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United States Coast Guard

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COMDTNOTE 16510
OCTOBER 14, 2002

COMMANDANT NOTICE 16510

CANCELLED:OCT 14, 2003

Subj: CH-1 TO AIDS TO NAVIGATION VISUAL SIGNAL DESIGN MANUAL, COMDTINST M16510.2A

1. PURPOSE. This Notice promulgates changes to the Aids to Navigation Visual Signal Design Manual, COMDTINST M16510.2A.

2. ACTION. Area and district commanders, commanders of maintenance and logistic commands, commanding officers of headquarters units, assistant commandants for directorates, Chief Counsel and special staff offices at Headquarters shall ensure that the required changes are made to the Manual.

3. PROCEDURES.

   a. The change consists of two pages. Remove & insert the following pages:

Remove	Insert
p 5-3/4	p 5-3/4 CH1
p 6-1/2	p 6-1/2 CH1

   b. Units that have not received Aids to Navigation Visual Signal Design Manual, COMDTINST M16510.2A, but have received this change may requisition a copy of the manual from the Department of Transportation Warehouse in accordance with the Directives, Publications and Report Index, COMDTNOTE 5600.

   c. Paper copies will be distributed to commands that deal directly with aids to navigation. An electronic version of this change is available at http://isddc.dot.gov/.

DISTRIBUTION – SDL No. 139

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A													2	2	2	2	2		2							
B			3						2					10	1											
C							2				1												2			
D				1																						
E																										
F																										
G																										
H																										

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4. SUMMARY OF CHANGES. Table 5-4 was revised to eliminate ambiguity in the values for the limits of intensity for a given nominal range, and Table 6-2 was revised to correct values of intensities for red and green lenses with 0.3 and 0.4 second contact closures.

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Assistant Commandant for Systems

Encl: (1) Change 1 to the Aids to Navigation Visual Signal Design Manual

3. Table 5-3 lists the Blondel-Rey Correction Factors for Rotating Flash Panels. These correction factors are used to obtain the effective luminous intensity for rotating classical (assembled) lenses. The table is entered by multiplying the rotation rate of the lens assembly (R), times the form factor (F) of the flash panel. The form factors for classical (assembled) flash panels are found in Table 7-3, Uncorrected Intensities, Classical Flash Panels.

TABLE 5-3.

BLONDEL-REY CORRECTION FACTORS FOR ROTATING FLASH PANELS

RxF	B-R	RxF	B-R	RxF	B-R
2	.907	100	.362	900	.078
2.5	.895	120	.330	1000	.071
3	.880	140	.308	1200	.061
4	.860	150	.292	1400	.053
5	.838	160	.282	1500	.050
6	.820	180	.264	1600	.047
7	.800	200	.247	1800	.042
8	.790	225	.228	1900	.040
9	.778	250	.212	2100	.037
10	.760	275	.199	2200	.035
15	.710	300	.187	2500	.031
20	.664	350	.166	2600	.030
25	.627	400	.151	2700	.029
30	.593	450	.138	2800	.028
40	.538	500	.128	2900	.027
50	.490	550	.118	3200	.025
60	.462	600	.111	3300	.024
70	.431	650	.103	3600	.022
80	.407	700	.097	3800	.021
90	.382	800	.087	4000	.020

Example: What is the effective luminous intensity for a fourth order lens, with 90 degree flash panels, rotating at 3 rpm, and outfitted with the 120-volt 1000W lamp?

a. From Table 7-3, the uncorrected intensity for the given lens/lamp combination is 1,100,000 candela, and the form factor (F) is 75.

b. The B-R factor, from Table 5-3, is equal to: RxF = 225, B-R = 0.228.

c. A fourth order lens would normally be enclosed in a lighthouse lantern. A correction factor of 0.88 must be applied to account for lantern pane losses. Therefore, the effective luminous intensity of the signal is:

Ie = 0.88 x 0.228 x 1,100,000 candela ≅ 220,000 candela.

4. Table 5-4 lists nominal range (in nautical miles) versus the effective luminous intensities required to achieve the stated range. Note that nominal range is provided as an integer value.

TABLE 5-4

NOMINAL RANGE VS EFFECTIVE LUMINOUS INTENSITY

Effective Luminous Intensity (candela)			Nominal Range (nautical miles)
1	to	2	1
3	to	9	2
10	to	23	3
24	to	53	4
54	to	107	5
108	to	203	6
204	to	364	7
365	to	632	8
633	to	1,065	9
1,066	to	1,757	10
1,758	to	2,843	11
2,844	to	4,533	12
4,534	to	7,134	13
7,135	to	11,106	14
11,107	to	17,123	15
17,124	to	26,181	16
26,182	to	39,737	17
39,738	to	59,920	18
59,921	to	89,825	19
89,826	to	133,949	20
133,950	to	198,801	21
198,802	to	293,770	22
293,771	to	432,392	23
432,393	to	634,125	24
634,126	to	926,900	25
926,901	to	1,350,655	26
1,350,656	to	1,962,539	27
1,962,540	to	2,844,148	28
2,844,149	to	4,111,561	29
4,111,562	to	5,930,110	30

CHAPTER 6. EFFECTIVE LUMINOUS INTENSITIES OF OMNIDIRECTIONAL LANTERNS

A. Introduction. This chapter provides tables on the effective luminous intensities for standard omnidirectional lanterns, including the 155mm lantern (Table 6-1), 200mm lantern (Table 6-2), 250mm lantern (Table 6-3), and 300mm lantern (Table 6-4). The effective luminous intensities for classical (assembled) omnidirectional lenses (Table 6-5) are also provided.

1. Table 6-1 lists the effective luminous intensities for the 155mm lantern outfitted with 12-volt marine signal lamps, up to and including the 2.03A lamp. The table is broken down by lens color, lamp size, and contact closure time. Note that CC-8 filament lamps and tungsten-halogen lamps cannot be used in the 155mm lantern. This lantern may be placed on all types of structures, including wooden, single-pile structures.

TABLE 6-1.

EFFECTIVE LUMINOUS INTENSITIES—155 MM LANTERN (ACRYLIC LENS)

Lens	Lamp	CONTACT CLOSURE TIME (seconds)								
		0.3	0.4	0.5	0.6	0.8	1	2	3	Fixed
		Effective Luminous Intensity (candela)								
Clear	12V 0.25A	25	30	35	35	40	40	45	45	50
	0.55A	60	70	80	85	90	95	110	110	120
	0.77A	90	110	120	130	140	150	160	170	180
	1.15A	120	150	160	180	190	210	230	240	260
	2.03A	190	260	300	330	370	390	440	460	500
Yellow	12V 0.25A	20	25	25	25	30	30	35	35	35
	0.55A	45	55	60	65	70	70	80	85	90
	0.77A	65	80	90	95	100	110	120	120	130
	1.15A	85	110	120	130	140	150	170	180	190
	2.03A	140	190	220	240	270	290	330	340	370
Red	12V 0.25A	8	9	10	10	10	10	15	15	15
	0.55A	20	20	25	25	25	30	30	35	35
	0.77A	25	30	35	35	40	40	45	50	50
	1.15A	35	40	45	50	55	60	65	70	75
	2.03A	55	75	85	95	110	110	130	130	140
Green	12V 0.25A	10	10	10	15	15	15	15	15	20
	0.55A	20	25	30	30	35	35	40	40	45
	0.77A	35	40	45	45	50	55	60	60	65
	1.15A	40	55	60	65	70	75	85	85	95
	2.03A	70	90	110	120	130	140	160	170	180

2. Table 6-2 lists the effective luminous intensities for the 200mm lantern (glass lens) outfitted with 12-volt marine signal lamps, up to and including the 3.05A lamp. The table is broken down by lens color, lamp size, and contact closure time. Note that CC-8 filament lamps and tungsten-halogen lamps cannot be used in the 200mm lantern. The 200mm lantern is used on beacons where light to moderate icing is anticipated. This lantern may be placed on all types of structures, including wooden, single-pile structures.

TABLE 6-2.

EFFECTIVE LUMINOUS INTENSITIES—200MM LANTERN (GLASS LENS)

Lens	Lamp	CONTACT CLOSURE TIME (seconds)								
		0.3	0.4	0.5	0.6	0.8	1	2	3	Fixed
		Effective Luminous Intensity (candela)								
Clear	12V 0.25A	15	20	20	20	25	25	25	30	30
	0.55A	40	45	55	55	60	65	70	75	80
	0.77A	60	70	80	85	90	95	110	110	120
	1.15A	80	100	110	120	130	140	160	170	180
	2.03A	150	190	230	250	280	300	340	350	380
	3.05A	—	230	280	320	370	400	460	480	520
Yellow	12V 0.25A	8	9	10	10	10	10	15	15	15
	0.55A	20	20	25	25	25	30	30	35	35
	0.77A	25	30	35	40	40	45	50	50	55
	1.15A	35	45	50	55	60	65	75	75	80
	2.03A	65	85	100	110	130	130	150	160	170
	3.05A	—	100	130	140	170	180	210	210	230
Red and Green	12V 0.25A	3	4	4	4	5	5	5	6	6
	0.55A	8	9	10	10	10	15	15	15	15
	0.77A	10	15	15	15	20	20	20	20	25
	1.15A	20	25	25	25	35	30	30	35	35
	2.03A	30	40	45	50	55	60	70	70	75
	3.05A	—	45	55	65	75	80	95	95	100