MIL-L-006730C(AS)
14 May 1971
USED IN LIEU OF
MIL-L-6730
9 June 1950
SUPERSEDING
MIL-L-006730B(WEP)
30 August 1961

MILITARY SPECIFICATION

LIGHTING EQUIPMENT; EXTERIOR, AIRCRAFT (GENERAL REQUIREMENTS FOR)

This limited coordination Military Specification has been prepared by the Naval Air Systems Command based upon currently available technical information, but has not been approved for promulgation as a revision of Military Specification MIL-L-6730. It is subject to modification. However, pending its promulgation as a coordinated Military Specification, it may be used in procurement.

SCOPE

Scope. This specification sets forth the general requirements exterior lighting equipment on Military aircraft.

APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of ation for bids, or request for proposal form a part of this specification to the nt specified herein.

SPECIFICATIONS

Military

MIL-W-5088	Wiring, Aircraft, Installation of
MIL-E-5272	Environmental Testing, Aeronautical and Associated Equipment, General Specification for
MIL-L-6723	Lights, Aircraft, General Specification for
MIL-C-6781	Control Panel, Aircraft Equipment, Rack or Console Mounted

FSC 6220

SPECIFICATIONS

Military (Continued)

MIL-E-7080	Electric Equipment, Aircraft, Selection and Installation of
MIL-I-7929	Flashers, Lights, Aircraft
MIL-I-18079	Installation of Angle of Attack and Sideslip Systems
MIL-A-19730	Air Refueling Systems, General Specification for
MIL-L-21652	Light, Beacon, Anticollision, Aircraft, General Specification for
MIL-C-25050	Color, Aeronautical Lights and Lighting Equipment, General Requirements for
MIL-L-81174	Light, Landing, Aircraft, Retractable

STANDARDS

Military

MIL-STD-461	Electromagnetic Interference Characteristics, Requirements for Equipment
MS25219	Light, Navigational and Warning, Aircraft
MS25318	Light, Approach, 28V

(When requesting any of the applicable documents, refer to both title and number. All requests should be made via the cognizant Government quality assurance representative. Copies of this specification and other unclassified specifications and standards required by contractors in connection with specific procurement functions should be obtained upon application to the Commanding Officer, Naval Publications and Forms Center (Code 1051), 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120. All other documents should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 General requirements. Table I prescribes the exterior lights required for individual types of aircraft.

3.1.1 Installation. Exterior lighting equipment and controls shall be installed in accordance with the requirements of MIL-E-7080.

3.1.2 Wiring. Wiring shall be in accordance with the requirements of MIL-W-5088.

3.1.3 Equipment. The equipment shall be in accordance with the requirements of MIL-L-6723 and the requirements specified herein.

3.1.4 Colors. The colors of the exterior lights shall be in accordance with the requirements for aviation colors of MIL-C-25050.

3.1.5 Environment. The equipment shall be in accordance with the environmental requirements of MIL-E-5272.

3.1.6 Radio interference. The equipment shall be in accordance with the radio interference requirements of MIL-STD-461.

3.1.7 Glare. Exterior lights shall be installed or shielded in such a manner as to prevent them from being a source of direct or reflected glare to the pilot or crew.

3.1.8 Life. All lamps used in exterior lights except landing and landing-taxi shall have a minimum life of 100 hours. Lamps used in landing and landing-taxi lights shall have a minimum life of 50 hours.

3.2 Detail requirements.

3.2.1 Position lights. The position lights shall consist of wing position lights and a tail position light(s). They shall be designated as Class 1 or Class 2 lights. The two classes of lights differ only in their intensity distribution requirements which are shown in Figures 1 and 2 for Class 1 lights, and Figures 3 and 4 for Class 2 lights. Unless otherwise specified, Class 1 lights shall be used on all new aircraft.

3.2.1.1 Wing position lights.

3.2.1.1.1 Location. The wing position lights shall be located at the extremities of the wings. Supplemental position lights may be installed in any location

TABLE I

PRESCRIBED EXTERIOR LIGHTS FOR NAVAL AIRCRAFT

Lights Required (indicated by "X")	Type of Aircraft							
	VF, VA, VS	VP, VR, VU, VF		VT		VO	VH	
		Carrier Based	Land Based	Carrier Based	Land Based		HO, HS HR, HC, HU	HT, HU (Small)
Position 1/ (Wing tip and tail)	X	X	X	X	X	X	X	X
Anticollision	X	X	X	X	X	X	X	X
Formation 2/	X			X	X		X	X
Prop-or-rotor tip		X	X	X	X		X	X
Angle of attack approach	X	X		X				
Angle of roll 3/	X	X		X				
Landing/taxi	X	X	X	X	X			
Hover						X	X	X
Controllable-spot 4/							X	X
Tanker refueling 5/	X			X	X			
Probe refueling	X	X	X			X	X	
Gear down				X	X			

1/ Provisions shall be made for dimming the position lights on carrier-based aircraft (par 3.3.1).
2/ Provisions shall be made for dimming the formation lights (par 3.2.6.1.4 and par 3.2.6.2.4).
3/ Angle of roll light required on aircraft when starboard wing tip does not provide angle of roll intensity distribution requirements (par 3.2.7).
4/ One light required on single engine aircraft and two lights required on multiple engine aircraft.
5/ Required only on those aircraft designated as tankers on in-flight refueling missions.

on the wing as necessary to meet the minimum light distribution requirements. For variable-sweep-wing aircraft, the candlepower distribution requirements shall be met regardless of the position of the wings.

3.2.1.1.2 Color. The color of the wing position lights and supplementary lights shall be Aviation Red in the port wing and Aviation Green in the starboard wing.

3.2.1.2 Tail position light(s).

3.2.1.2.1 Location. The tail position light(s) shall be located as close as possible to the center rearmost extremity of the airplane. As an alternate on swept wing aircraft, two lights may be installed, one located at the trailing edge of each wing tip.

3.2.1.2.2 Color. The color of the tail position light(s) shall be Aviation White.

3.2.2 Anticollision light(s). Anticollision lights shall be designated as Class 1 or Class 2 lights. The two classes of lights differ only in their intensity distribution requirements which are shown in Table II. The lights shall be in accordance with MIL-L-21652. Unless otherwise specified, Class 1 lights shall be used on all new aircraft.

3.2.2.1 Location. The anticollision light(s) shall be located so that the emitted light shall not be detrimental to the crew's vision and shall not detract from the conspicuity of the position lights.

3.2.2.2 Color. The color of the anticollision light(s) shall be Aviation Red except as specified in 3.2.9.2.

3.2.2.3 Field of coverage. The field of coverage of the anticollision light(s) shall extend in all directions within 30° above and 30° below the flight axis of the airplane, except that a solid angle or angles of obstructed visibility totaling not more than 0.03 steradian shall be permissible within a solid angle equal to 0.15 steradian centered about the longitudinal axis in the rearward direction.

3.2.2.4 Flashing characteristics. The arrangement of the system, i.e., number of light sources, beam width, speed of rotation, etc. shall be such as to give an effective flash frequency of 90 ±10 flashes per minute. The effective flash frequency shall be the frequency at which the flashes from the airplane's complete anticollision light system are observed as distinct flashes from a distance, and shall apply to all sectors of light including the overlap areas which might exist when the system consists of more than one light source. In overlap areas, flash frequencies higher than 100 flashes per minute shall be permissible, except that they shall not be

higher than 180 flashes per minute. Flash frequencies lower than 80 flashes per minute shall be permissible, provided that the instantaneous intensity of each flash during the off period decays to less than 30 percent of its peak and provided that the effective intensity of each light is increased by twice the percentage of its flash reduction below 90 flashes per minute. The minimum permissible flash rate, however, shall be 40 flashes per minute. For example, for a flash frequency of 45 FPM (a decrease from 90 FPM of 50 percent) the effective intensity requirements of 3.2.2.5 is increased by 100 percent.

3.2.2.5 Candlepower. The minimum luminous intensities in all vertical planes, measured with the red filter in place and expressed in terms of "effective" intensities, shall be in accordance with Table II. The following relation shall be assumed:

$$I_e = \frac{\int_{t_1}^{t_2} I_t \, dt}{0.2 + (t_2 - t_1)}$$

where: I_e = effective intensity (candelas), and is the maximized value of the right-hand side of this equation.

I_t = instantaneous intensity as a function of time.

$t_2 - t_1$ = flash time interval (seconds)

NOTE: The maximum value of I_e is obtained when t_2 and t_1 are so chosen that the effective intensity is equal to the instantaneous intensity at t_2 and t_1.

TABLE II

MINIMUM EFFECTIVE INTENSITIES FOR ANTICOLLISION LIGHTS

Angle above and below horizontal plane	Effective intensity in candelas	
	Class 1	Class 2
0° to 5°	500	100
5° to 10°	300	60
10° to 20°	100	20
20° to 30°	50	10

3.2.3 Landing lights. Whenever practical, two landing lights shall be used. One landing light is permissible on aircraft where space and weight limitation will not permit two. Retractable and controllable landing lights shall be in accordance with MIL-L-81174.

3.2.3.1 Location. The light(s) shall be located laterally as far from the center line of the aircraft as practical.

3.2.3.2 Adjustment. The light(s) shall be adjusted as shown in Figure 10.

3.2.3.3 Candlepower. The minimum peak candlepower of each light shall be not less than 300,000 candelas. The beam spread (between the points at 10% of peak candlepower) shall be at least 8 degrees in the vertical plane and 14 degrees in the horizontal plane.

3.2.4 Taxi light.

3.2.4.1 Location. Taxi light(s) shall be installed on the nose wheel movable strut so that the light(s) will turn laterally with the nose wheel strut.

3.2.4.2 Candlepower. The minimum peak candlepower of each light(s) shall be not less than 50,000 candelas. The beam spread (between the points at 10% of peak candlepower) shall be at least 10 degrees in the vertical plane and 40 degrees in the horizontal plane.

3.2.5 Landing-taxi light. A single, dual-purpose, landing-taxi light is permissible, when space and weight limitations will not permit the use of individual landing and taxi lights.

3.2.5.1 Location. The light shall be mounted as close as practicable to the fuselage reference line, preferably in the nose-wheel well area.

3.2.5.2 Adjustment. The light shall be adjusted as shown in Figure 10.

3.2.5.3 Candlepower. The minimum peak candlepower of the light shall be not less than 300,000 candelas. The beam spread (between the points at 10% of peak candlepower) shall be at least 8 degrees in the vertical plane and 14 degrees in the horizontal plane.

3.2.6 Formation lights. Formation lights shall be designated as Type I or Type II lights. Type I lights shall utilize incandescent light sources and Type II lights shall utilize electroluminescent light sources. The installation geometry of the lights shall be determined by the configuration of the aircraft and by its operational requirements. Unless otherwise specified, Type II lights shall be used on all new aircraft requiring formation lights as specified in Table I.

3.2.6.1 Fixed wing aircraft.

3.2.6.1.1 Location.

3.2.6.1.1.1 Type I lights. Four Type I lights shall be located on the fuselage, one on the forward quarter and one on the aft quarter on each side of the aircraft. A similar type light(s) shall be placed in or near each wing tip so that it is visible from above and below the airplane. The lights shall be located so as to provide the maximum visibility to the wingman when flying the normal step-down formation position. At least one of the wing lights shall be visible at all times from any point behind the airplane. The general location of the lights shall be as shown in Figure 5.

3.2.6.1.1.2 Type II lights. There shall be, on each side of the aircraft, one light which wraps around the outer edge of the wing tip, one light on the fuselage forward of the wing root, one light on the rear quarter of the fuselage, and one light on the vertical stabilizer. In addition, there shall be a cross-under light located along the bottom centerline of the aircraft and slightly aft of the lateral centerline on the fuselage. When possible, the relative location of the fuselage light(s) and the wing light on each side of the aircraft shall be such that they form a broken horizontal line when viewed by the wingman flying in the normal step-down formation position. The general location of the lights shall be as shown in Figure 6. Each vertical stabilizer light shall be mounted so that its longer dimension is in the direction of and between lines parallel to the leading edge of the stabilizer and the rudder hinge. The location of the light shall be as approved by the procuring activity.

3.2.6.1.2 Size.

3.2.6.1.2.1 Type I lights. The luminous surface of each Type I light shall be at least 5-1/2 inches long and 1 inch wide.

3.2.6.1.2.2 Type II lights. The luminous surface of each fuselage, vertical stabilizer, and cross-under light shall have a total length of not less than 36 inches and a width of not less than 2 inches nor greater than 2-1/4 inches. These lights shall be fabricated of three or four individual lamps assembled end to end. The non-luminous surfaces between adjacent lamps shall be not more than 5/8 inch wide. The wing lights shall wrap around the wing tips and each shall have a luminous surface of at least 72 square inches on the top surface and 72 square inches on the bottom surface. The wing lights shall be fabricated of not less than six individual lamps assembled side by side. Nonluminous areas between adjacent lamps shall be not more than 5/8 inch in width.

3.2.6.1.3 Color.

Type I. The color of Type I lights shall be Aviation Green for the starboard wing light, Aviation Red for the port wing light, and Aviation Yellow for the fuselage lights.

Type II. The color of all Type II lights shall be Aviation Green.

3.2.6.1.4 Luminous output.

Type I. Type I lights shall have two luminous output conditions designated as "Bright" and "Dim". In the dim condition, the surface luminance of the fixtures shall be between 0.5 and 1.5 footlamberts. In the bright condition, the luminous output of the fixtures shall be not less than 1.0 candela (see 6.1).

Type II. The surface luminance of Type II lights shall be either continuously variable or adjustable in seven steps with the luminance at each step 1/2 that of the next higher step. The surface luminance at the highest step shall be not less than 15 footlamberts.

3.2.6.2 Rotary wing aircraft.

3.2.6.2.1 Location. Rotary wing aircraft shall utilize Type I lights on the main rotor blade tips and Type II lights on the fuselage. The general location of the lights shall be in accordance with the installation pattern shown in Figure 7. Where the configuration of the aircraft prohibits this pattern, the location of the lights shall be as determined by the procuring activity.

3.2.6.2.2 Size. Type I lights shall be as small as possible and shall be designed for minimum aerodynamic disturbance to the rotor blades. The luminous surface area of Type II lights shall be a minimum of 2 inches by 10 inches where practical. The use of fixtures having smaller luminous areas may be permitted, however, if approved by the procuring activity.

3.2.6.2.3 Color. The color of the Type I blade-tip lights shall be Aviation White. The color of the Type II fuselage lights shall be Aviation Green.

3.2.6.2.4 Intensity distribution and/or luminous output.

3.2.6.2.4.1 Blade tip lights. The candlepower distribution of the Type I lights when operating at their highest intensity condition shall be as shown in Figures 7 and 8. Seven dimming steps plus an "Off" position shall be provided for the lights. The intensity at each dimming step shall be 1/2 that of the next higher step.

3.2.6.2.4.2 Fuselage lights. The surface luminance of the fuselage lights when operating at the highest intensity condition shall be not less than 15 footlamberts. Seven dimming steps plus an "Off" position shall be provided. The surface luminance of the light at each dimming step shall be 1/2 that of the next higher step.

3.2.7 Angle-of-roll light. An angle-of-roll light shall be installed on all carrier-based aircraft. It shall be energized only when the position lights are on and the landing gear extended.

3.2.7.1 Location. This light shall be so located that it can be seen by the landing signal officer during night carrier-landing approaches. It shall be installed so as to provide maximum wing span information to the landing signal officer, and shall be visible to the LSO at all times during the last 80 degrees of the turn to the approach path. The preferable location of this light is on the top side of the starboard wing. When this is impractical, the light may be located on the port side of the fuselage above and near the forward edge of the wing. (See Figures 1 through 4.)

3.2.7.2 Intensity. Throughout the entire required angles of visibility (Figures 1 through 4) the light shall have an intensity of not less than 1 candela nor more than 5 candelas.

3.2.7.3 Color. The color of the light shall be Aviation Green.

3.2.8 Ice detection lights.

3.2.8.1 Location. These lights shall be located so as to provide illumination along the leading edge of the wings. More than one light on each side of the aircraft may be used.

3.2.8.2 Color. The color of the ice detection lights shall be Aviation White.

3.2.9 Air refueling lights. The air refueling lights shall be in accordance with the requirements of MIL-A-19736 and as specified herein.

3.2.9.1 Probe light. A floodlight shall be located on the receiver aircraft to illuminate the probe nozzle and also to illuminate the drogue during final closure for engagement. The floodlight beam shall be such as to produce a 40° cone of light having its apex at the probe tip. The axis of the cone shall be inclined 10° above the axis of the nozzle, and it shall lie in a vertical plane which passes through the axis of the nozzle (Figure 9).

3.2.9.1.1 Candlepower distribution. Illumination at the probe nozzle shall be not less than 0.25 footcandle nor more than 2 footcandles as measured in a plane perpendicular to the pilot's line of sight to the probe tip. Except in the region which may be shadowed by the probe, the light shall provide an illumination level of not less than 0.10 footcandle on the axis of the cone at a distance of 50 feet from the probe tip as measured in the plane perpendicular to the axis of the cone. The illumination at the edge of the cone at a distance of fifty feet from the probe tip shall be not less than 0.01 footcandle as measured in the plane perpendicular to the edge of the cone.

3.2.9.1.2 Color. The color of the probe light shall be Aviation Red.

3.2.9.2 Tanker recognition light. On tanker aircraft during flight refueling missions, at least one of the anticollision lights shall be Aviation Green instead of Aviation Red.

3.2.9.3 Tanker signal lights. A cluster of three lights shall be mounted on the tanker to indicate the state of readiness of the tanker for in-flight fuel transfer. The lights shall be in accordance with the requirements of MIL-A-19736.

3.2.9.3.1 Full trail light. The purpose of this light is to indicate to the pilot of the receiver aircraft that the drogue has been extended to within 5 feet of its full trail position, and the tanker is ready for the engagement.

3.2.9.3.2 Fuel transfer light. This light shall indicate to the pilot of the receiver aircraft that satisfactory mating of the probe and drogue has been accomplished and fuel is being transferred.

3.2.9.3.3 Fuel low-pressure light. The purpose of this light is to warn the pilot of the receiver aircraft that the hydraulic pressure at the hose reel is too low for proper response action.

3.2.9.3.4 Intensity. Each of the tanker signal lights shall have a peak intensity of not more than 5 candelas, not less than 2 candelas, and a beam spread (between the points at 10% of peak candlepower) of not less than 20° in all planes.

3.2.10 Propeller-tip safety lights. All carrier-based propeller-driven aircraft shall be equipped with light sources for irradiating a luminous phosphorescent coating installed on the propeller tips. The sources shall operate in the ultra-violet region of the radiation spectrum, and the radiation shall be essentially invisible to the human eye.

3.2.10.1 Location. The ultra-violet lights shall be located on the fuselage of the aircraft adjacent to the propellers or other appropriate places so as to irradiate both the front and rear surfaces of the propeller tips. The fixtures shall be mounted flush with the skin of the aircraft so as to minimize aerodynamic drag. Where it is impractical to illuminate the propellers in this manner, the airframe manufacturer shall propose an alternate method for illuminating the propeller tips.

3.2.10.2 Luminance. The system design (phosphor plus irradiating sources) shall be such as to produce a luminous ring on the rotating propellers of at least 0.01 footlamberts. The ring luminance shall be essentially uniform throughout the entire ring.

3.2.10.3 Color. The color of the luminous ring shall be green.

3.2.10.4 Size. The size of the irradiating sources shall be as small as practical consistent with the performance requirements. The phosphorescent coating across the propeller tips shall be a minimum of 4 inches in width.

3.2.11 Helicopter hover lights.

3.2.11.1 Location and orientation. Three floodlights are used in the configuration. One shall be located below the cargo hatch and shall be directed downward. Two of the lights shall be located in the area directly below the cockpit. They shall be directed forward at an angle of 30 degrees below horizontal and at angles of 15 degrees outboard from each side of the forward direction.

3.2.11.2 Candlepower. Each light shall have a peak candlepower of not less than 16,000 candelas. The beam spread (between the points at 10% of maximum peak candlepower) shall be at least 40 degrees in all planes.

3.2.11.3 Adjustability. The lights shall be adjustable for 15 degrees in any direction from the specified position.

3.2.12 Approach lights.

3.2.12.1 Angle of attack lights. Angle of Attack approach lights shall be installed on all carrier based aircraft as shown in Table I. The approach light system shall be in accordance with MIL-I-18079.

3.2.12.1.1 Complement. The Angle of Attack approach lights shall consist of three lights (red, yellow, and green) in accordance with MS25318.

3.2.12.1.2 Location and orientation. The approach lights shall be mounted on the forward part of the airplane as near as practicable to the fuselage reference line, so as to be visible to the Landing Signal Officer during the landing approach prescribed for the particular airplane on which installed.

3.2.12.1.3 Beam axis. The beam axis shall be directed 8° ±1° to the left of the fuselage reference line and directed below the fuselage reference line at an angle theta (θ) which shall conform with the wing angle of attack at the related approach speed. This angle theta (θ) is derived as follows:

$$\theta = \alpha_W + \Phi - I$$

Where: θ = angle between fuselage reference line and the optical glide slope

α_w = wing angle of attack

I = wing angle of incidence

Φ = angle between actual glide slope and optical glide slope

3.2.13 Gear-down light. A light conforming to MS25219 and equipped with a type 1683 lamp shall be mounted on each landing gear of trainer type aircraft to provide a positive indication to the Landing Signal Officer or Runway Watch that the landing gears are down and locked. The color of the light(s) shall be Aviation White.

3.3 Lighting controls. Lighting control switches shall be installed in panels conforming to MIL-C-6781. Individual ON-OFF switches shall be provided for each light except where indicated. All individual ON-OFF switches shall be connected to the main bus through the master exterior light switch (see 3.3.1.3).

3.3.1 Carrier based aircraft.

3.3.1.1 Position lights. Both wing position lights shall be operated from the same switch. The tail light shall be operated from a separate switch. These two switches shall be of the three-position type designated as "Bright-Off-Dim" and shall be so labelled. A third switch shall be provided for the simultaneous selection of STEADY or FLASH operation for both the wing and tail lights.

3.3.1.1.1 Flasher. A flasher in accordance with MIL-F-7929 shall be installed to flash the position lights when the selector switch is in the "Flash" position.

3.3.1.2 Approach lights. The angle of attack approach lights shall be connected to the angle of attack system for power. In addition, a separate switch shall be provided for selecting either "Day" or "Night" operation. In the day position power shall be provided for energizing the major filaments of each lamp, and in the night position power shall be provided for energizing the minor filament of each lamp.

3.3.1.2.1 Hook bypass switch. A hook bypass switch shall be provided in the cockpit which shall have two positions, "Carrier" and "Field". When set in the "Carrier" position, the approach lights shall flash if the wheels are down and the hook is not down. When set in the "Field" position, the lights shall remain steady when the wheels are down, regardless of hook position. When flashing, the flash rate shall be 170 to 180 flashes per minute. Turning aircraft power "OFF" or moving the hook control handle to "DOWN" shall reset the by-pass circuit, making the system operate normally for carrier landings.

3.3.1.3 Master exterior light switch. A master exterior light control switch shall be provided. This shall be an ON-OFF switch located on or adjacent to the throttle. This location shall be such as to allow the pilot to signal for night catapult without materially affecting his physical readiness and also to permit him to immediately extinguish his exterior lights after a night carrier landing.

3.3.2 Non-Carrier based aircraft.

3.3.2.1 Position lights. Wing tip and tail lights shall be connected to one ON-OFF switch.

3.3.2.2 Ice detection lights. Ice detection lights shall be connected to one ON-OFF switch.

3.3.2.3 Landing lights. Landing lights shall be connected to individual switches for EXTEND-RETRACT control. A common switch shall be provided for ON-OFF control.

4. QUALITY ASSURANCE PROVISIONS (Not Applicable)

5. PREPARATION FOR DELIVERY (Not Applicable)

6. NOTES

6.1 Formation lights. The specification of the luminous output Class I formation lights in different kinds of lighting units is necessary for formation lights because in the bright position the lights are used for "join-up", they are, therefore, seen at distances such that the lights are observed as point sources, whereas in the dim position the lights are used to maintain formation, and are seen as extended sources. The luminous output of a point source is expressed in units of intensity as "candelas" (see 3.2.6.1.4). The luminous output of an extended source is expressed as luminance for which the "footlambert" is the appropriate unit. The foregoing does not apply to Class II lights which are viewed as extended sources for both join-up and formation flying.

6.2 International standardization. Certain provisions of this specification are the subject of international standardization agreements (NATO STANAG 3153 "Navigation and Anticollision Lights" and NATO STANAG 3154 "Formation Lights"). When amendment, revision, or cancellation of this specification is proposed, which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices, if required.

Preparing activity:
Navy - AS
Project No. 6220-N199

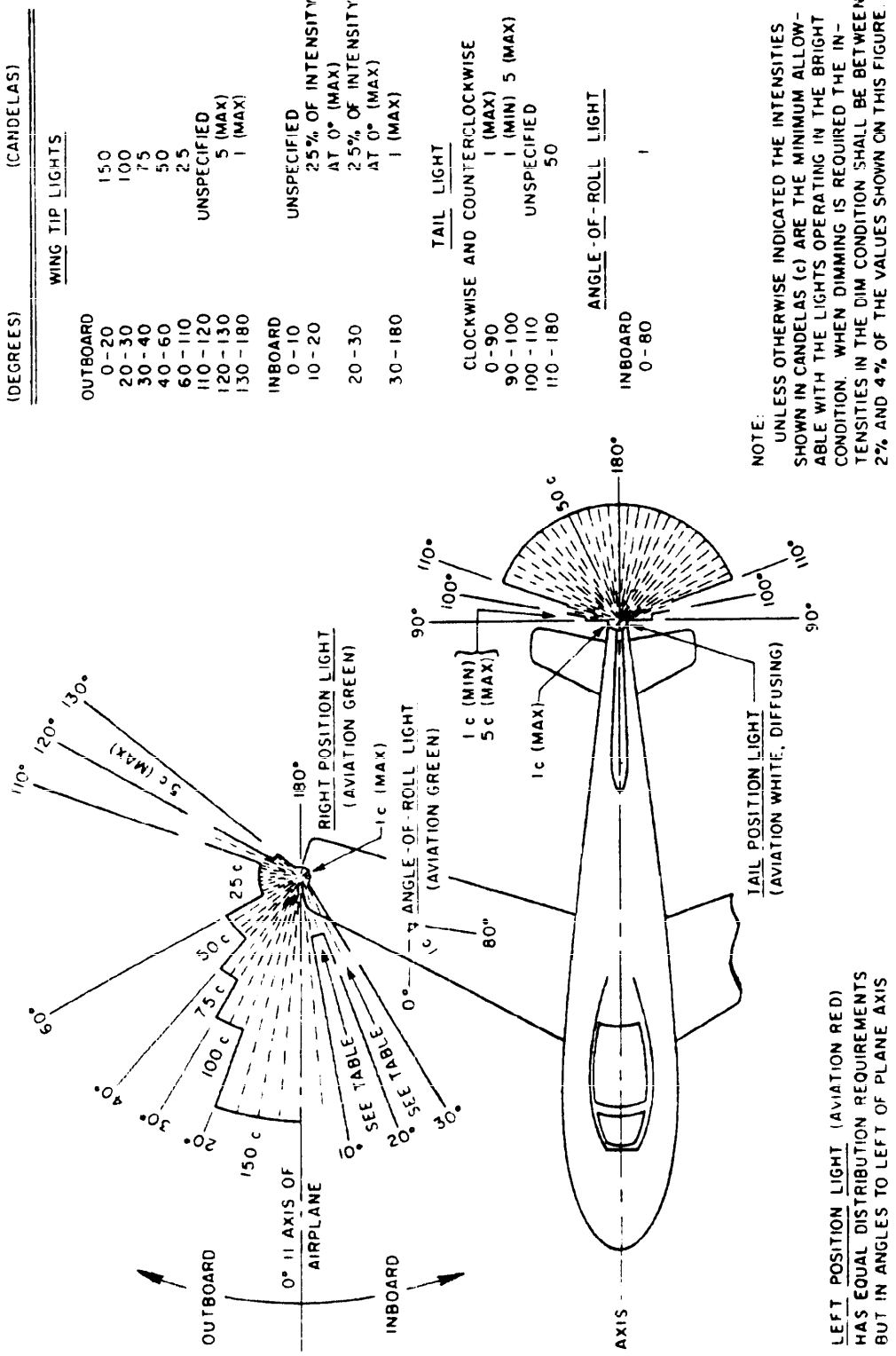


Figure 1. Intensity distribution requirements in the horizontal plane for Class 1 lights

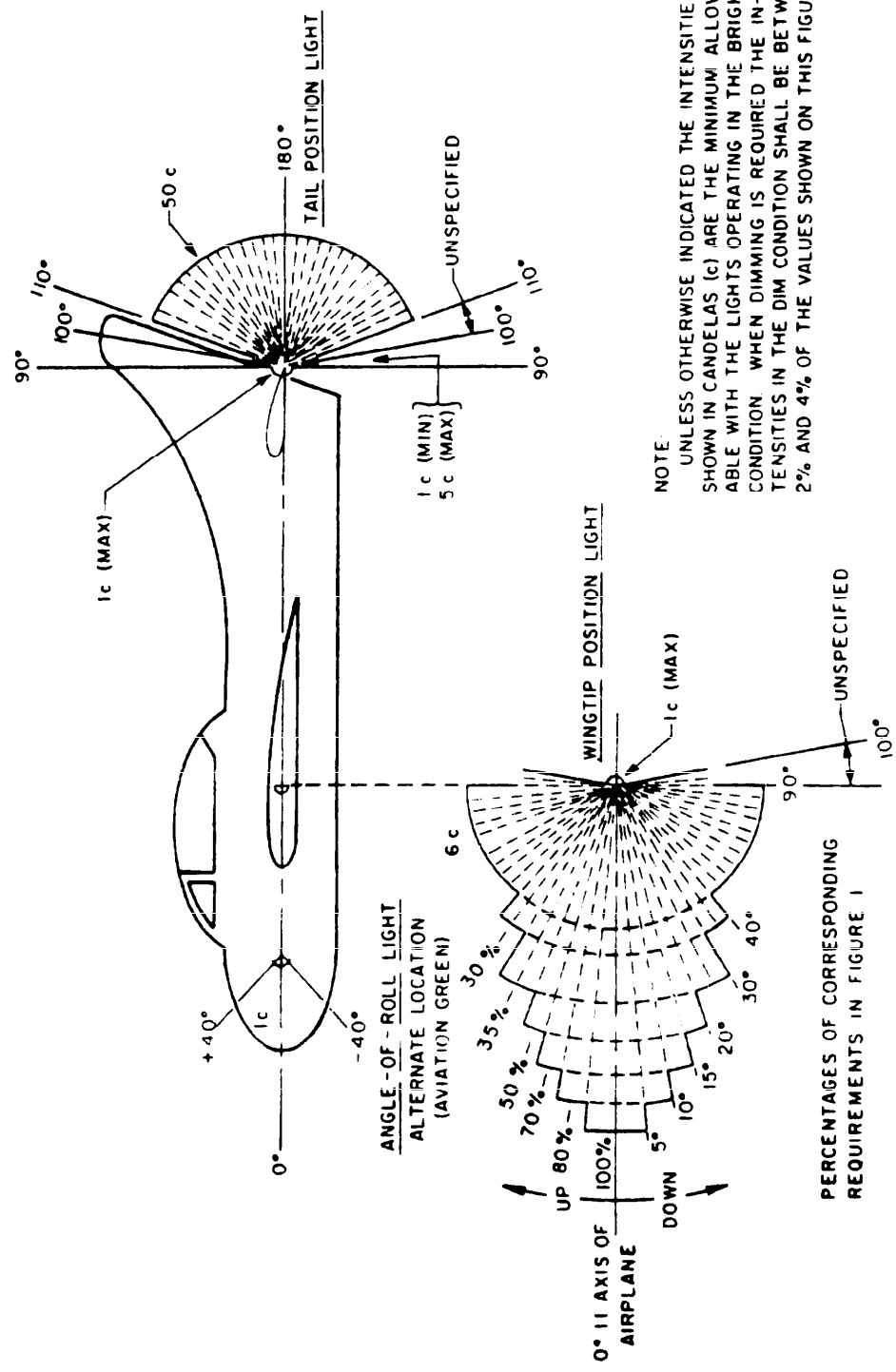


Figure 2. Intensity distribution requirements in the vertical plane for Class 1 lights

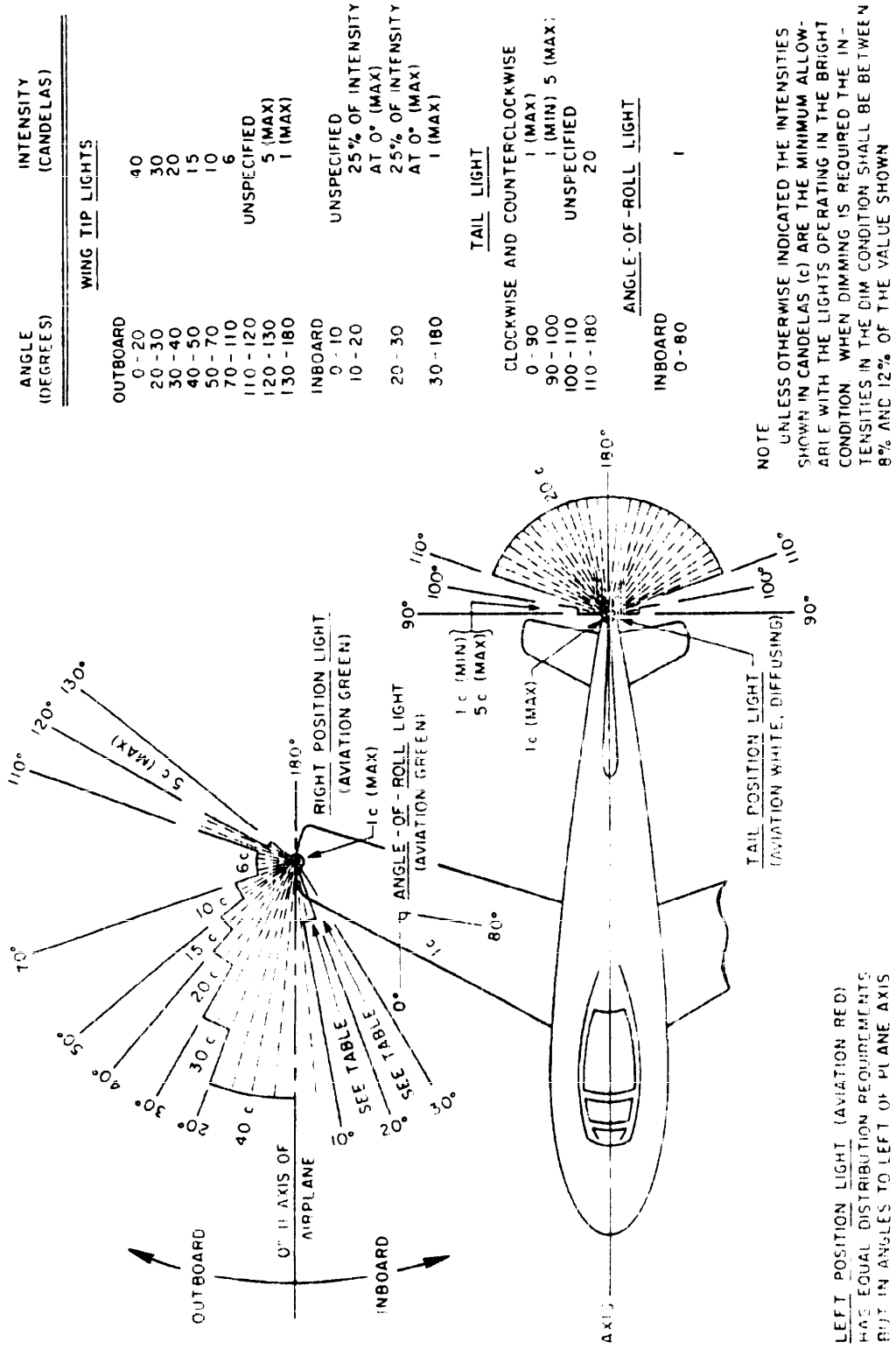


Figure 3. Intensity distribution requirements in the horizontal plane for Class 2 lights

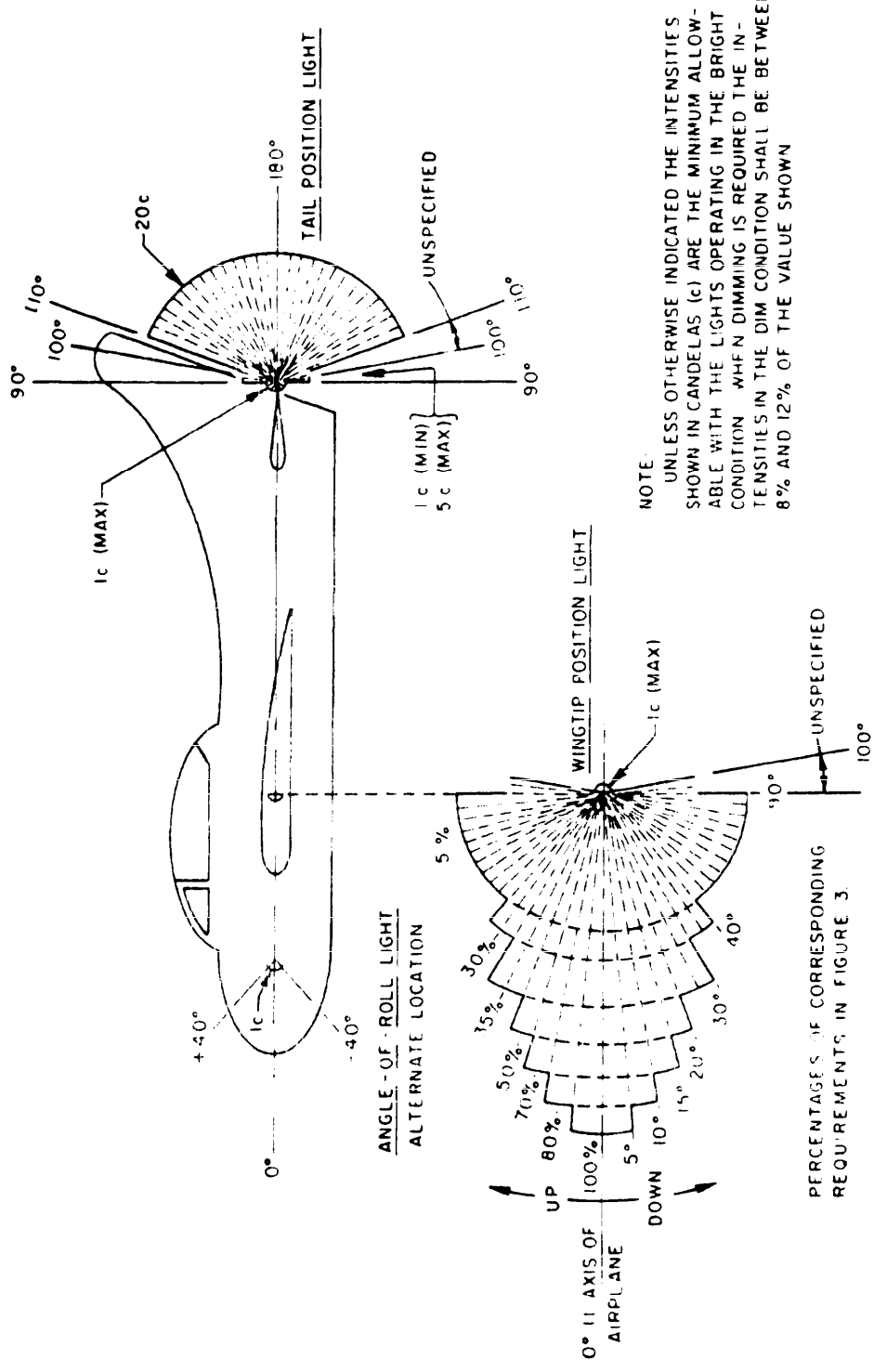


Figure 4. Intensity distribution requirements in the vertical plane for Class 2 lights

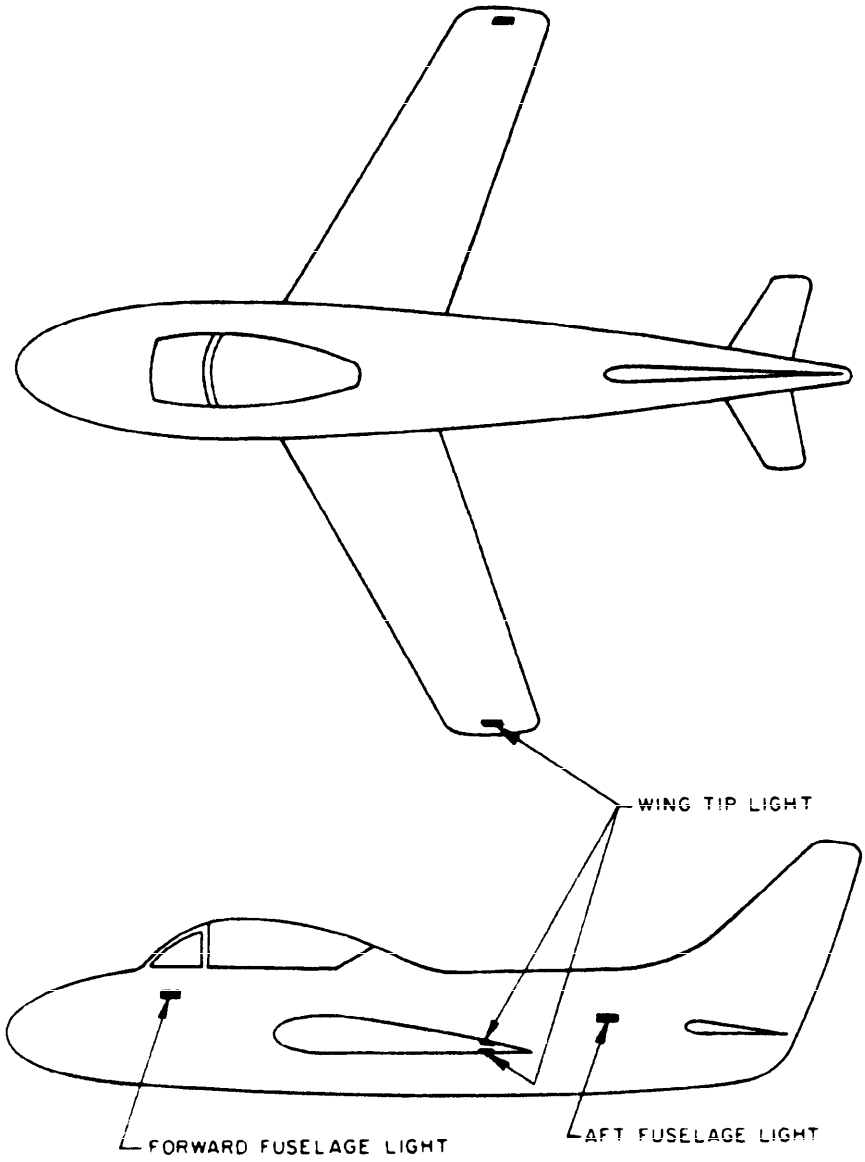


Figure 5. General installation pattern, Type I formation lights for fixed-wing aircraft

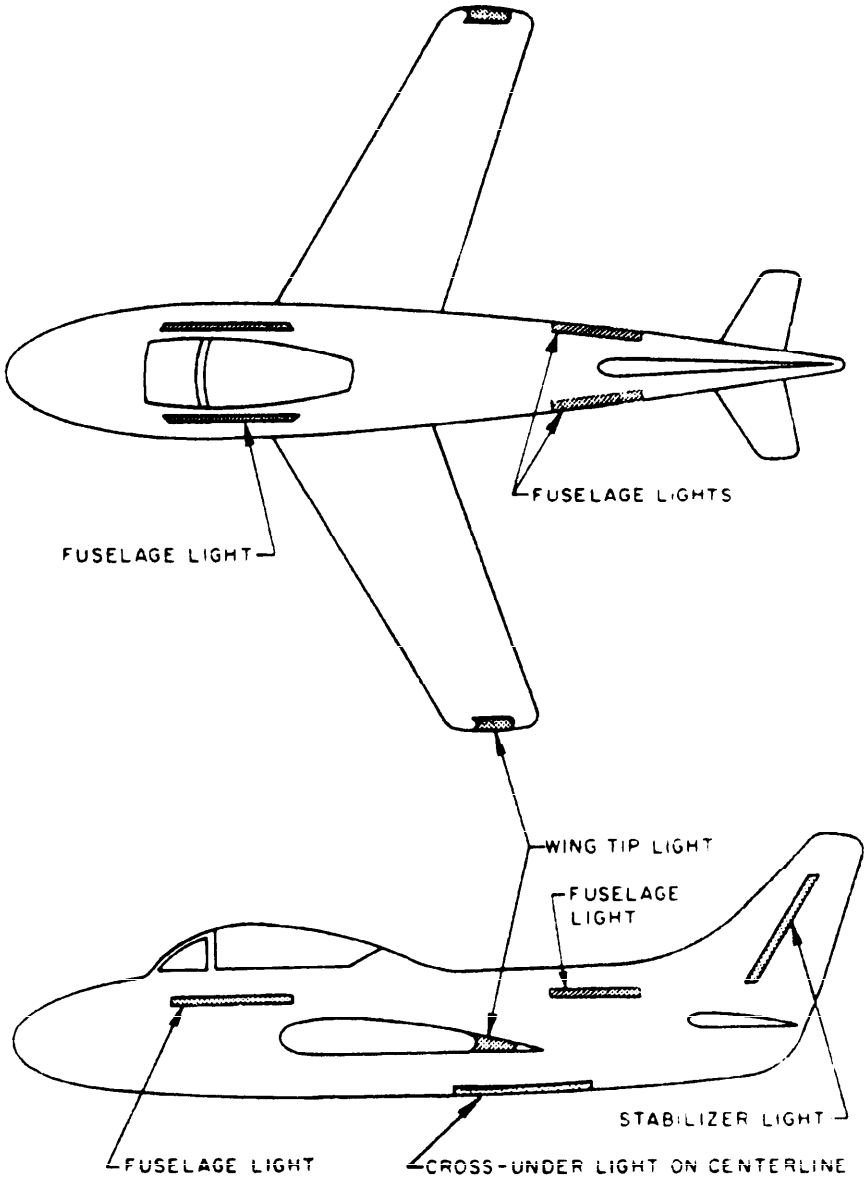
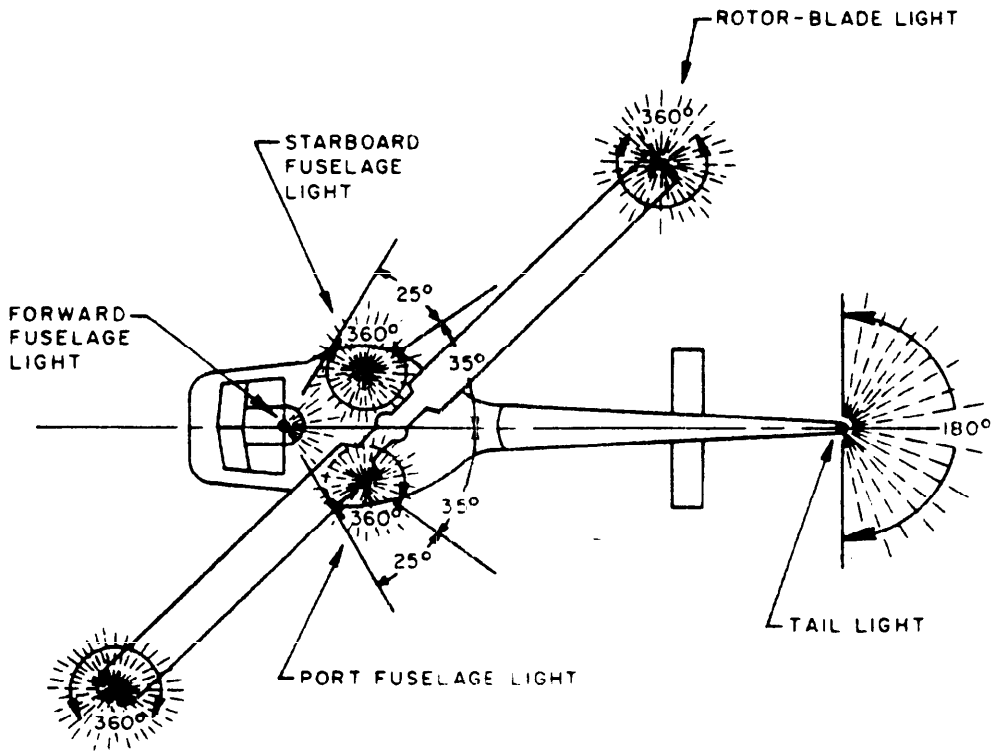


Figure 6. General installation pattern, Type II formation lights for fixed-wing aircraft



NOTE:

Rotor Blades: Type I
Fuselage and Tail Lights: Type II

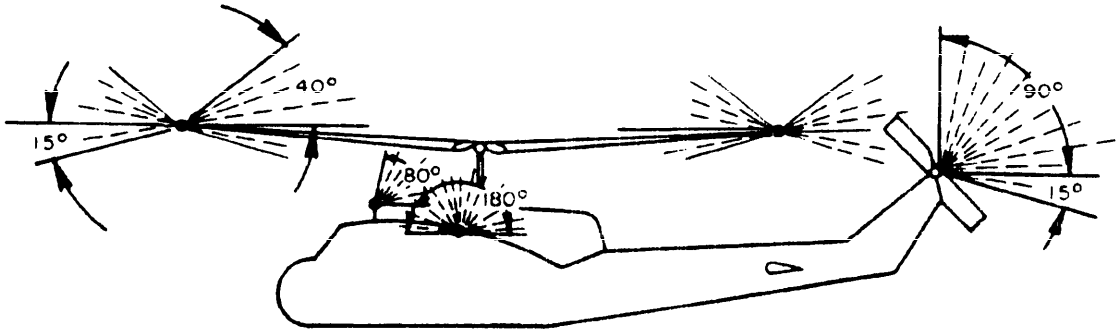


Figure 7. General installation pattern and light distribution requirements of formation lights for rotary-wing aircraft

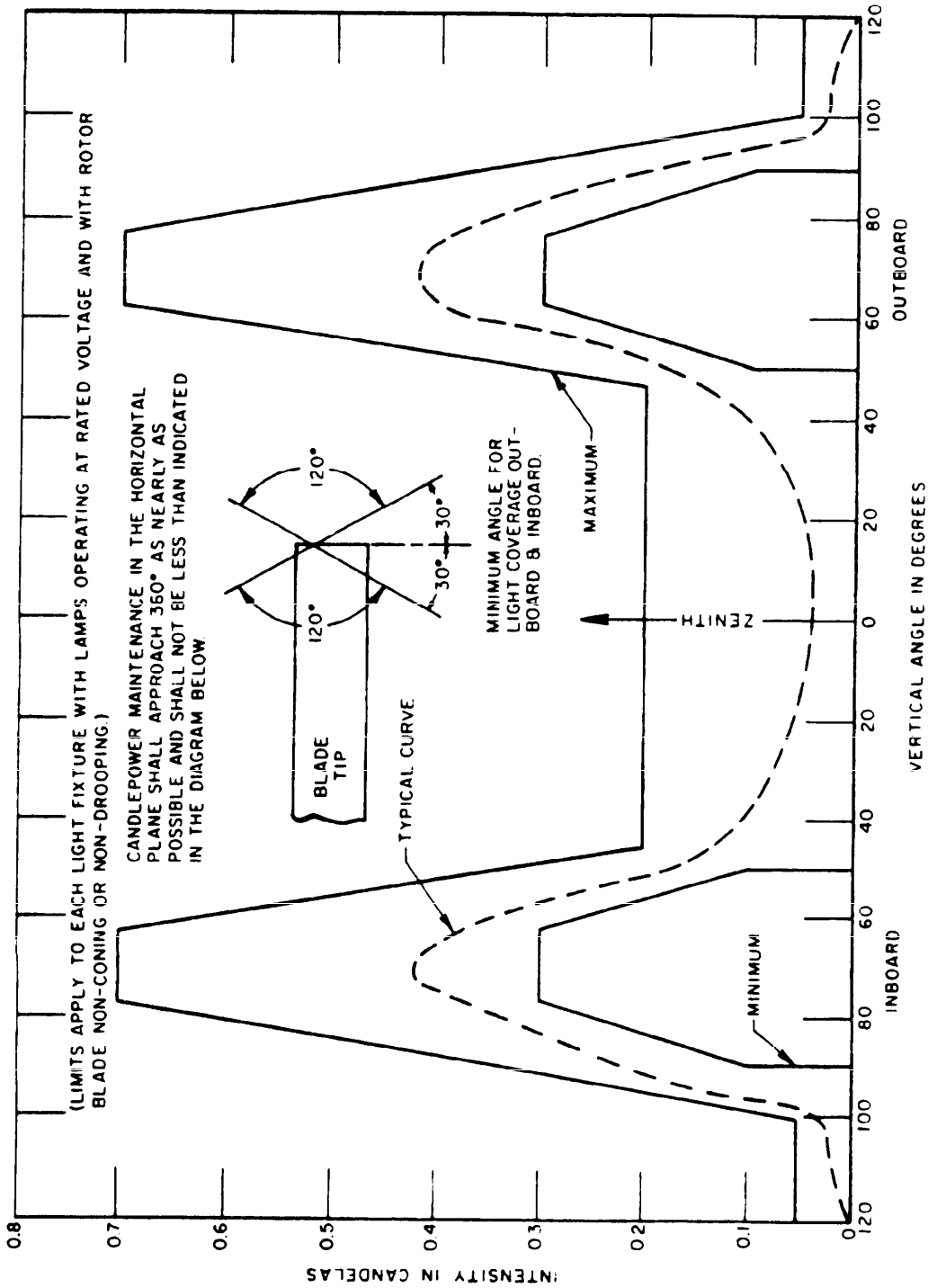
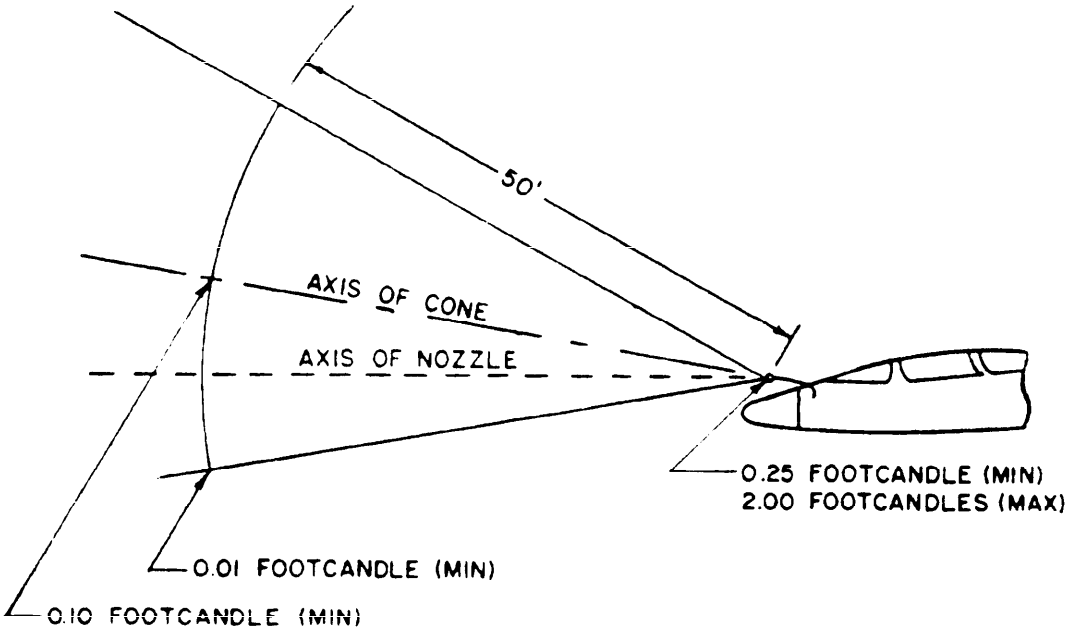


Figure 8. Intensity distribution requirements in the vertical plane for helicopter blade tip formation lights



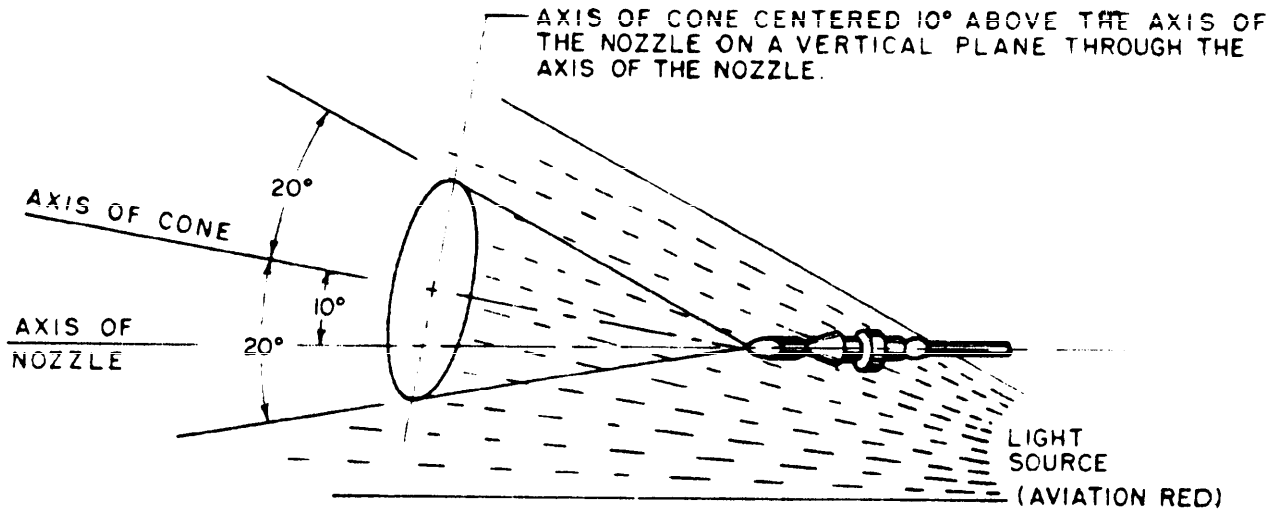
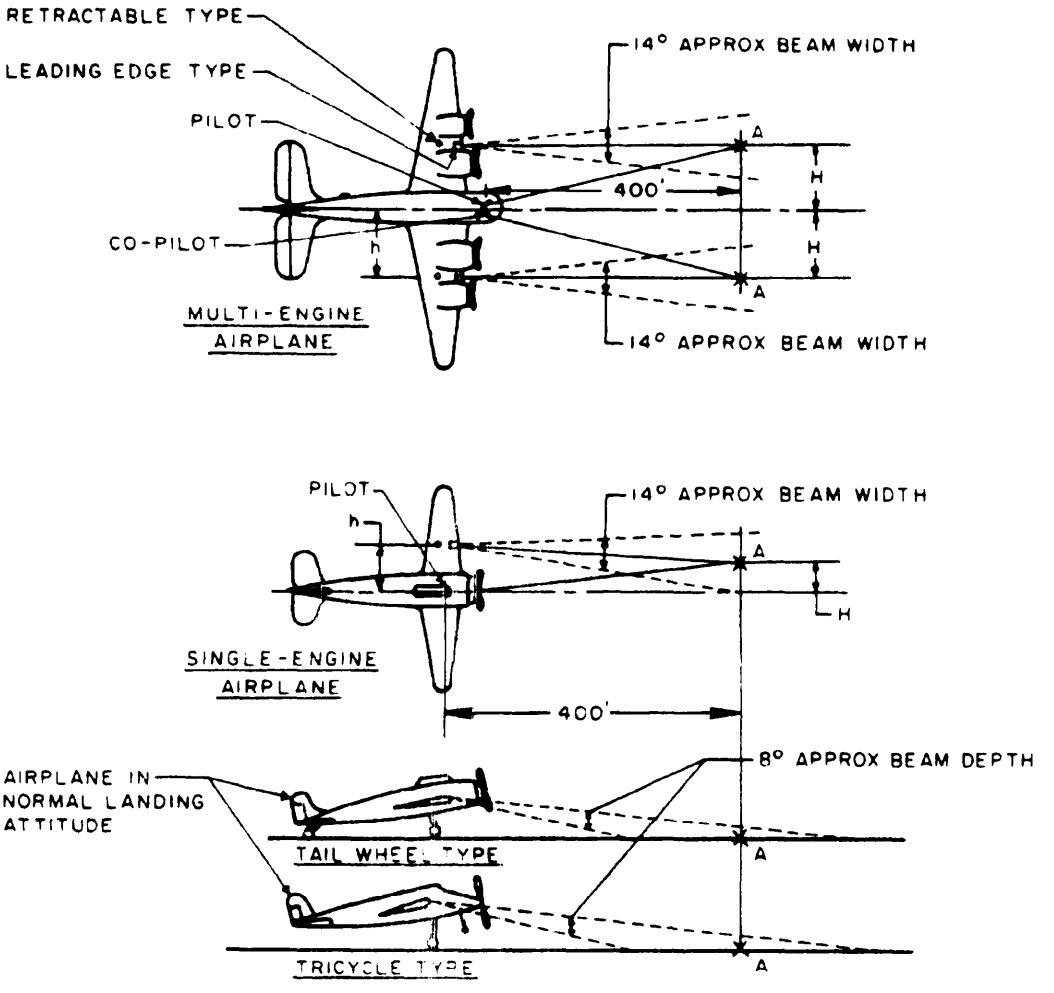


Figure 9. Illumination Distribution Requirements for Air Refueling Probe Light



NOTE:
WITH THE AIRPLANE IN NORMAL LANDING ATTITUDE, POINT "A" SHALL BE LOCATED ON A LINE PERPENDICULAR TO THE AIRPLANE AXIS 400 FEET AHEAD OF THE PILOT AND SHALL BE THE POINT NEAREST THE AIRPLANE AXIS VISIBLE TO THE PILOT. THE DISTANCE "H" WILL DEPEND UPON THE TYPE AIRPLANE. THE LIGHT ASSEMBLIES SHALL BE LOCATED SO AS NOT TO PRODUCE OBJECTIONABLE GLARE REFLECTED FROM THE PROPELLER BLADES TO THE PILOT. THE LOCATION AND DIRECTION OF LIGHT ASSEMBLIES SHALL BE SATISFACTORY TO THE MOCK-UP BOARD. THE DISTANCE "h" (LIGHT TO PILOT) SHALL BE THE MAXIMUM PRACTICABLE.

Figure 10. Position and adjustment of landing and landing-taxi lights (Leading edge and retractable types)

INDEX

INDEX (Continued)

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity *(as indicated on reverse hereof)*.

SPECIFICATION

ORGANIZATION *(Of submitter)* | CITY AND STATE

CONTRACT NO. | QUANTITY OF ITEMS PROCURED | DOLLAR AMOUNT $

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity)* | DATE

DD FORM 1 APR 63 1426

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[illegible] to maximize the probe nozzle and also to maximize the drogue during that