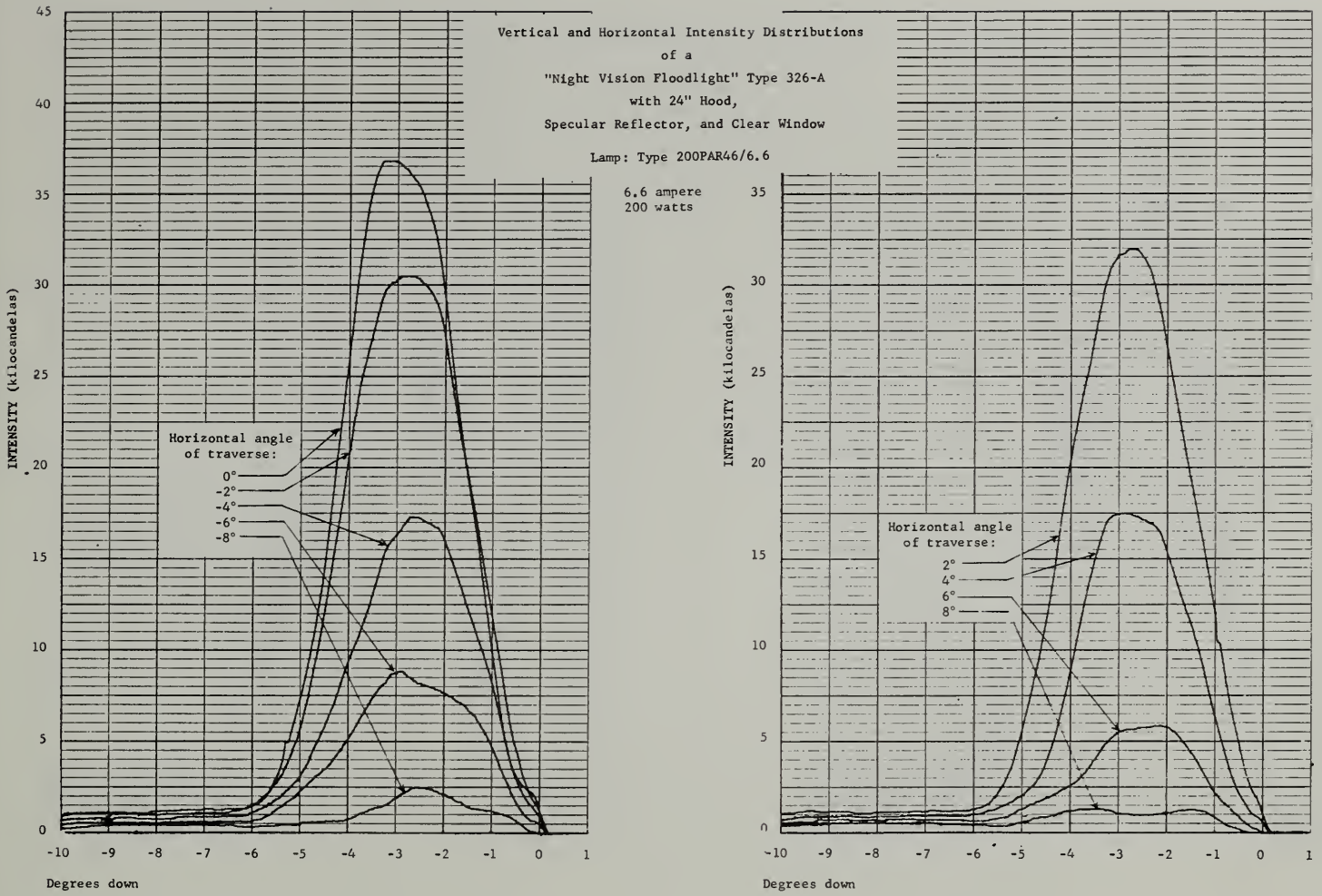
Degrees Up



Vertical and Horizontal Intensity Distributions
of a
"Night Visibl Floodlight" Type 326-A
with 24" Hood,
Corrugated Reflector, and Spread Lens Window
Lamp: Type 200PAR46/6.6

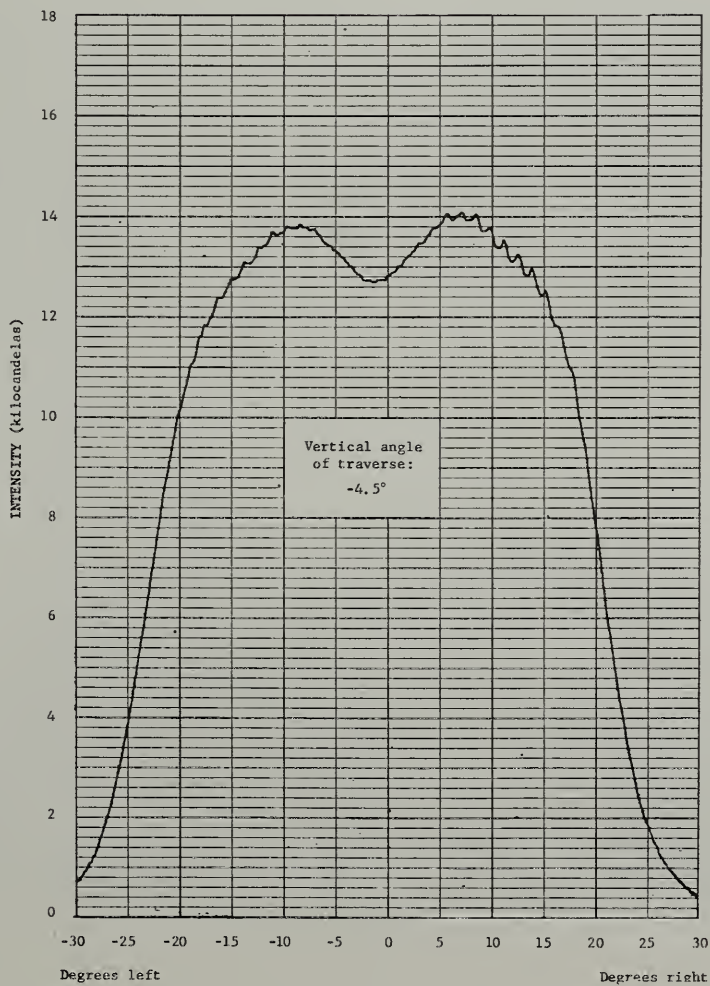
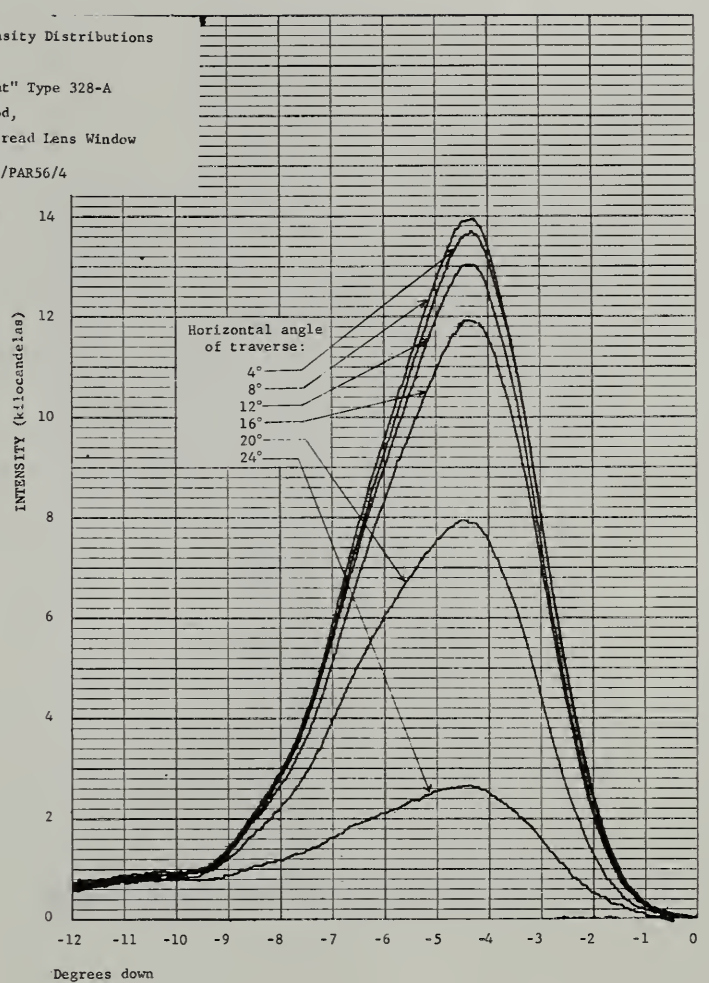
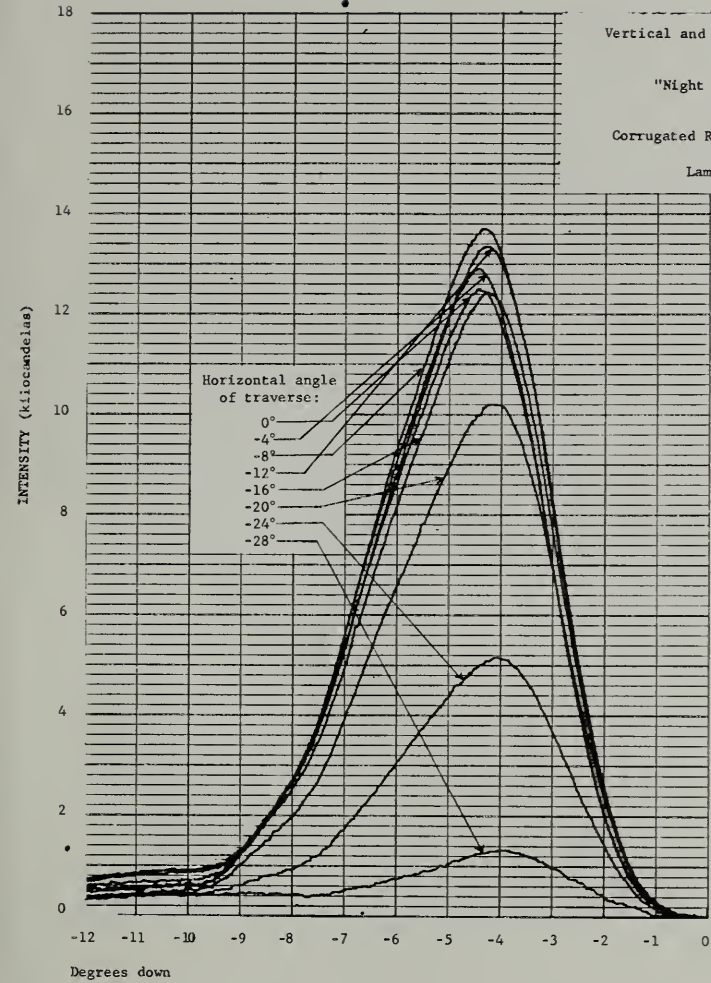
6.6 ampere
200 watts





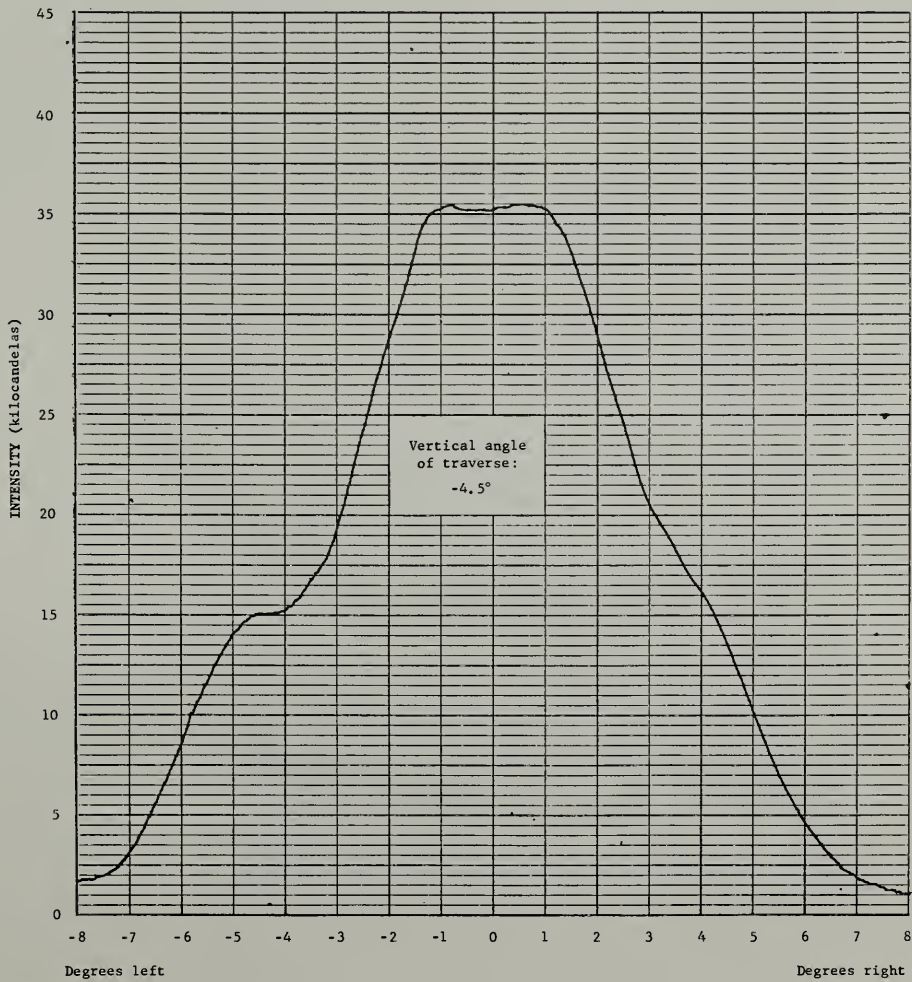
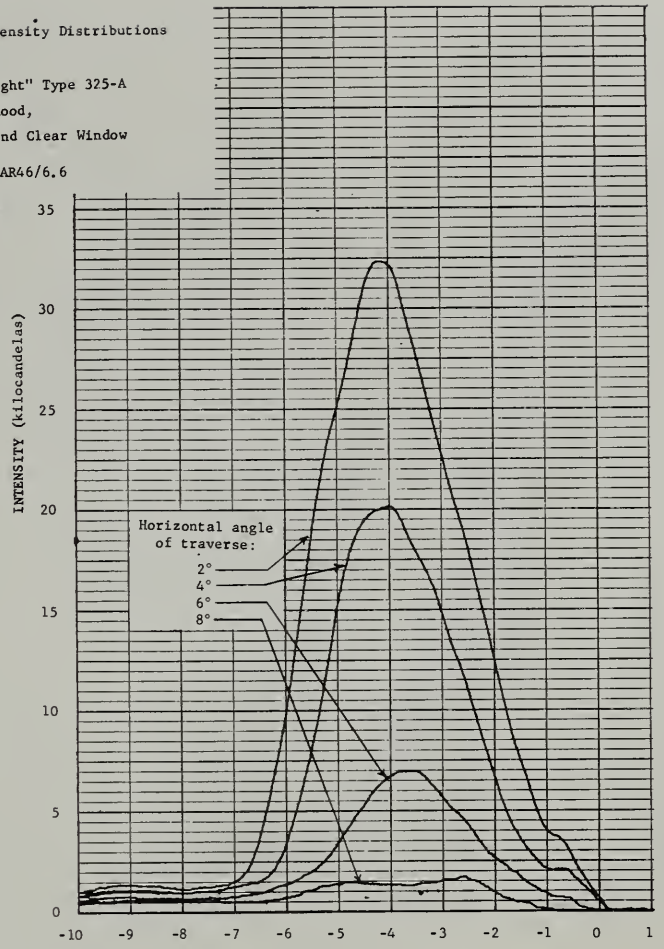
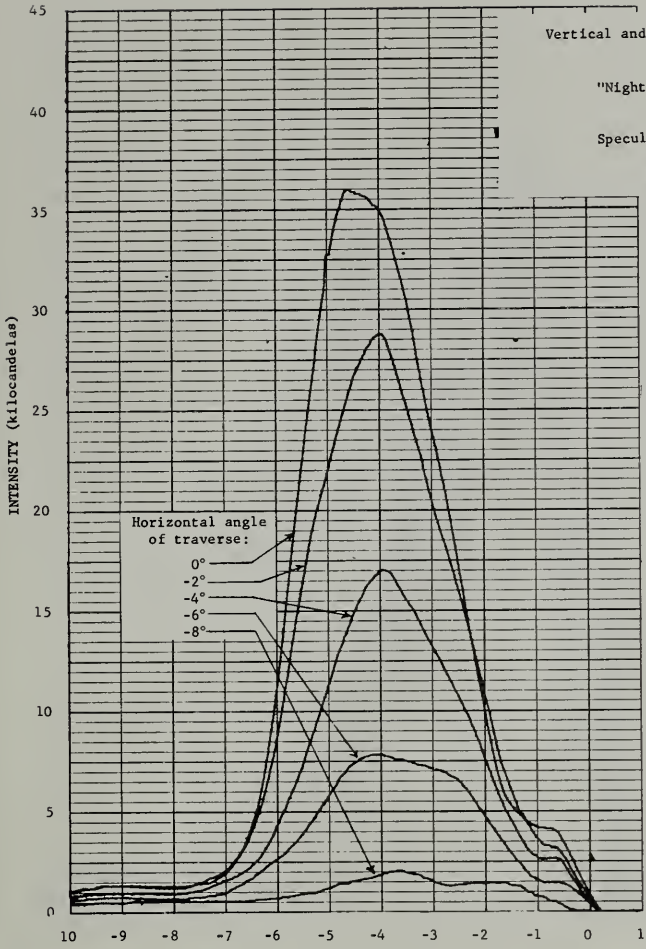
Vertical and Horizontal Intensity Distributions
of a
"Night Vision Floodlight" Type 328-A
with 14" Hood,
Corrugated Reflector, and Spread Lens Window
Lamps: Two Type 6.6/PAR56/4

6.6 ampere
250 watts



Vertical and Horizontal Intensity Distributions
of a
"Night Vision Floodlight" Type 325-A
with 14" Hood,
Specular Reflector, and Clear Window
Lamp: Type 20OPAR46/6.6

6.6 ampere
200 watts



of
Angle-of-Approach Light
Type AA-1 Class H

Lamp: PR-12 operated at design
current, 0.50 ampere

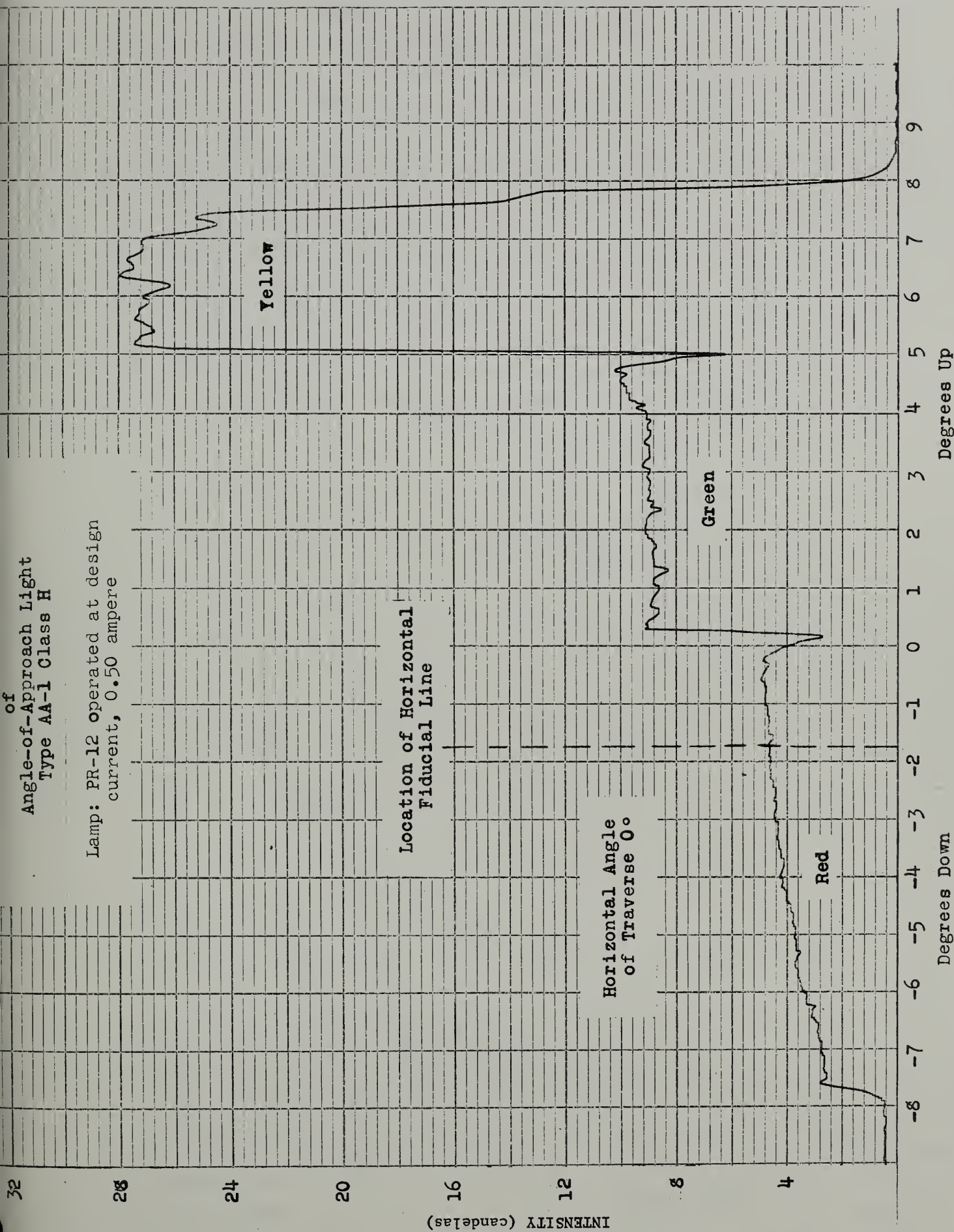
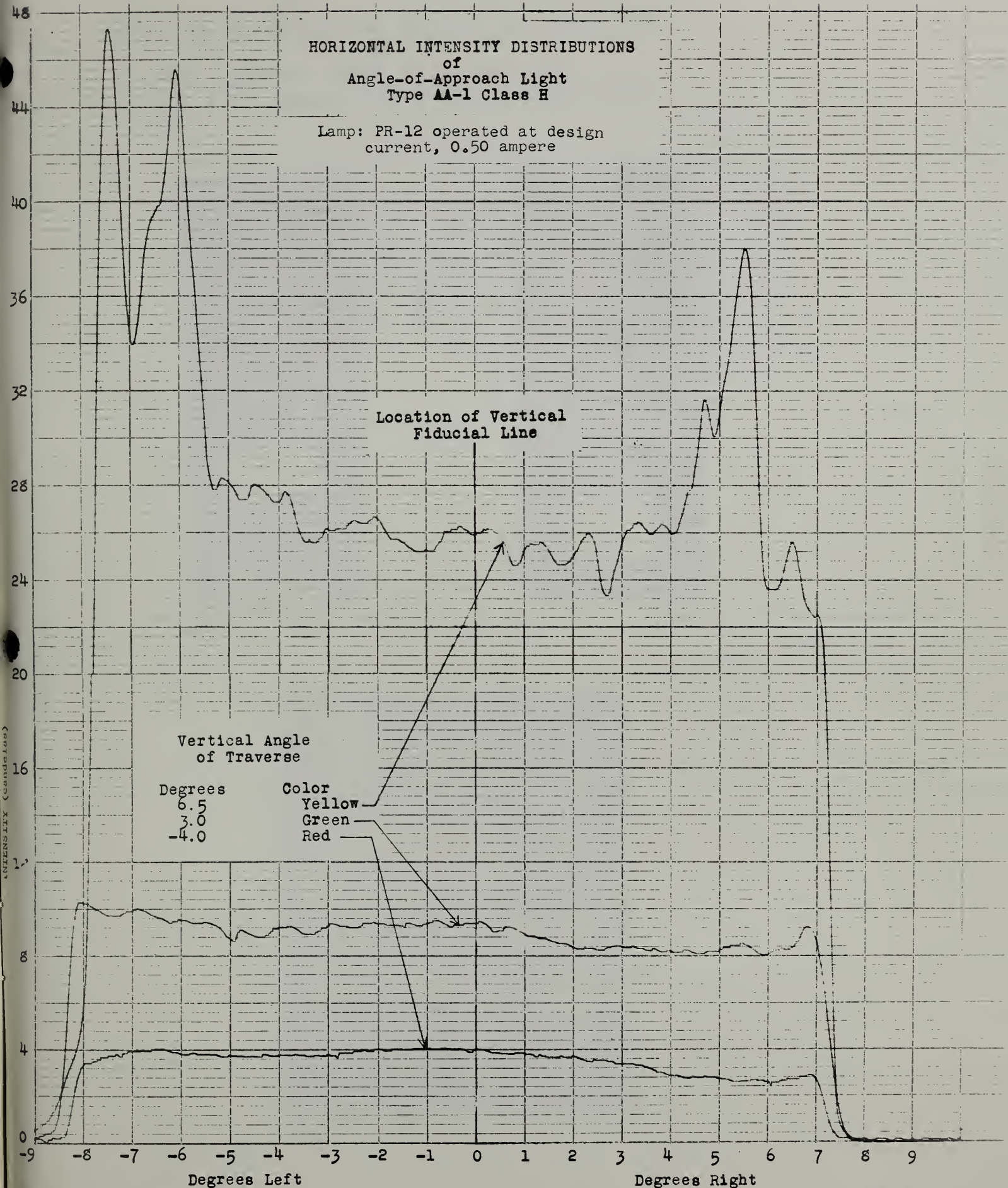


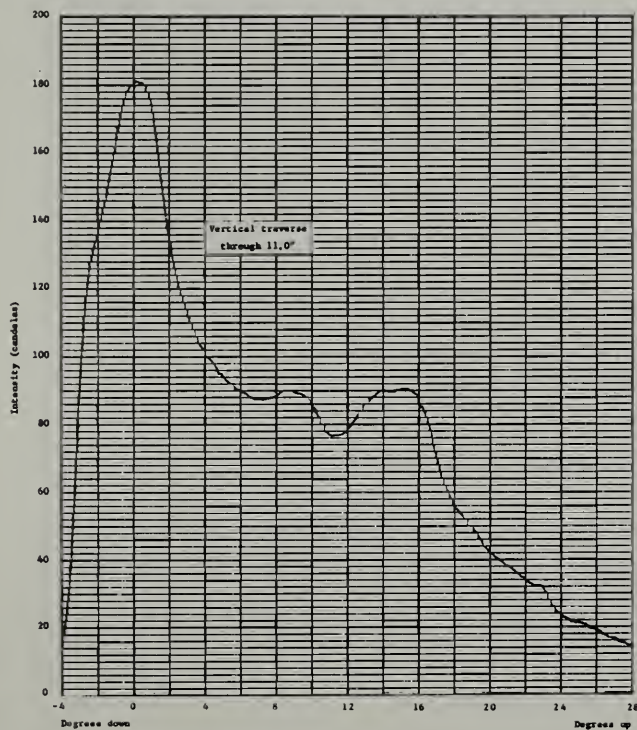
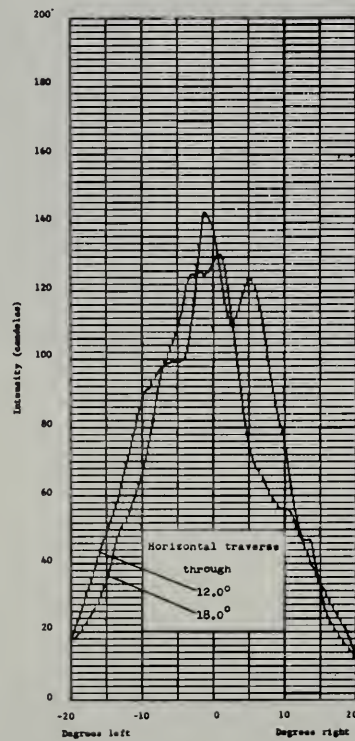
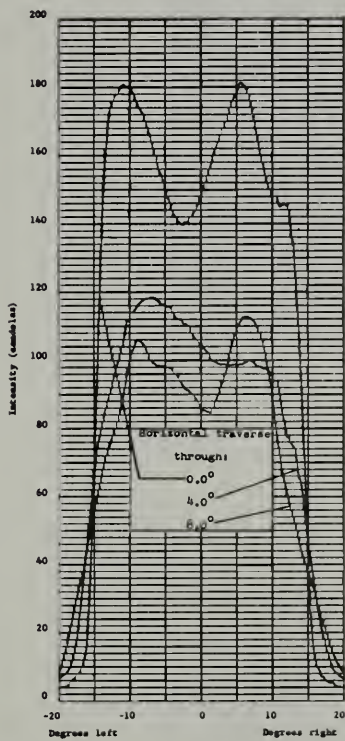
Figure 12

HORIZONTAL INTENSITY DISTRIBUTIONS
of
Angle-of-Approach Light
Type AA-1 Class H

Lamp: PR-12 operated at design
current, 0.50 ampere



Vertical and Horizontal intensity Distributions
of a
Deck Guide Light, L.C.D. No. 366
with a 6.6-ampere, 45-watt Q6.6A/T2 $\frac{1}{2}$ /C1 lamp



Vertical and Horizontal Intensity Distributions
of a
Deck Guide Light, L.C.D. No. 366
with a 6.6-ampere, 100-watt Q6.6A/T3/C1 lamp

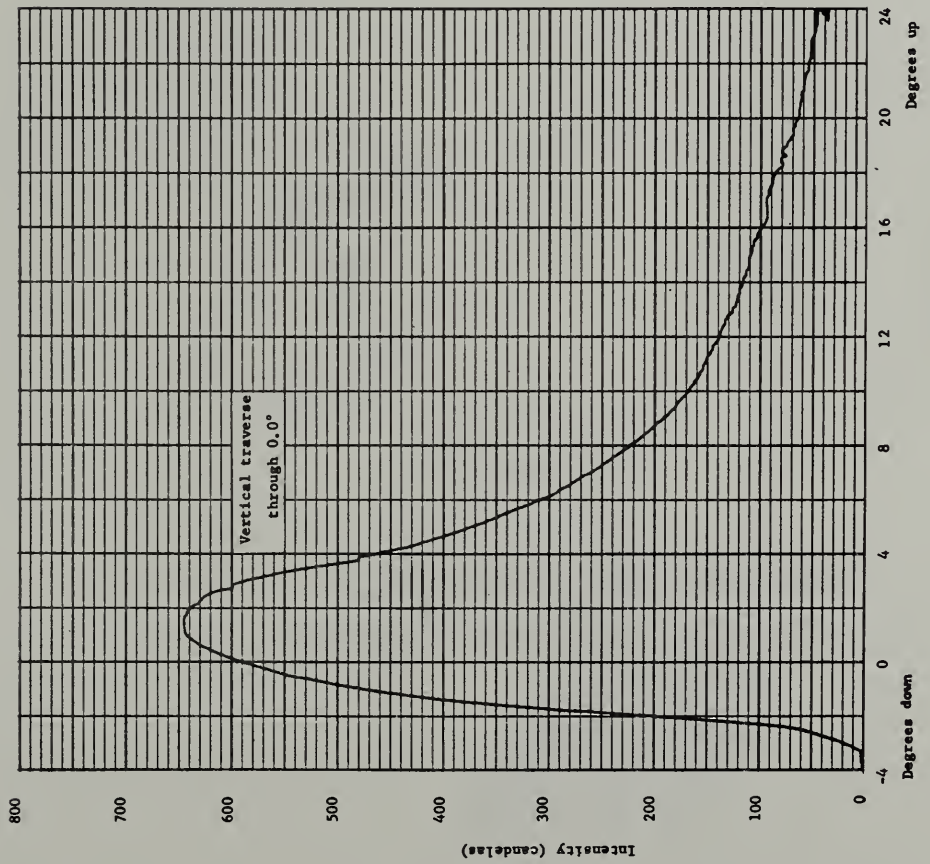
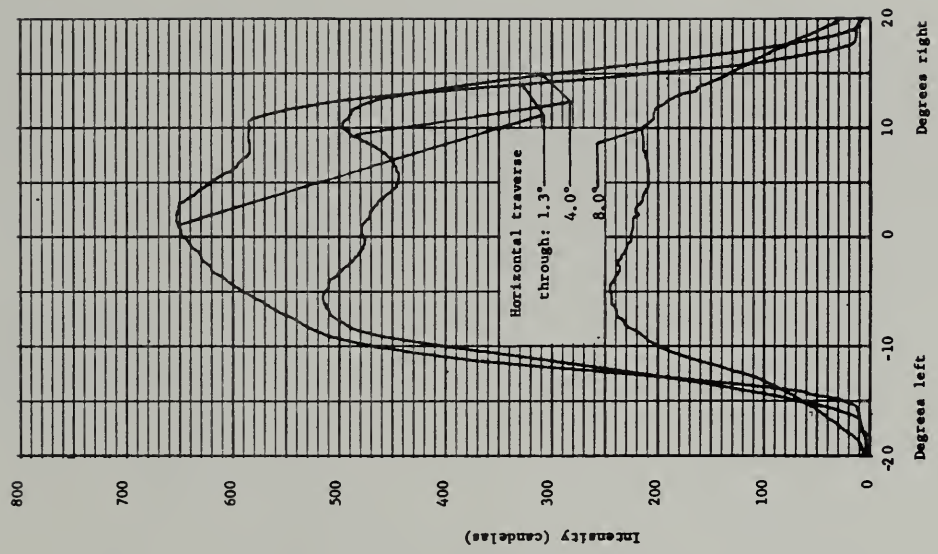
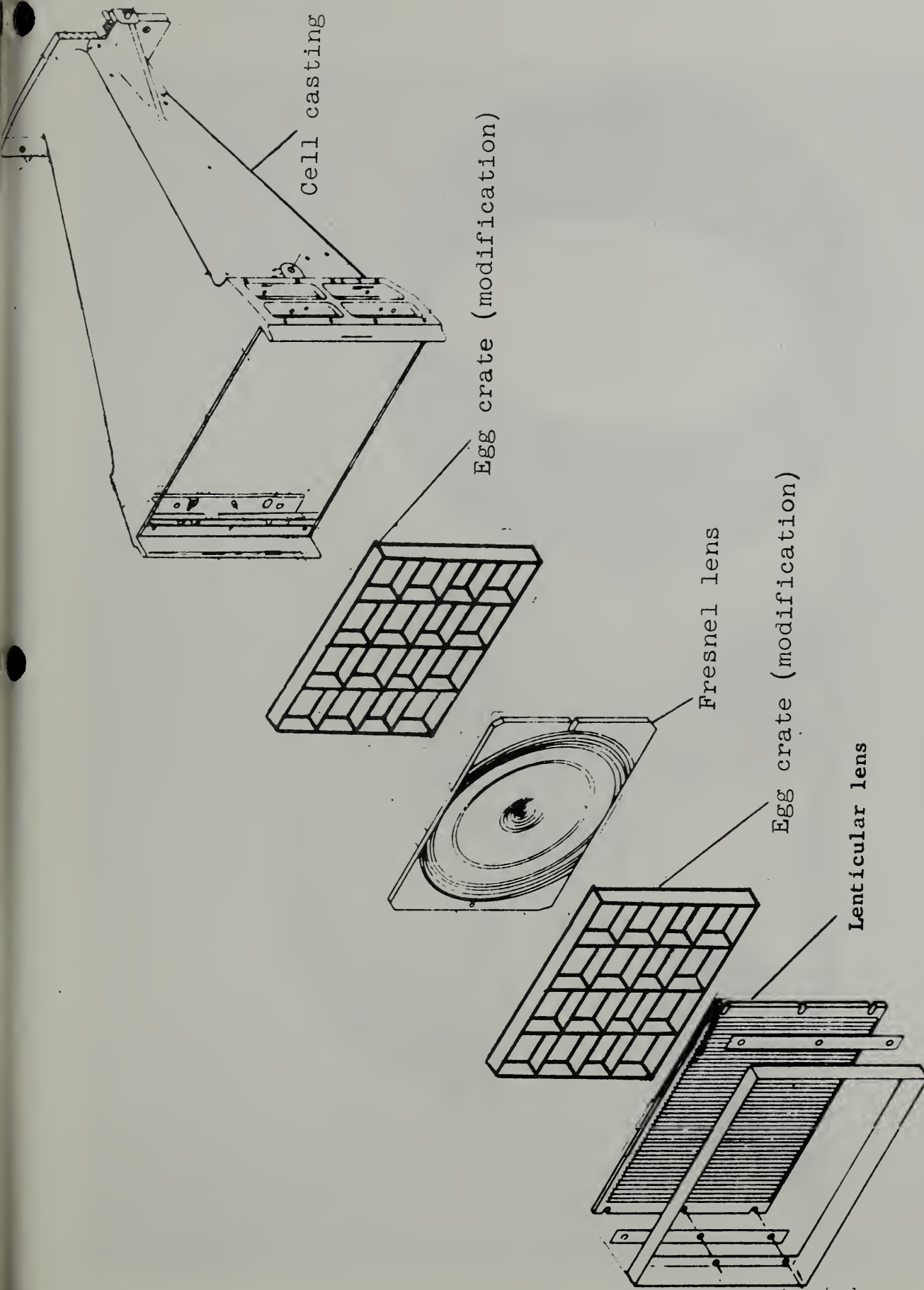
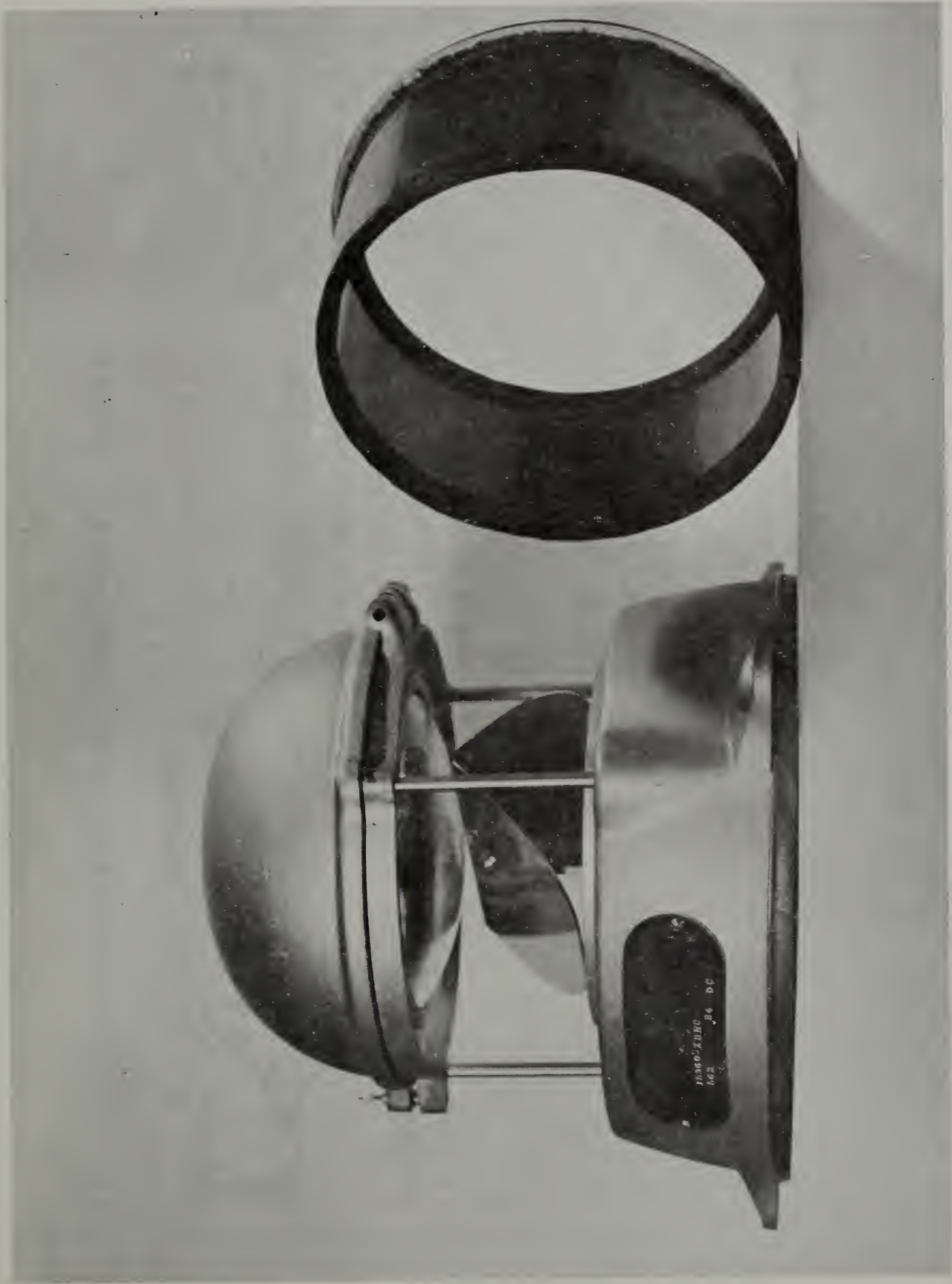


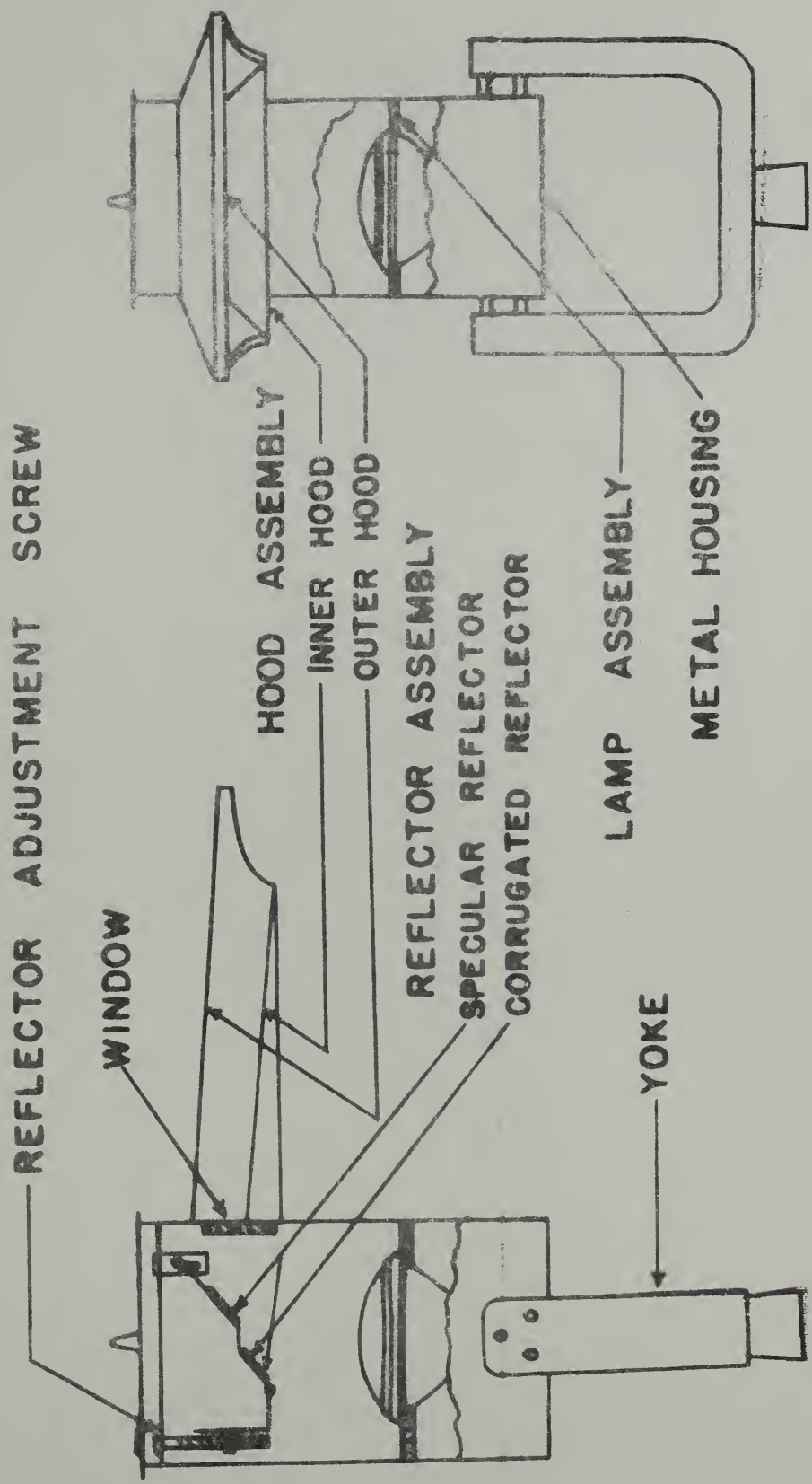
Figure 15



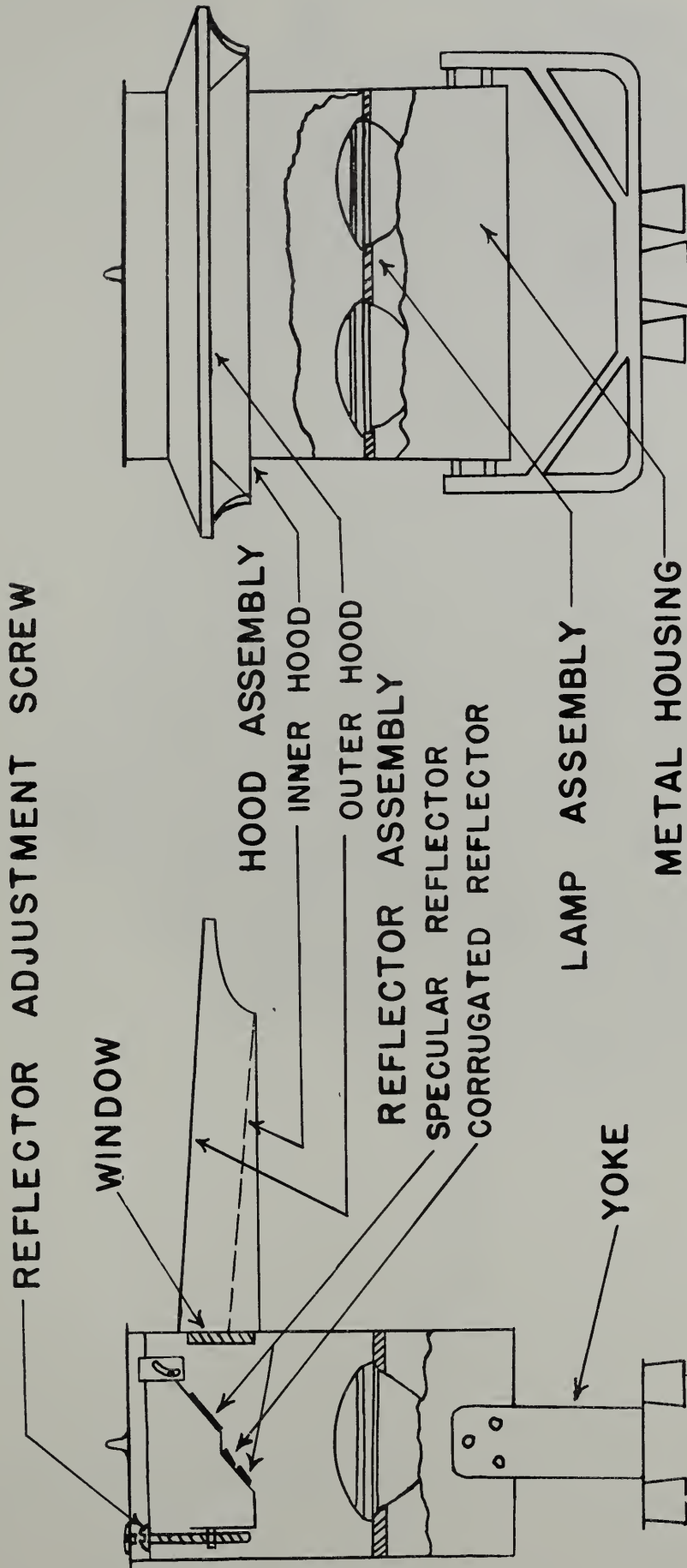
Partial lens cell assembly, exploded view showing "egg crate" lens restraining device, of the Fresnel-Lens
 NBS Report 9350 Supplementary
 Optical Landing System.



Carrier homing beacon.



Schematic diagram of the "Night Vision Flood Light" types 325-A and 326-A



Schematic diagram of the "Night Vision Flood Light" types 328-A and 329-A



NBS Report 9350 Supplementary Battery operated AA-1 glide slope indicator. Figure 20



- A. Shear Ring Assembly
- B. Guard Assembly
- C. Baseplate (lamps omitted)

Deck guide light, L. C. D. Co. No. 366

