Prevention (Marine Safety) Department

Navigation System Division

AtoN DISCREPANCY REVIEW

PRESENTATION OBJECTIVES

- To acquire a general knowledge of the responsibilities of the Auxiliary for checking aids for discrepancies.
- To understand the three categories of aid to navigation discrepancies.
- To help an Auxiliarist to recognize a discrepancy to an aid to navigation.

Discrepancy Categories

CRITICAL

URGENT

ROUTINE

Definition of CRITICAL

CRITICAL

This term is used for those discrepancies where failure to report by the most expeditious means may result in loss of life or damage to a vessel.

CRITICAL Discrepancies

CRITICAL

If a Federal Aid or a PATON is listed in the Light List (Class I and II), report at once to the C.G. ANT by the most expeditious means.

Definition of URGENT

URGENT

This term is used for those discrepancies where failure to report will not result in loss of life or vessel damage, but may contribute to a grounding or a stranding.

URGENT Discrepancies

URGENT

If a Federal (or Private Aid is listed in the Light List - Class I or II), report at once to the C.G. ANT by the most expeditious means.

Definition of ROUTINE

ROUTINE

This term is used for those discrepancies where failure to report will result in very low likelihood of grounding or stranding, but corrective maintenance is necessary.

ROUTINE Discrepancies

ROUTINE

Forward a hard-copy report to your C.G. ANT through your Auxiliary Unit Coordinator

by mail.

Auxiliary Unit Coordinator

This is reference to the Auxiliarist assigned to screen AtoN reports before they are presented to the Coast Guard – AUX Quality Control

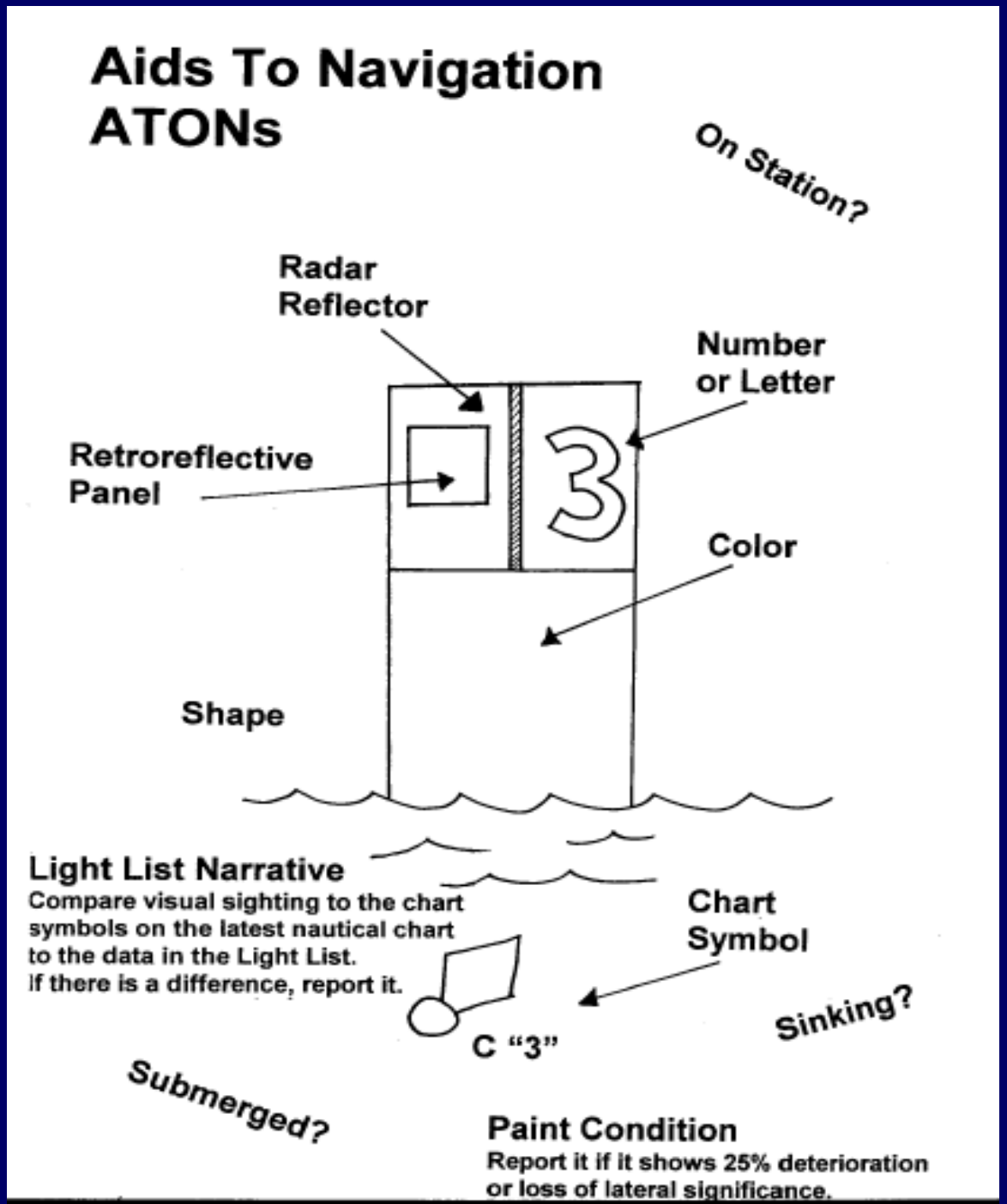
Should be AV-Aid Verifier qualified.

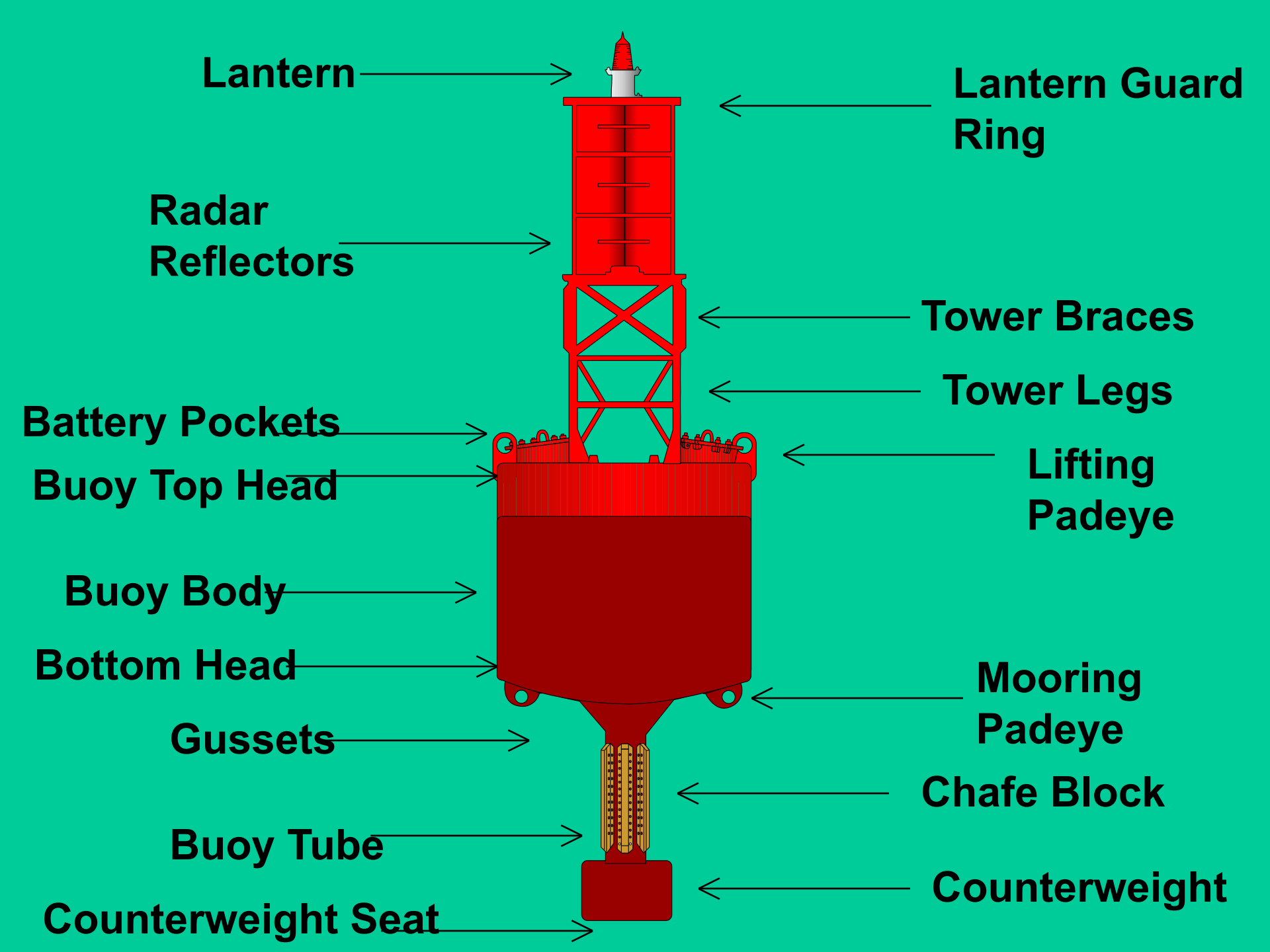
Often is a Auxiliary liason assigned to a particular CG ANT, Cutter or CG Agency that manages the aids to navigation in the AOR.

A I D

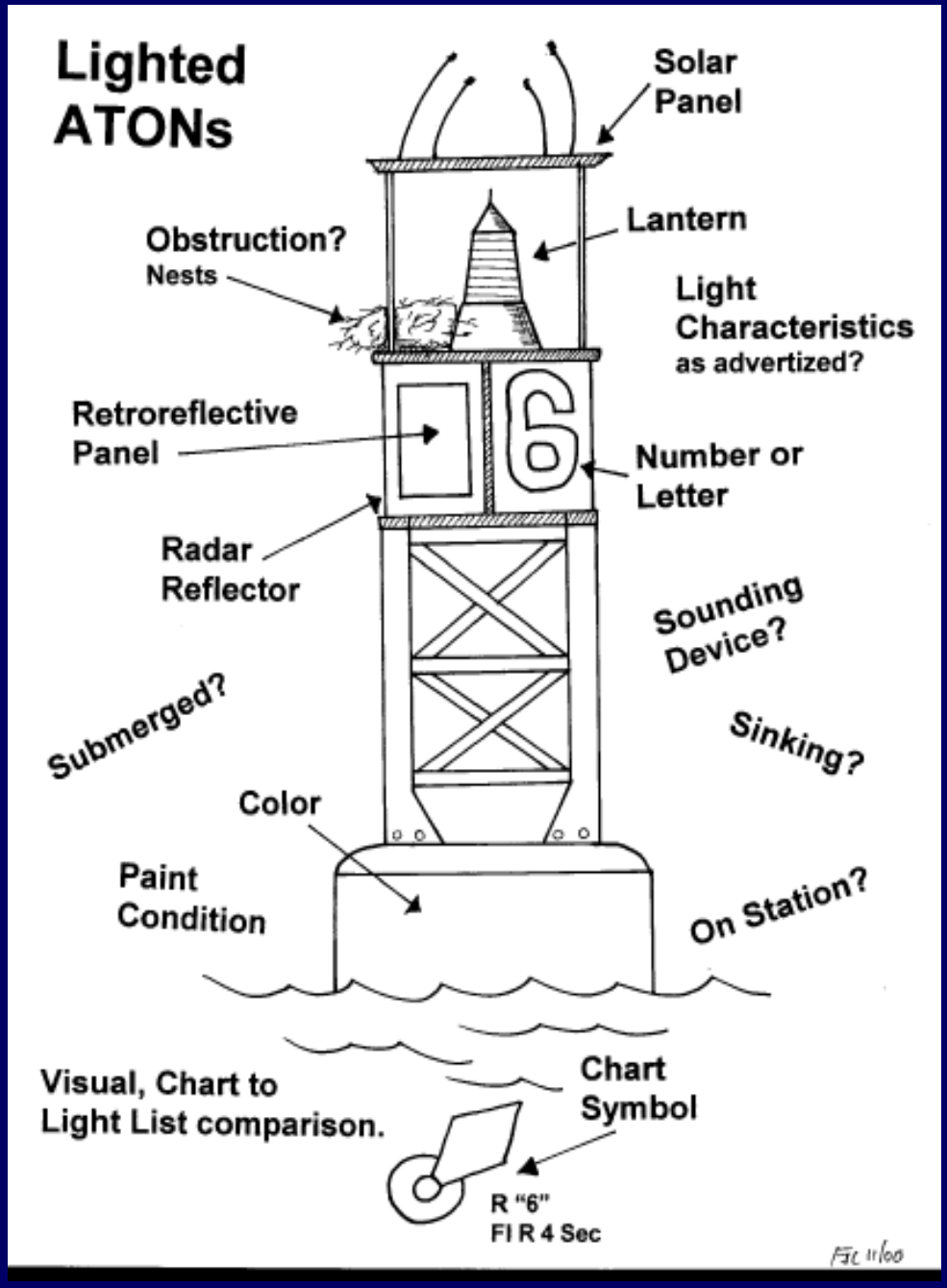
D E F E C T S

Aids To Navigation ATONs




Lantern
Lantern Guard Ring
Radar Reflectors
Tower Braces
Tower Legs
Battery Pockets
Buoy Top Head
Lifting Padeye
Buoy Body
Bottom Head
Mooring Padeye
Gussets
Chafe Block
Buoy Tube
Counterweight
Counterweight Seat

MORE ISSUES


Lighted ATONs
Solar Panel
Lantern
Obstruction?
Nests
Light Characteristics
as advertized?
Retroreflective Panel
6
Number or Letter
Radar Reflector
Sounding Device?
Submerged?
Sinking?
Color
Paint Condition
On Station?
Visual, Chart to Light List comparison.
Chart Symbol
R "6"
Fl R 4 Sec
FJL 11/00


3

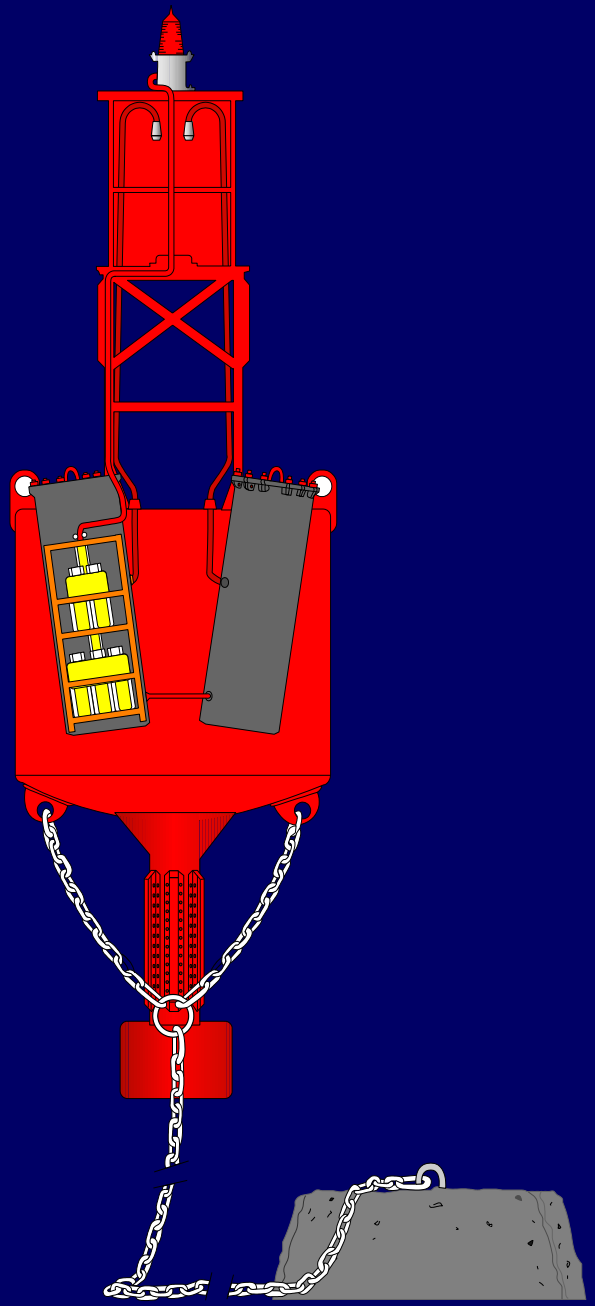
Battery Pockets

- **Battery Pockets:**

  Hollow watertight tubes built into the buoy body that hold the batteries.

Still a concern even when the new LED light fixtures are used.

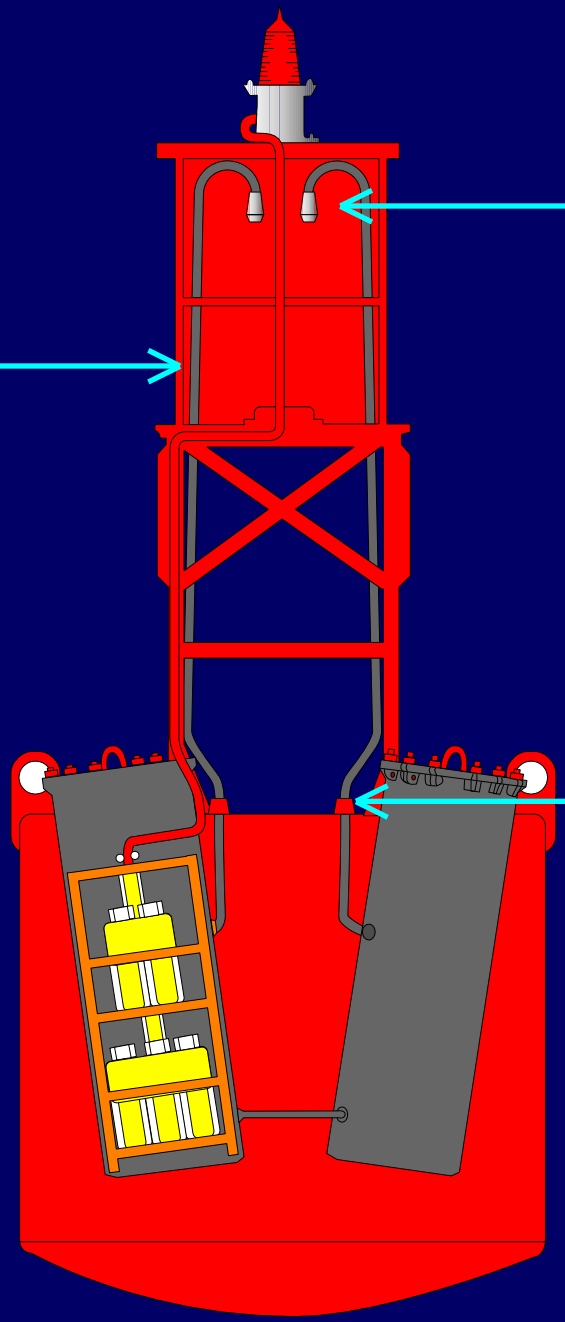
Check that snorkel is intact and the tubes are intact at the hull even when a new LED lantern is used.



The reason for the venting system on Lighted Buoys

- The batteries used in lighted buoys require a continuous means of airflow.
- Primary batteries require oxygen from the air to operate.
- While secondary (solar) batteries must vent flammable hydrogen gasses.

Vent System



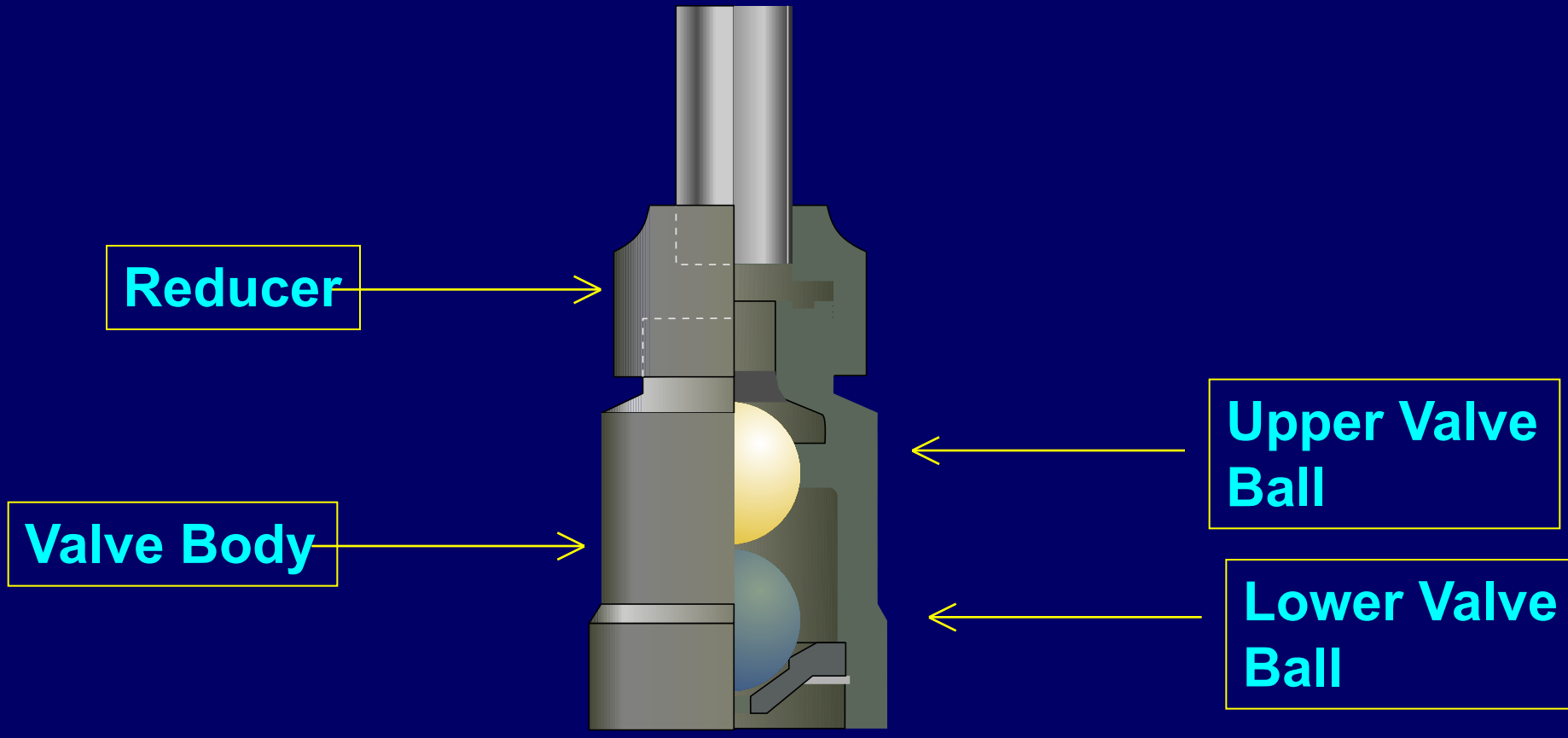
Vent Valve

Vent Line

Tube at the hull

Vent Valve

Designed to seal when the buoy heels over 30 degrees or is submerged.



Battery Box

- There are single and double battery boxes.
- A vent valve must be installed.
- Box may be painted the color of the buoy.

Sound Systems

There are three main types of wave actuated sound signals:

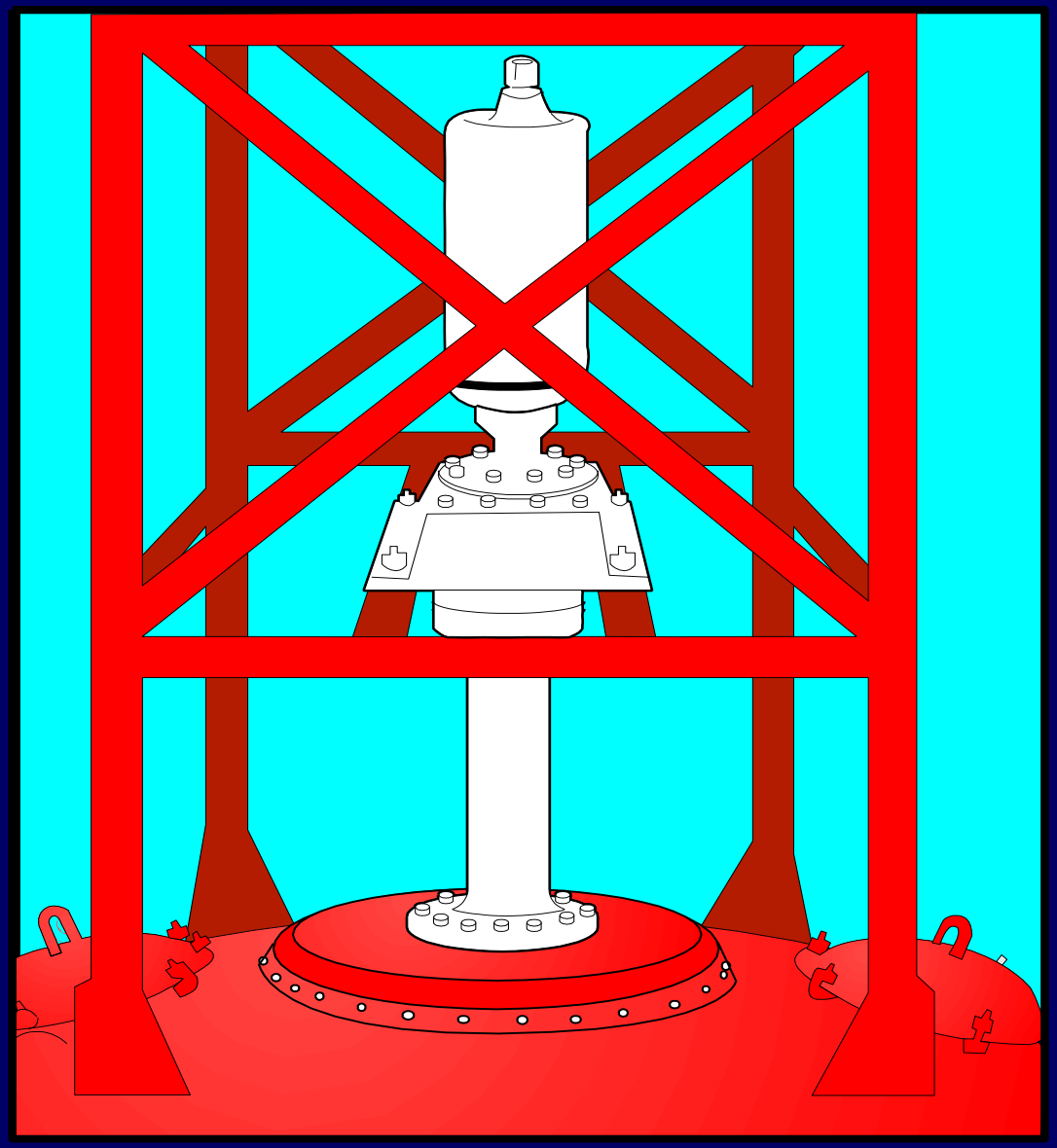
Whistle

Bell

Gong

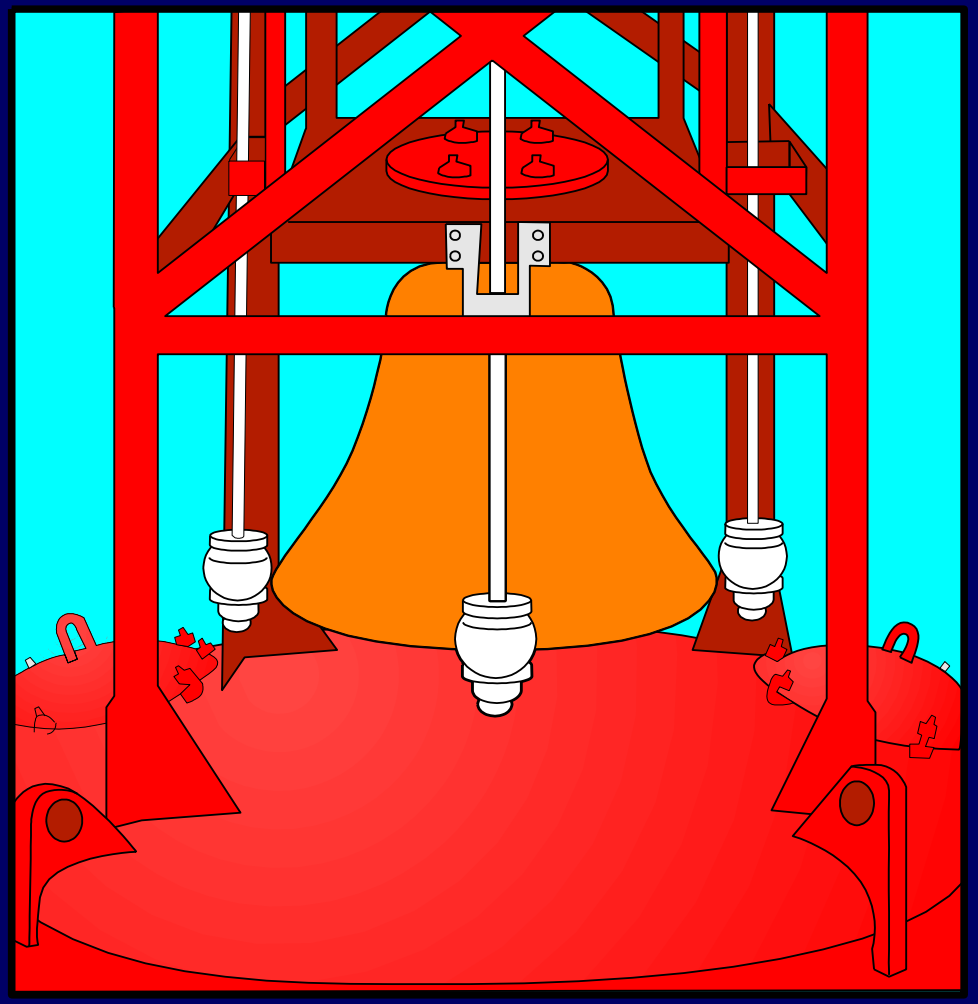
Whistle

- Whistle is made of cast bronze and is mounted inside the cage.
- As air is forced through the whistle, the familiar drone sound is made.



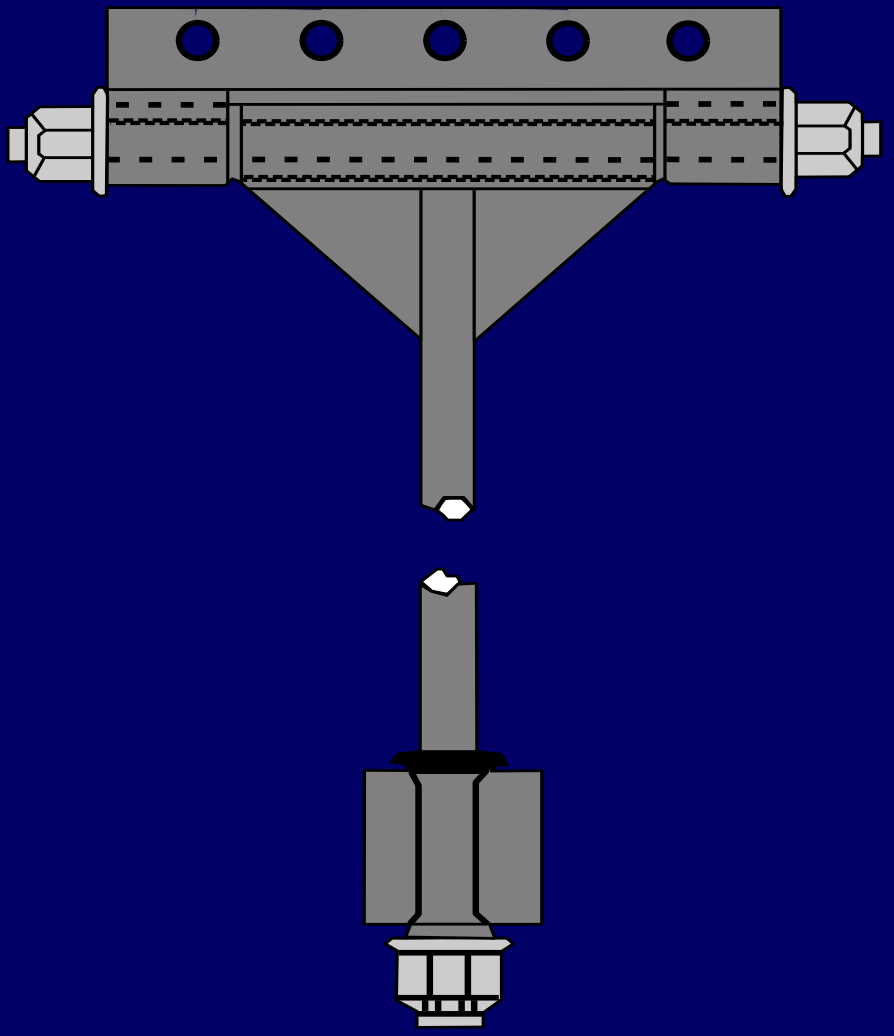
BELLS

- Bells used on lighted and unlighted buoys and are made of a copper-silicon alloy.
- External tappers impact the fixed bell when wave motion causes the buoy to roll.



1975 Type Tapper

- This type tapper is a modification of the 1962 type. The tapper balls come in various sizes and have been designed to minimize vibration. (Standard)



LED LANTERN

(Light Emitting Diode)

Introduction

- MFG by Carmanah of Canada.
- Approved as a replacement for the 155 mm.
- Used with a 5NFR/5CFR to replace old style TRLB.
- Cost $749.00.
- Programmable flash rhythm by remote.

Model 701

- Self-powered.
- Omni-directional.
- Single Unit-Solar panels, flasher, battery, DLC and lantern housed together.
- 3 mile range.

Model 701

- Available in **RED,**, **GREEN,**, **YELLOW**, and **WHITE.**
- Programmable flash characteristic.
- FIXED characteristic has 2 mile range.

Model 702

- Larger battery.
- More Solar Panels.
- Designed for use in limited sunlight.
- Same features as 701.

Model 702-5

- Same as 702.
- Extra solar panel on top.
- Designed for extremely limited sunlight (less than 1.5 hrs a day).

Model 601

- Not approved for use by USCG.
- 2 NM range.
- Self-contained.
- May be used on private aids.
- Small, lightweight, easy to install, inexpensive.

Programming the light characteristic:

- Lantern color determined by colored dot near serial number.
- Any flash characteristic can be programmed using a Universal TV remote control.
- Security code must be entered to prevent accidentally changing characteristic.
- Follow instructions supplied with lantern.

Installing the lantern:

- Install with three bolts similar to a 155.
- Use leveling bolts on a structure.
- Bolts can obstruct solar panels, make sure they protrude only as much as necessary.
- Install nylon insulating spacer on buoys to minimize corrosion.

Service Life of Lantern

- LED lanterns do not burn out.
- Light output degrades over time.
- Replace lanterns according to Duty Cycle.
- 10-29% duty cycle replace every 12 yrs.
- 30-100% replace every 8 years.
- Replace battery every 4 years.

Coast Guard servicing an Aid


49418
U. S. COAST GUARD

Maneuvering into position near the aid.


Pulling the buoy.


Placing the buoy on deck.

Servicing the harness.

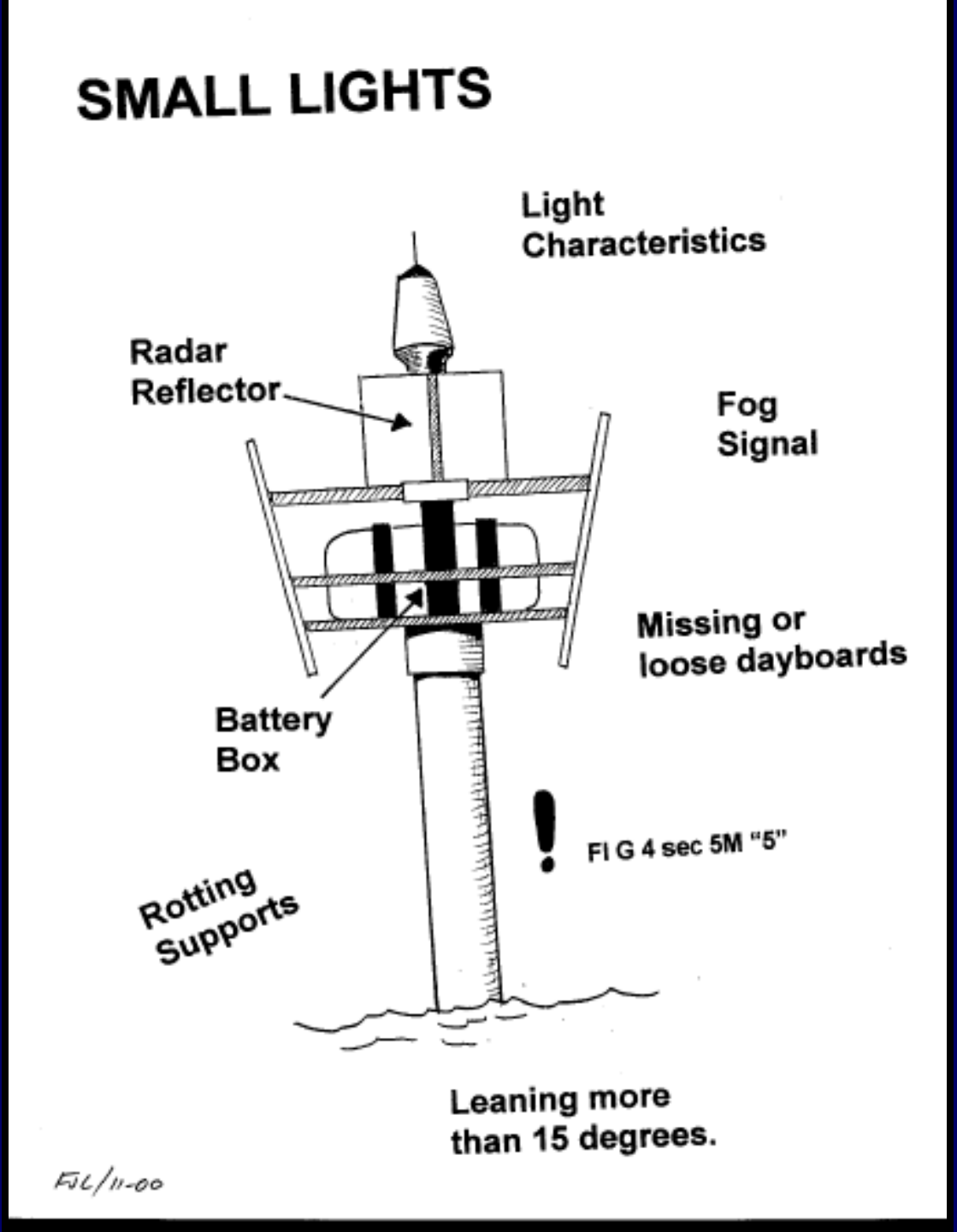

Inspecting the
chain and anchor

Servicing the lantern.


Faking out the chain
in preparation to
resetting the buoy.

Aid is put back on station

Small Lights and Daymarks

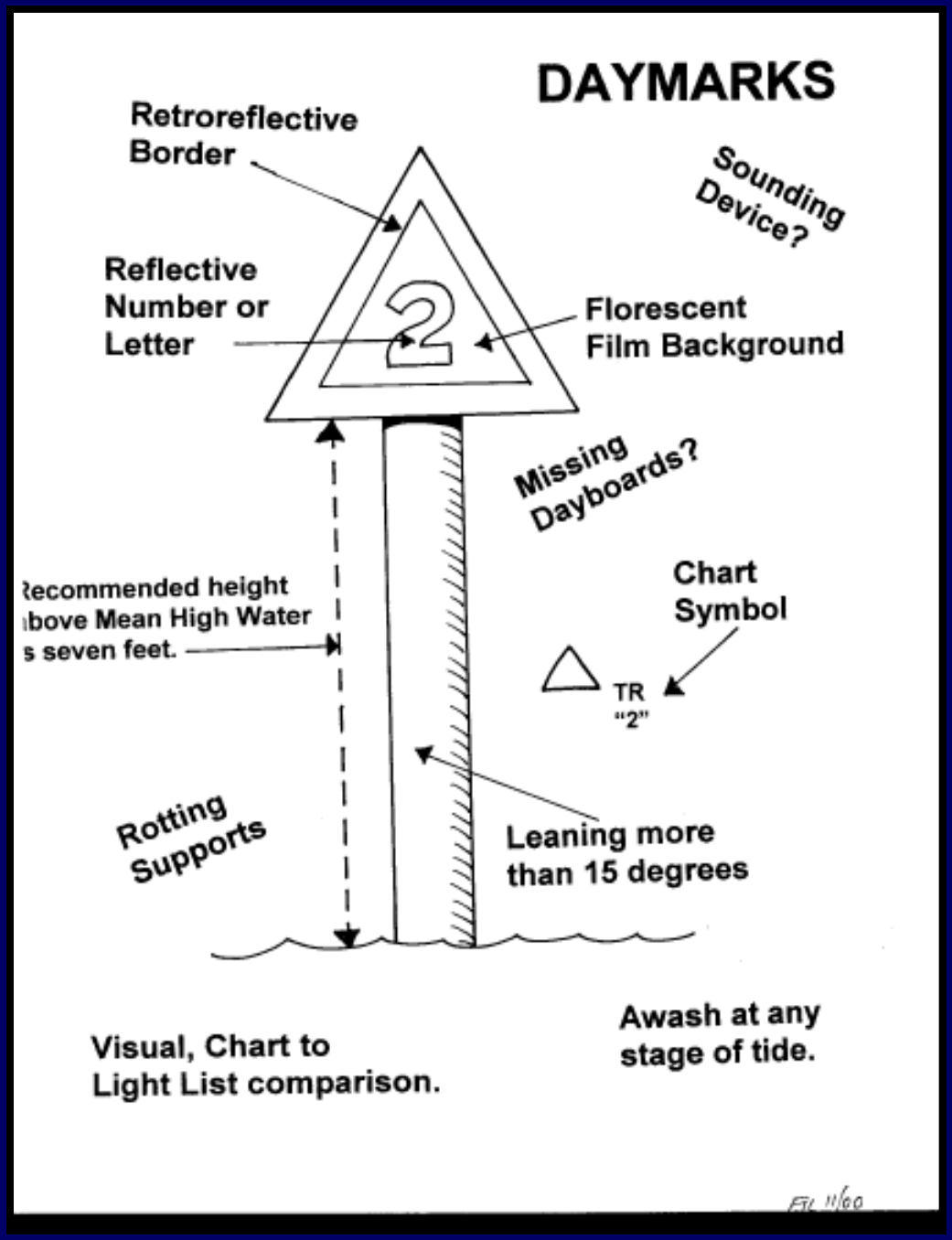


Don't get too close to this ATON!

Always stay in the channel.

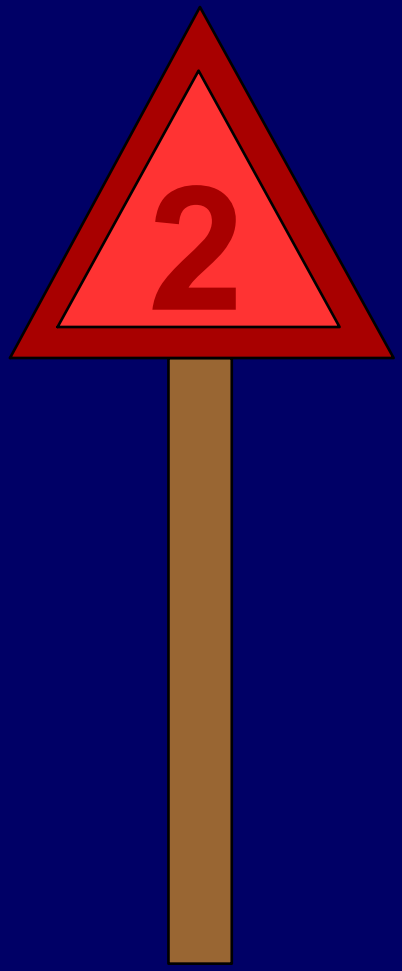
Check after storms.

Panels are designed to break away so that high winds or waves will not destroy the supporting pile or structure.



Single Pile Structure

- Used in protected or semi-exposed locations where *fixity* can be attained.



Multiple Pile Structures

- Used when *fixity* can not be achieved with single pile.
- Two categories:

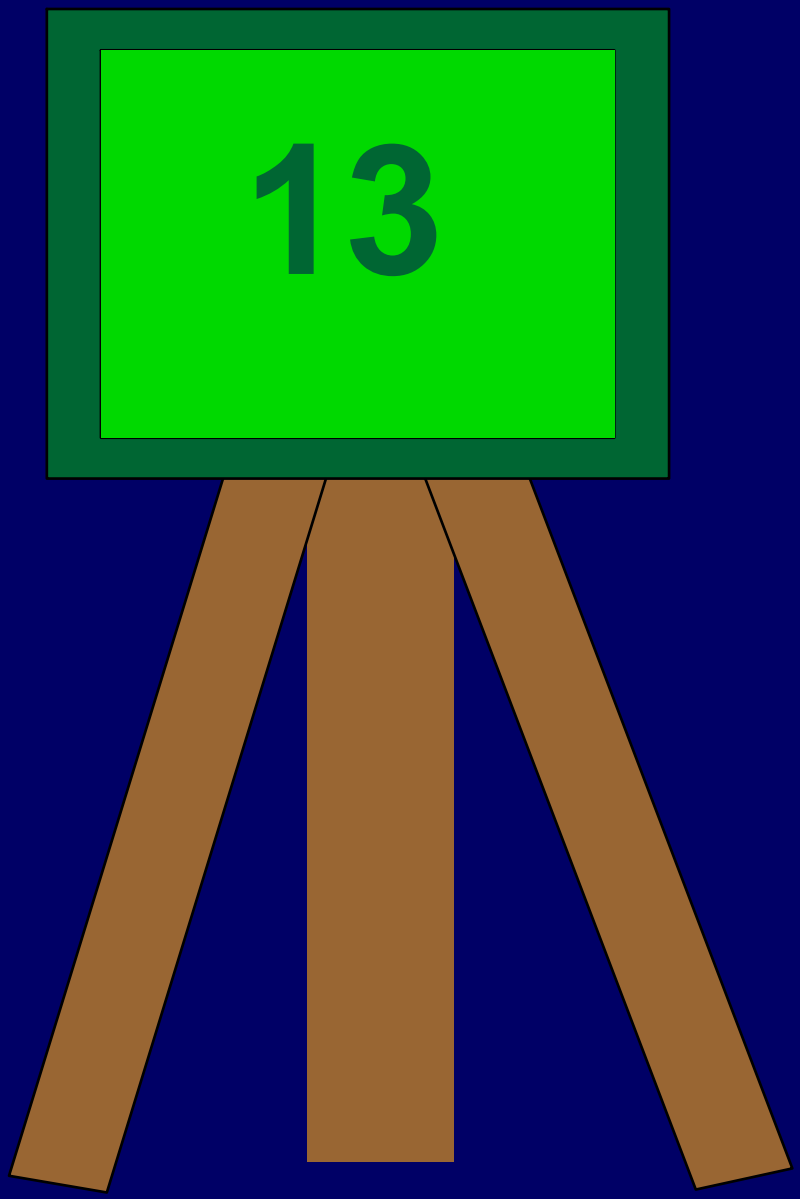
Dolphin

Platform Structure

Dolphin

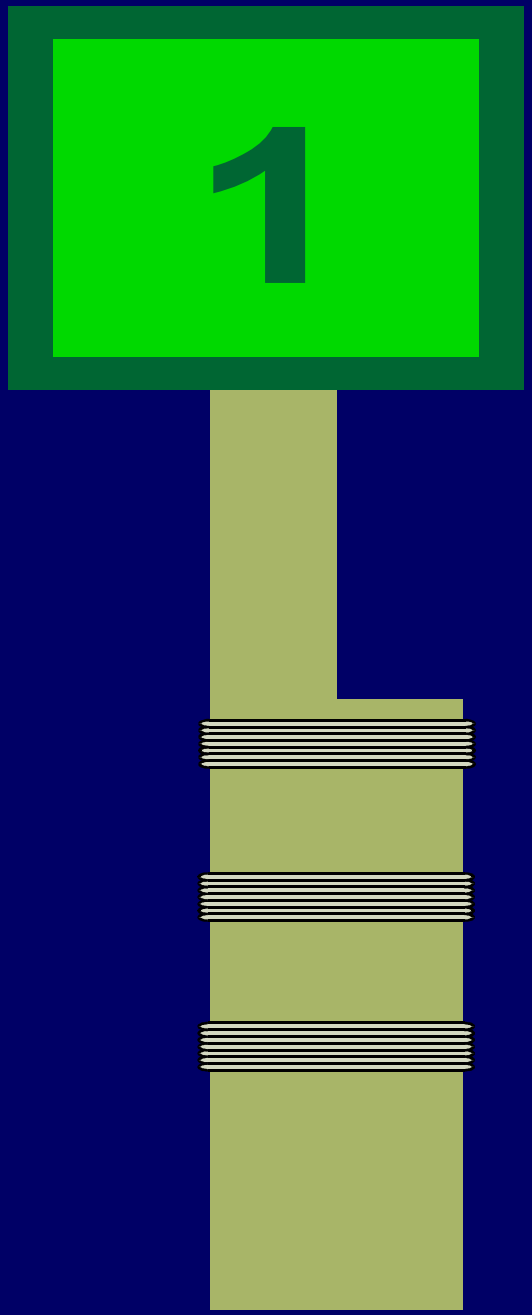
- **Battered pile**

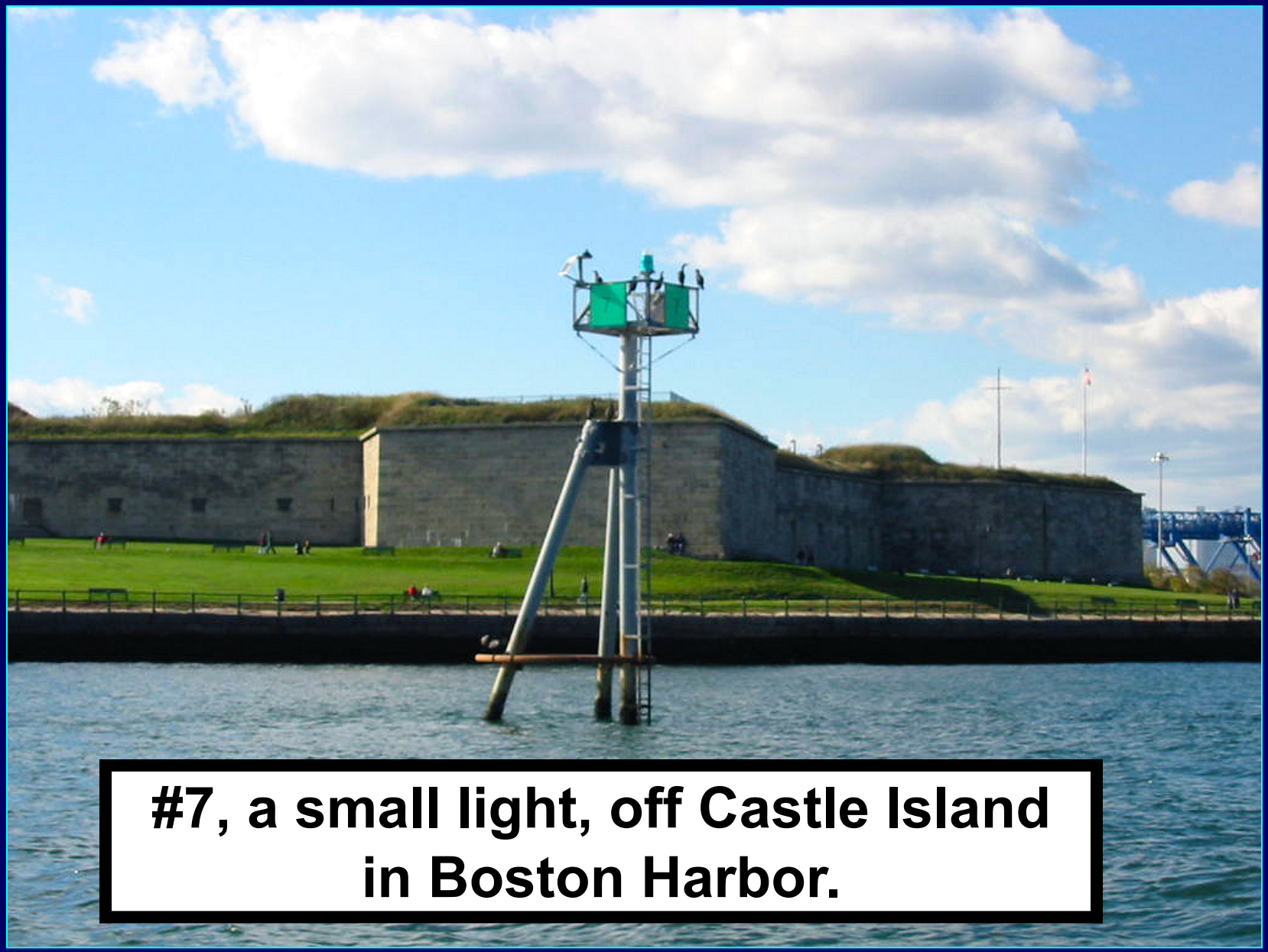
  Three to seven piles driven ***at an angle*** with the bottoms spread and the tops secured with ***wire rope*** or bolts and shear connectors.



Dolphin

- **Cluster pile**
  - Three or more piles driven *vertically* with their surfaces in contact with each other and wrapped tightly at various heights.





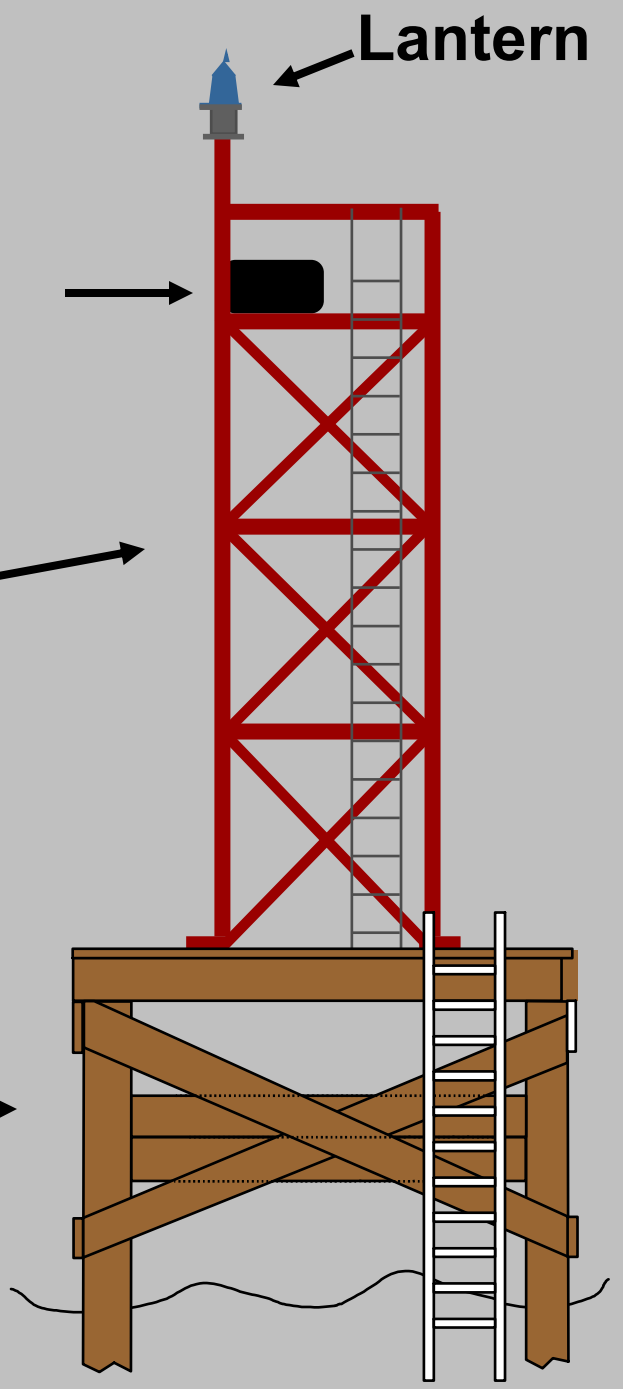
#7, a small light, off Castle Island in Boston Harbor.

Platform Structure

Things to check on this aid.

more separate
en *vertically*,
d at the top by a
hat spreads the
all the piles.
the foundation

for skel

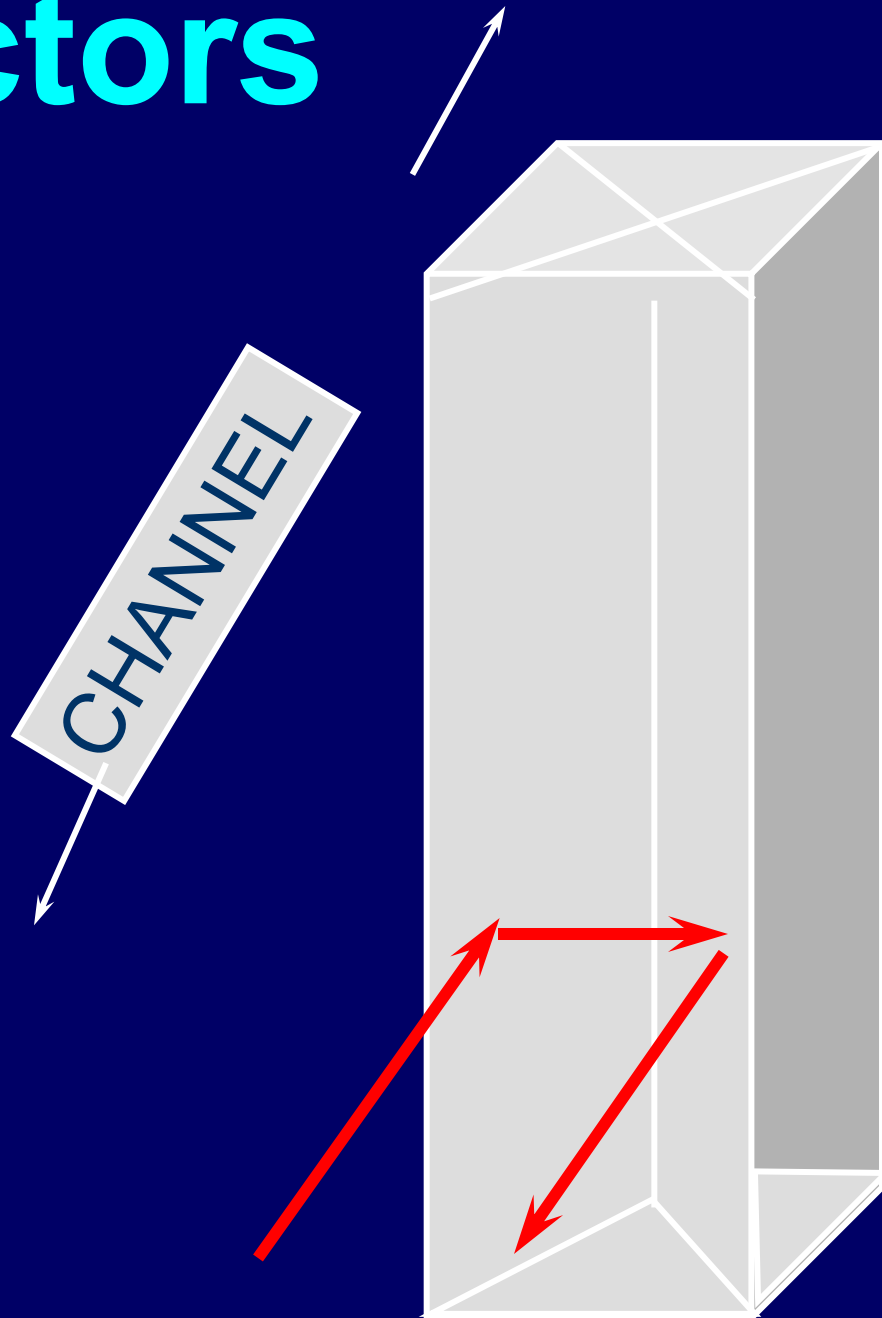


Battery Box

- Large box is designed to hold up to 4 secondary batteries.
- Small box is designed to hold up to 2 secondary batteries.
- Single battery boxes are available commercially and are acceptable as long as they are white in color.

Radar Reflectors

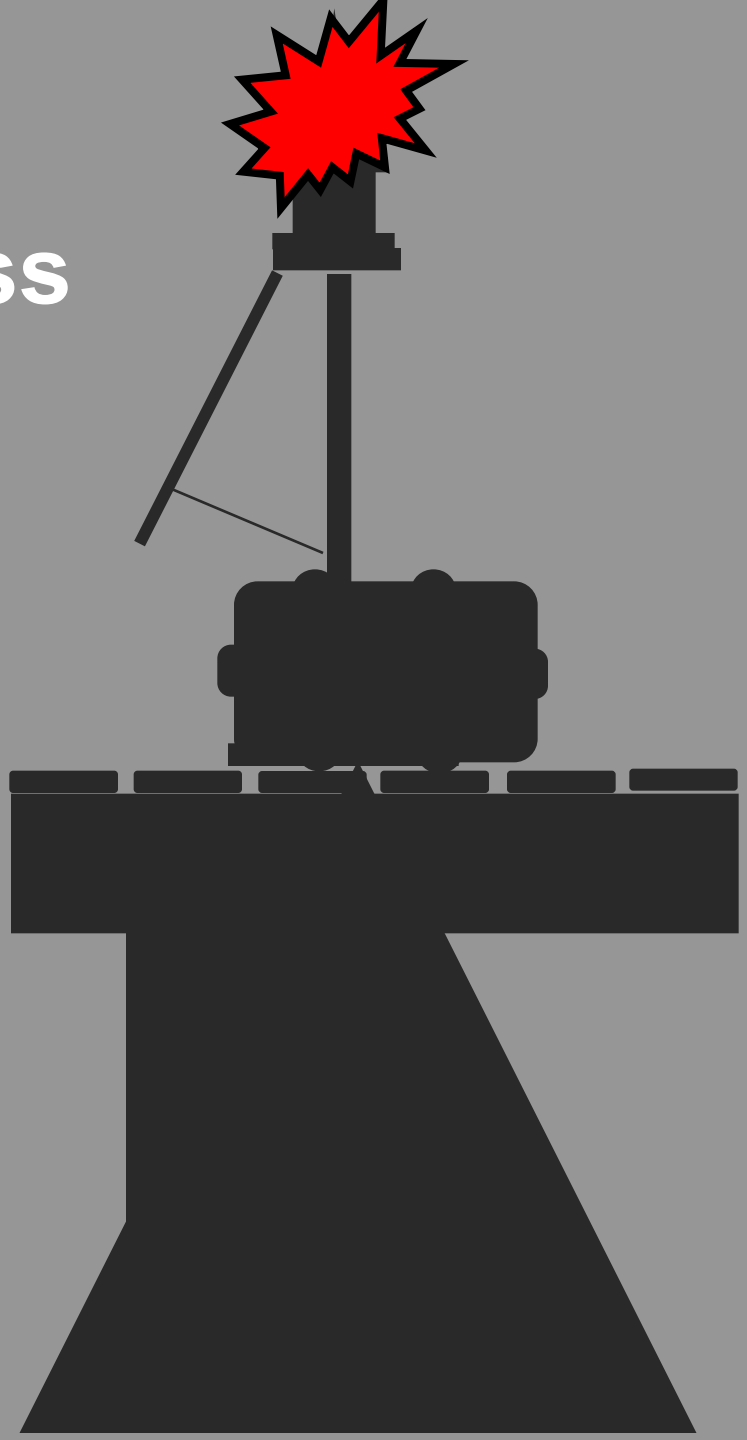
- Installed when the reflectivity of the structure doesn't meet operational requirements.
- A standard radar set should detect it at 1.5 to 2 NM when mounted 10 ft above the water.
- Must be properly oriented to the channel.



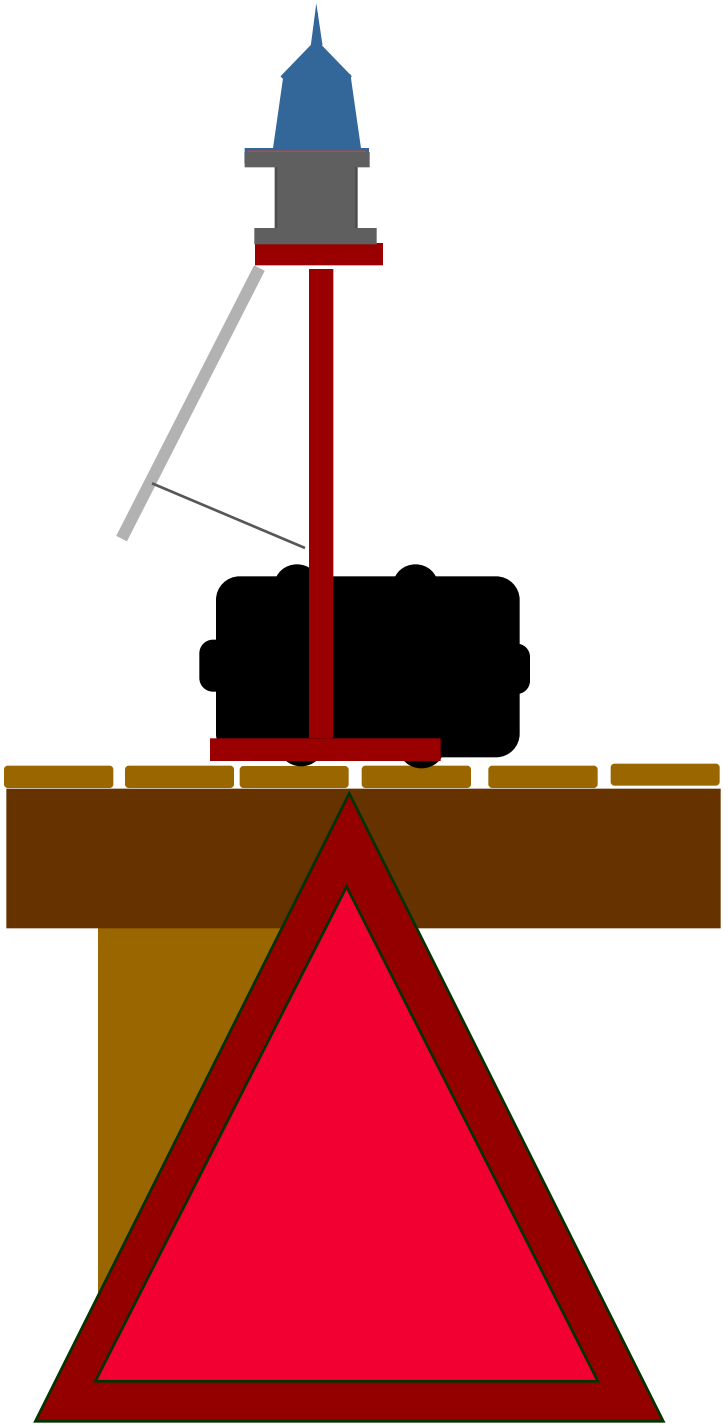
Dayboards

- A dayboard shall always be installed for maximum utility.
- The dayboard should be the dominant component of the silhouette with the battery box hidden behind it.

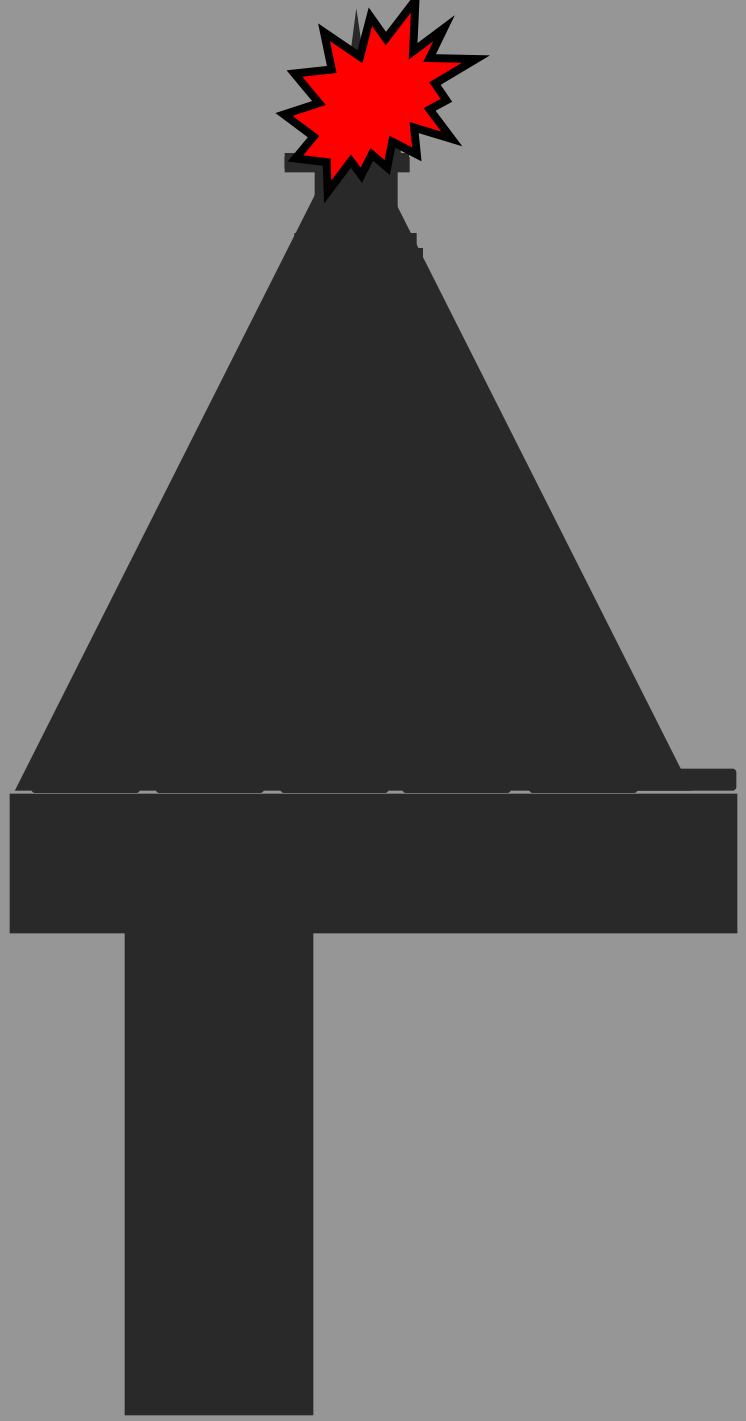
On what side should you pass this mark?



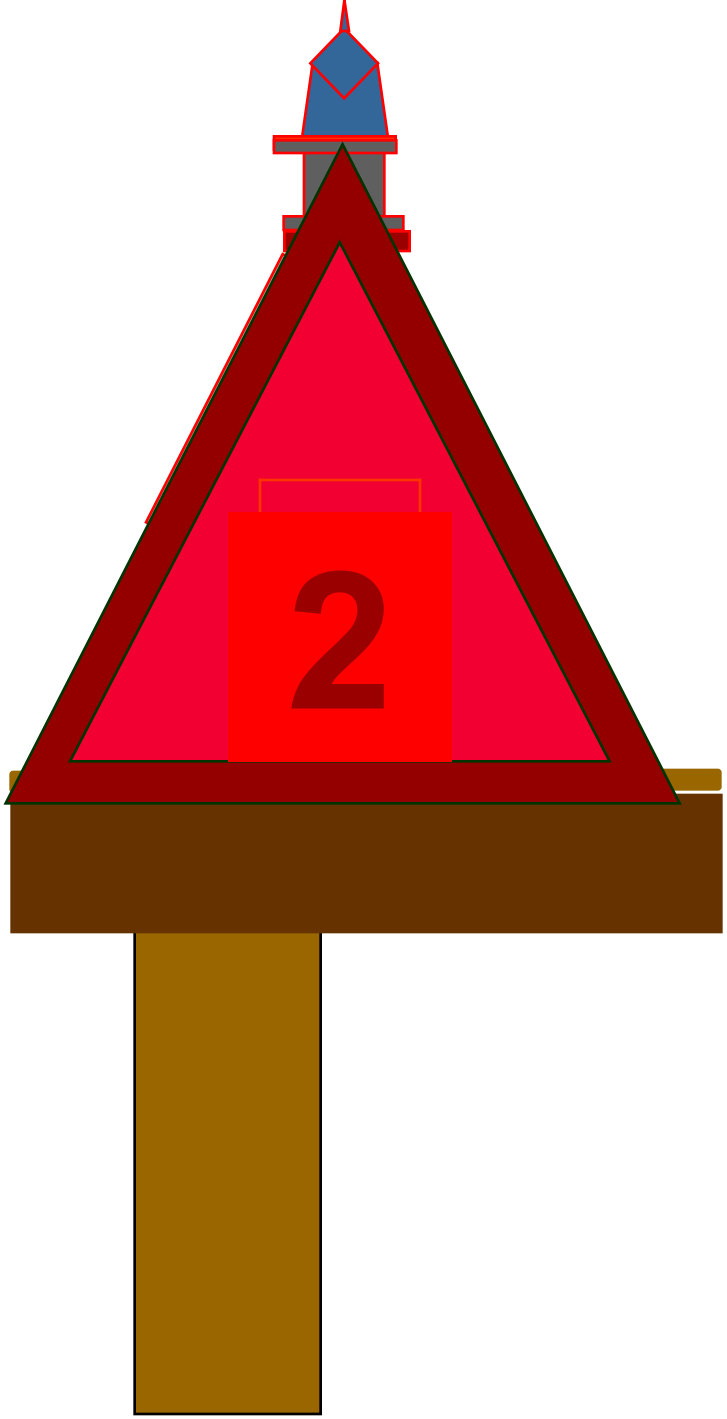
It is a little easier to make the decision in the daylight!



Raising the dayboard makes it more obvious.



What's wrong with this daymark?



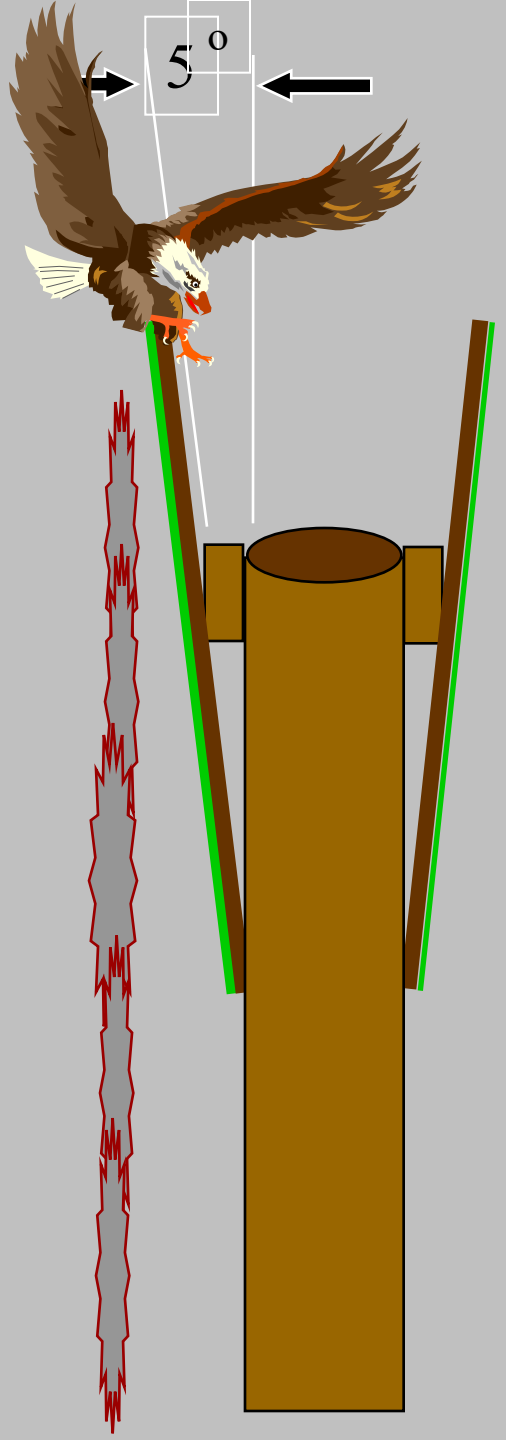
Mounting Dayboards

- Dayboards should be fastened so the dayboard becomes sacrificial in high winds.
- Dayboards shall be fastened to meet or exceed a lifetime of 5 years.
- The fasteners shall not pierce the retro-reflective border or characters.

Mounting

Dayboard may be installed approximately 5 degrees from vertical.

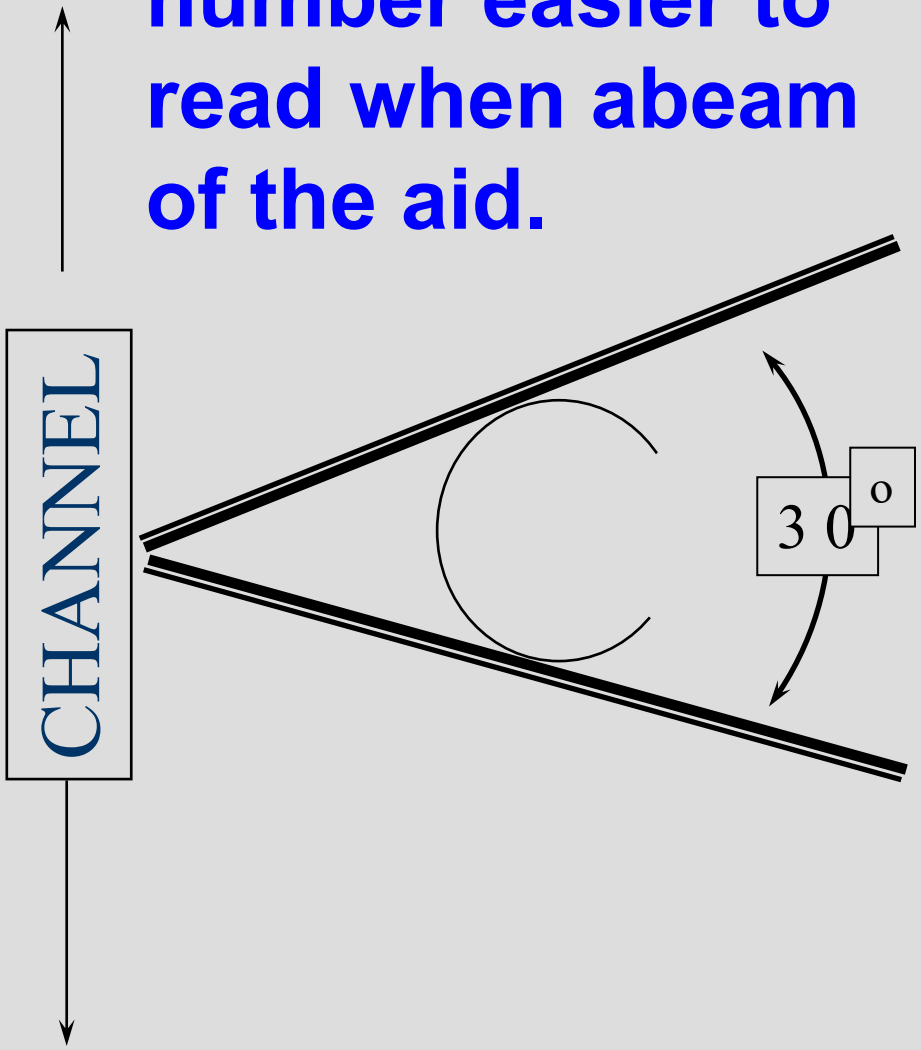
Do you know why?



Mounting

- Whenever possible, dayboards shall be mounted on an angle to the channel.
- The angle will vary to best suit the channel.
- In a straight channel, about 30 degrees.

This makes the number easier to read when abeam of the aid.

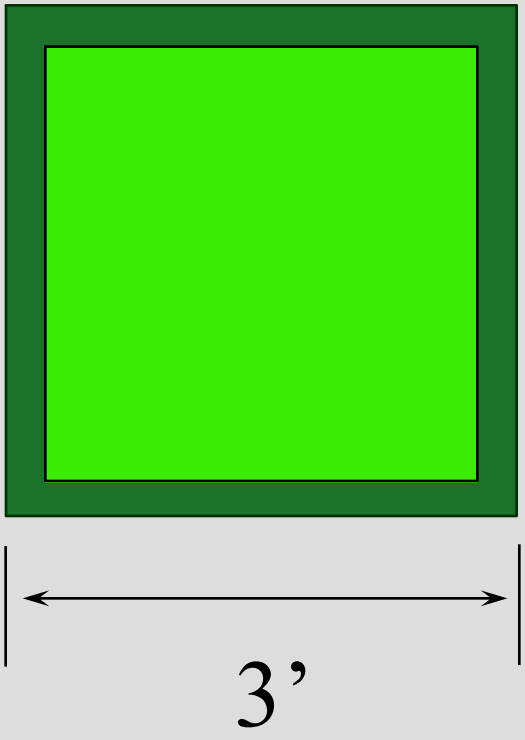


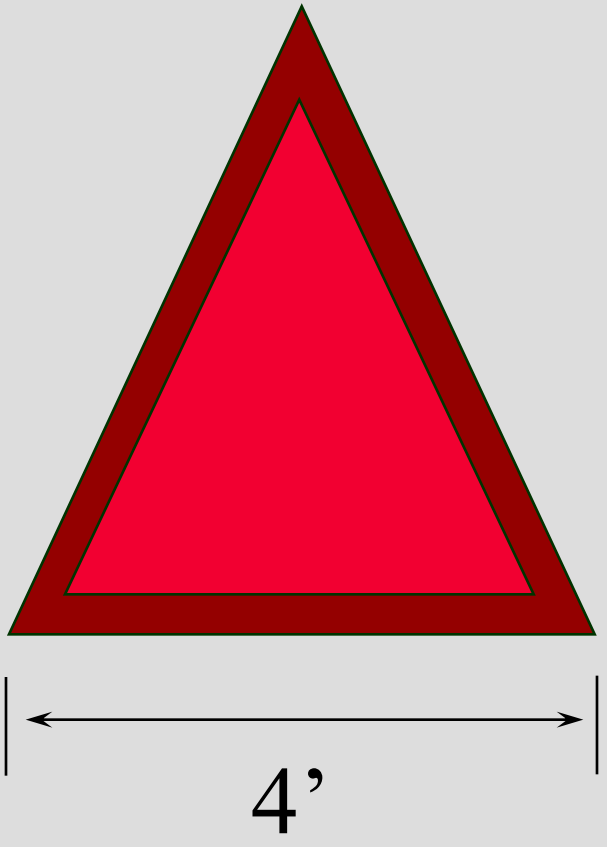
Dayboards

- Dayboards differ in size and shape depending on the marking system and their specific function.
- Each dayboard has a designator composed of a number followed by a group of letters.

Dayboards

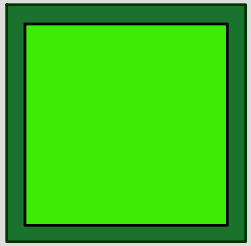
- **The first number indicates the width of the dayboard in feet.**



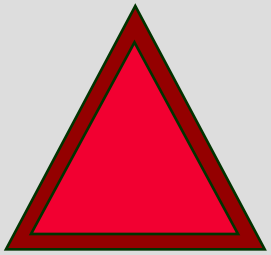


Dayboards

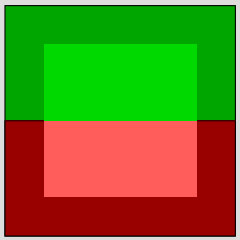
The next letter refers to the shape or purpose of the dayboard.



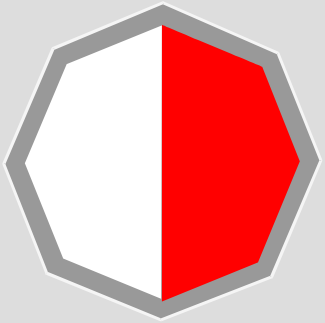
S-Square



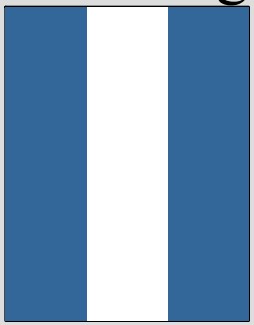
T-Triangle



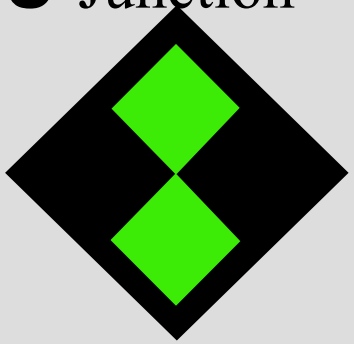
J-Junction



M-Mid-Channel



K-Range



N-No Lateral Significance

Dayboards

The second letter represents the key or background color.

R- Red

G- Green

W- White

B- Black

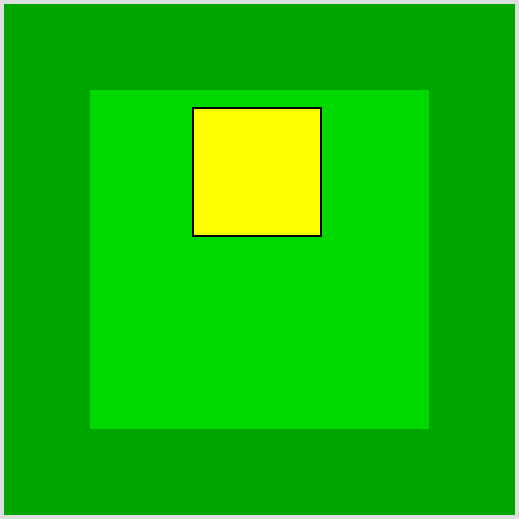
Dayboards

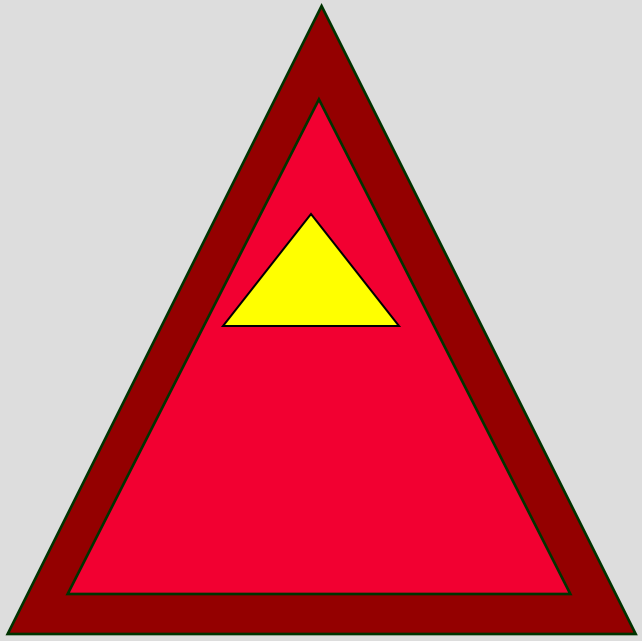
Additional information is shown by letters placed after a dash (-)

I - Intracoastal

SY - yellow square

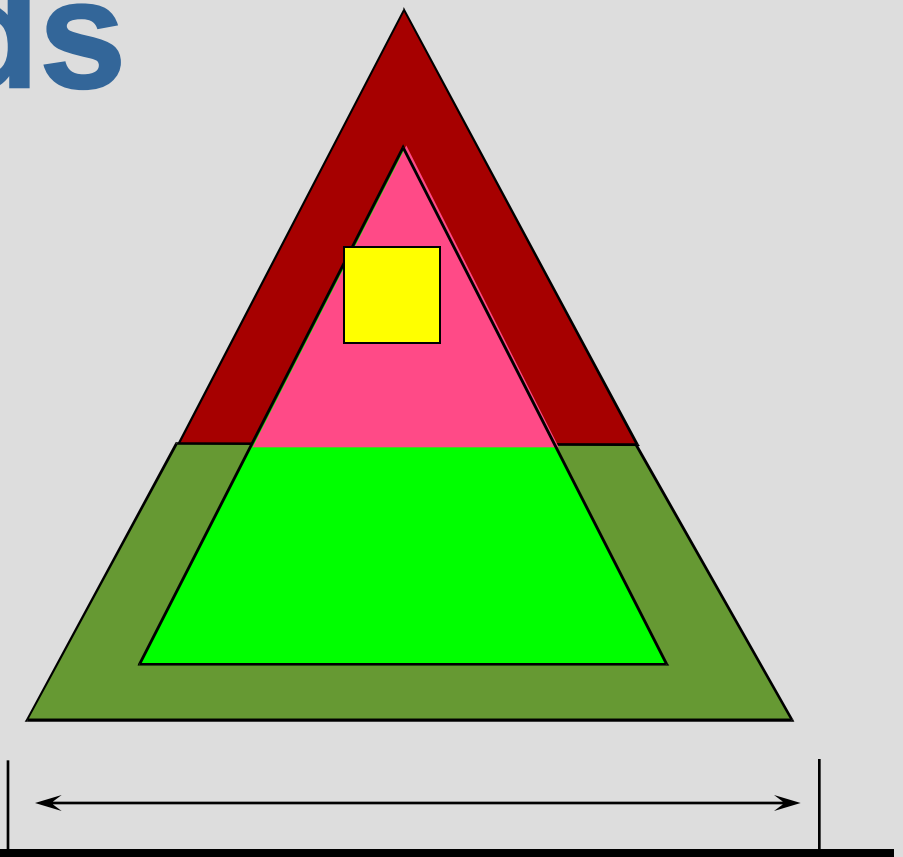
TY - yellow triangle





Dayboards

4JR-SY



(4) Aid has 4 foot base – **(J)**is used for channel junction – **(R)**functions as a nun in main channel – **(SY)**is used as a "**Dual Purpose**" aid (can) on the **ICW**.

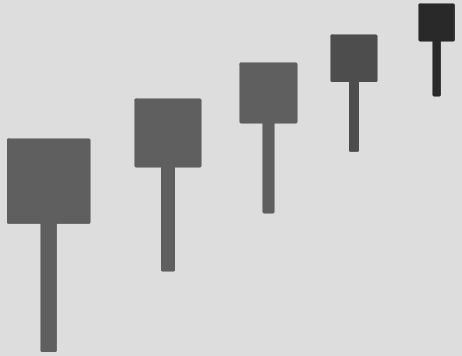
Detection Range

- As a mariner approaches a dayboard from a distance it is first detected as an object apart from its surroundings.

This is the detection range

Recognition Range

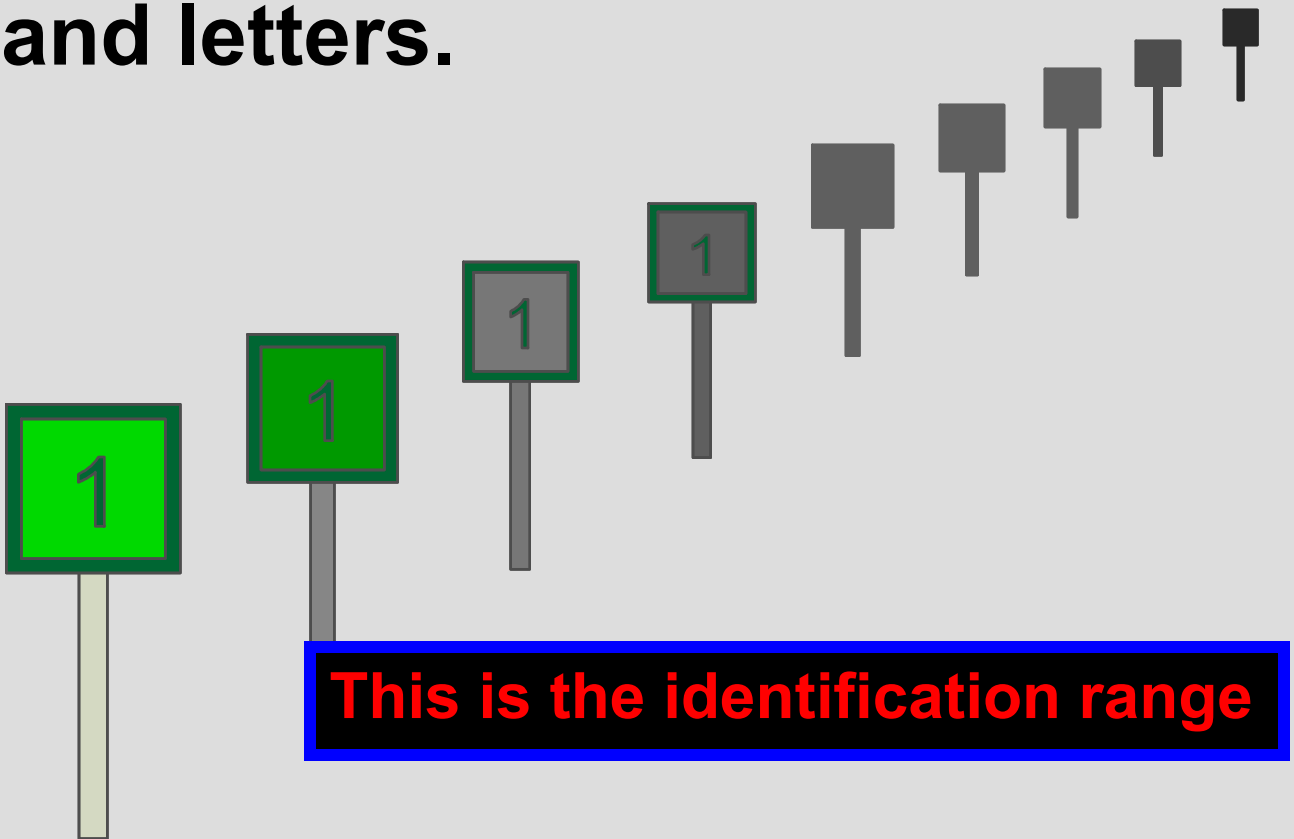
- Upon coming closer to the dayboard, it can be recognized as an aid to navigation.



This is the recognition range

Identification Range

Finally the aid can be identified when the mariner is close enough to read the numbers and letters.



Nominal Range

- **The nominal range rating is used to classify dayboards.**

3SG and **4TR**

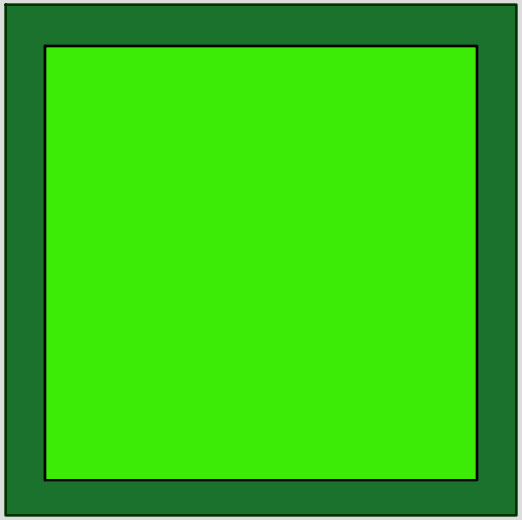
– **nominal range 1NM**

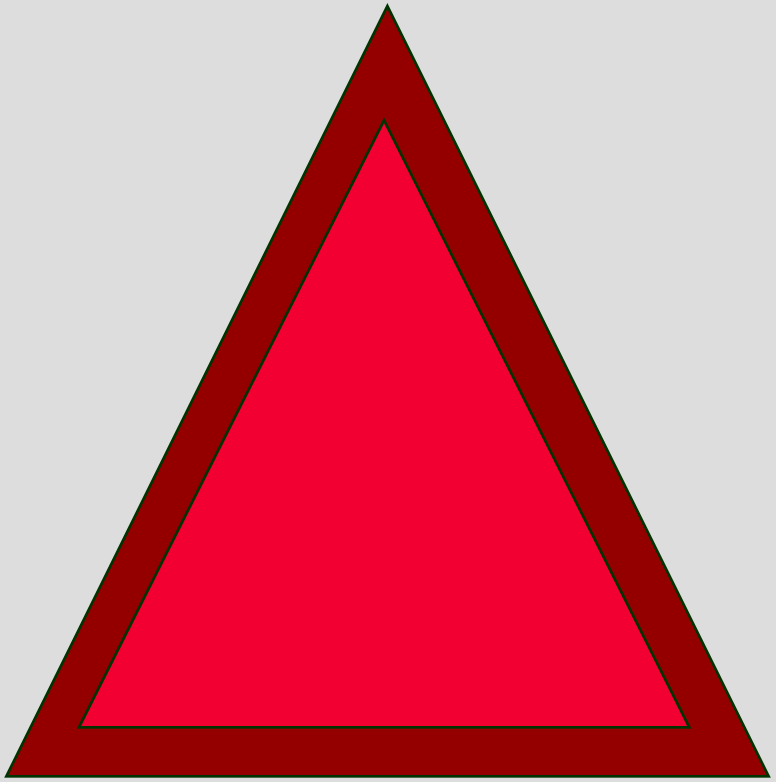
4SG and **6TR**

– **nominal range 2NM**

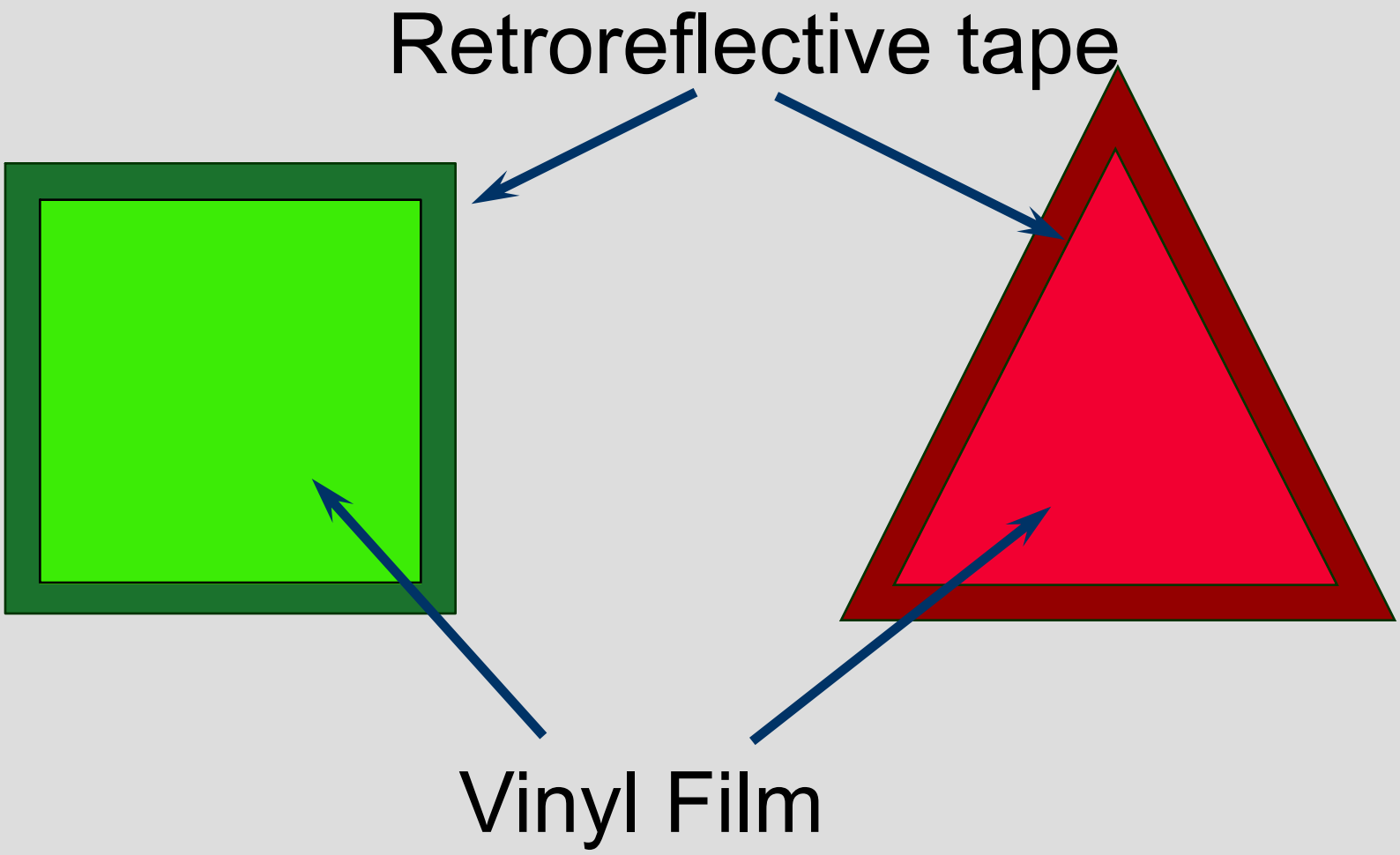
6SG and **8TR**

– **nominal range 3NM**





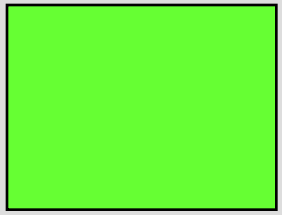
Films



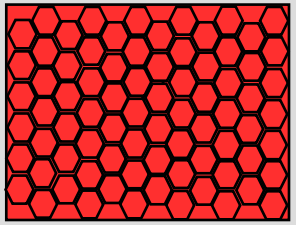
Retroreflective material

- Commonly called Retro.
  Two manufacturers:

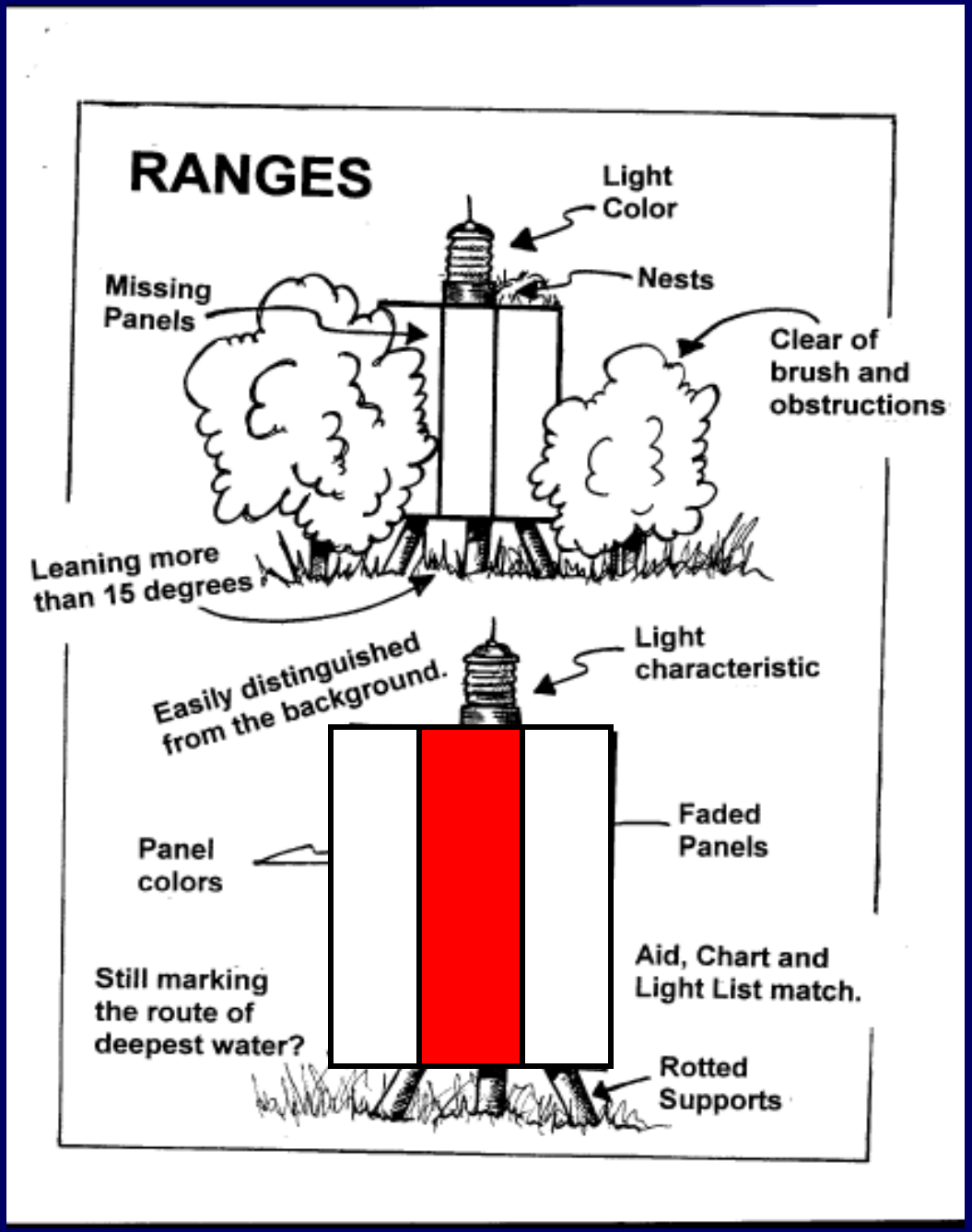
Reflexite has a smooth appearance



3M has a honeycomb appearance



3M and **Reflexite** materials may be used together on the same aid.



Front Panel Symbol

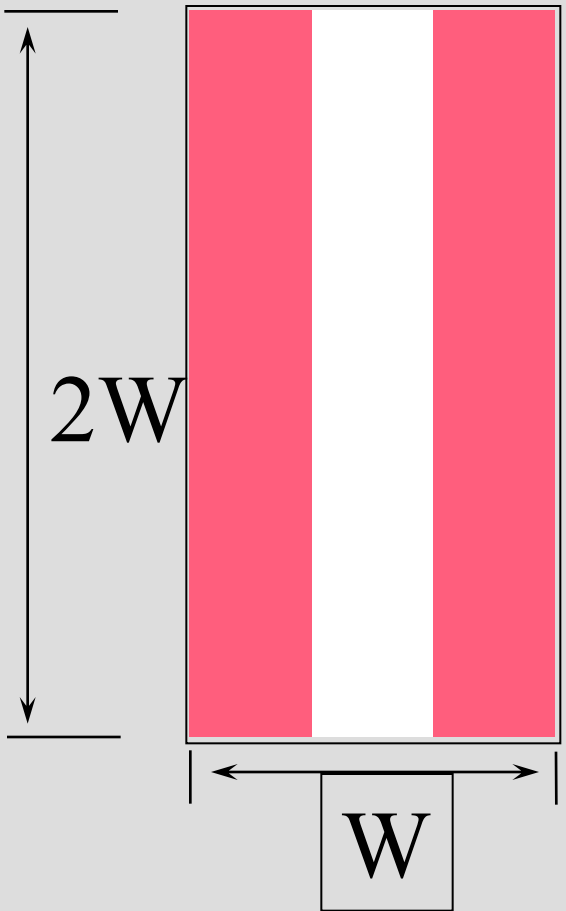
KWR

Main panel is **white**.

Center stripe is **red**.

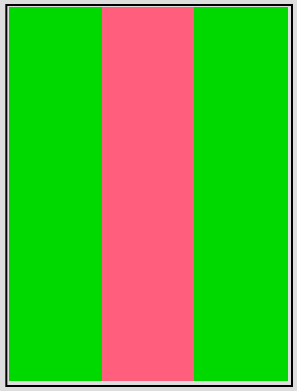
K - range dayboards

Range boards are always twice as tall as they are wide.

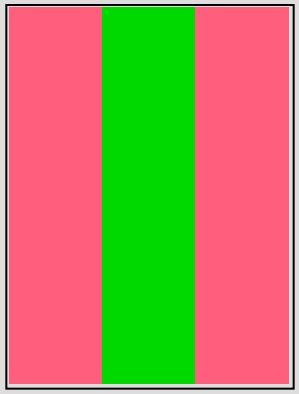


Dayboards

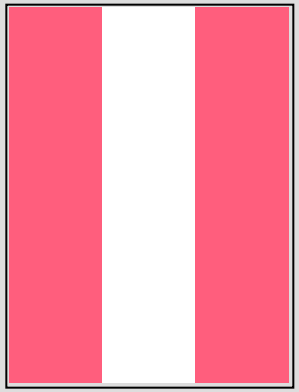
The third letter indicates the color of stripe (range dayboards only).



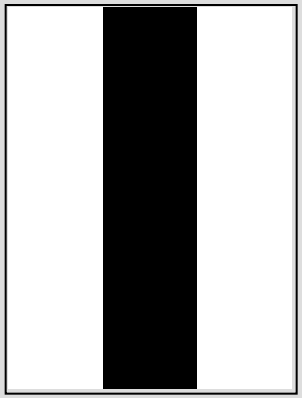
R- Fluorescent red



G- Fluorescent green



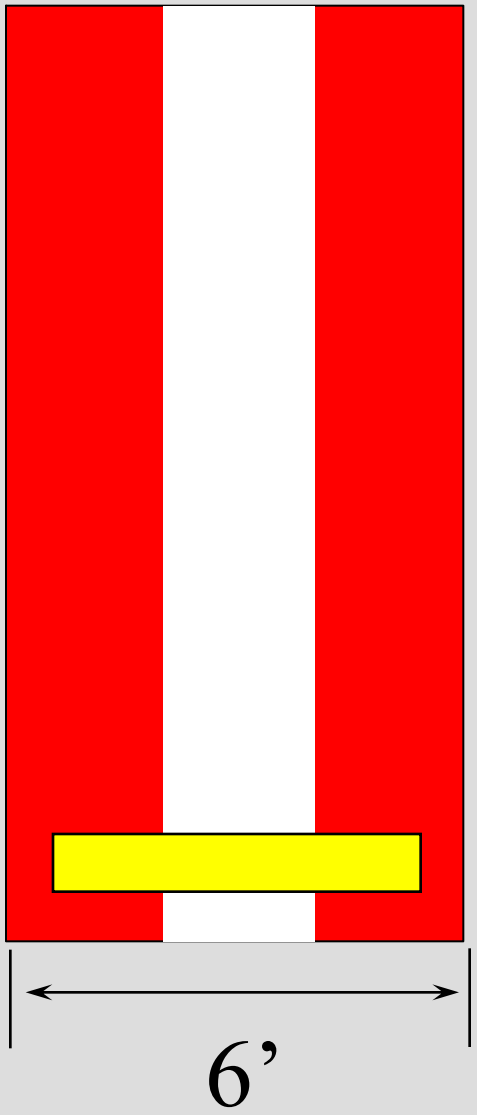
W- White



B- Black

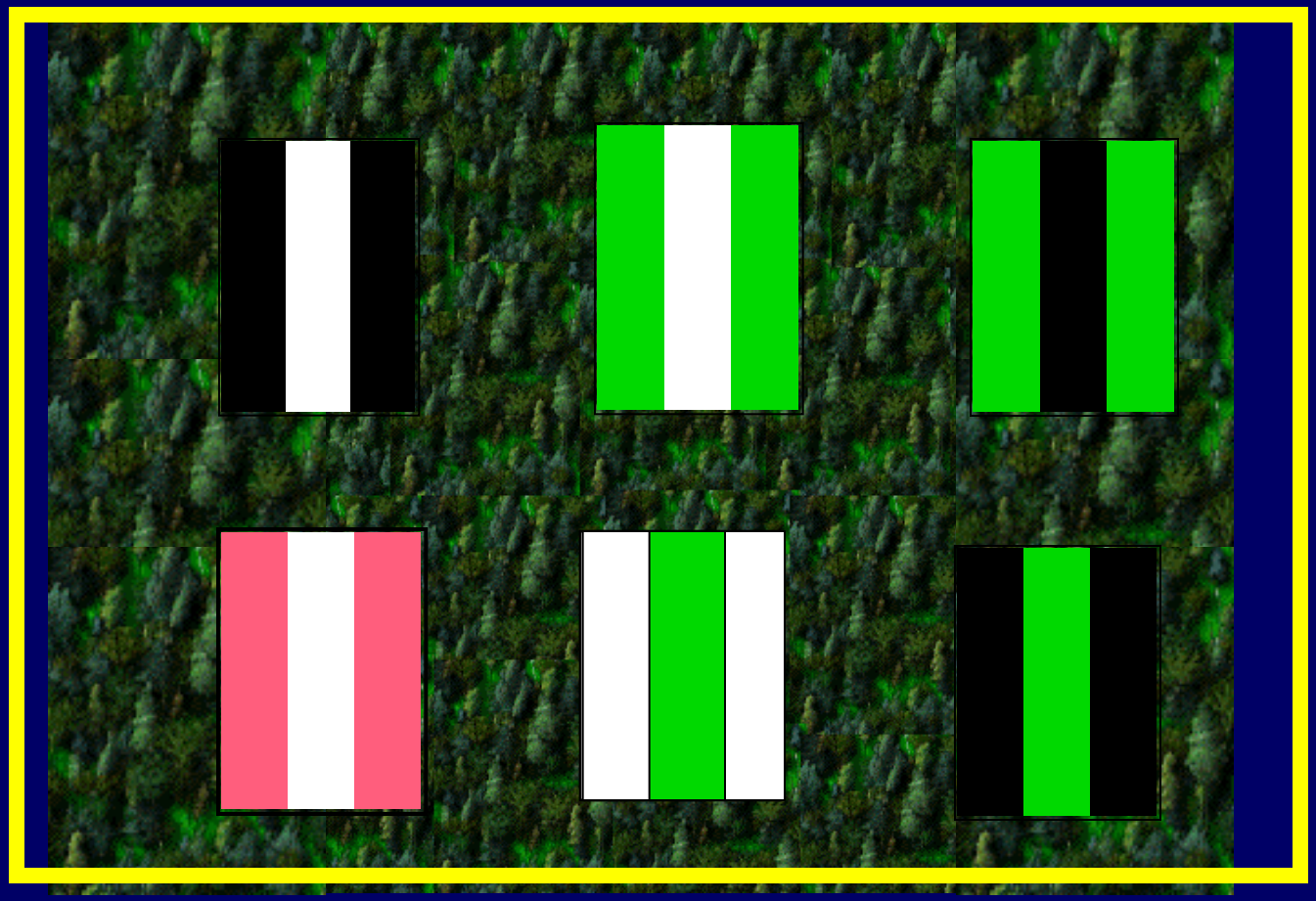
Dayboards

6KR W -1



Operational Requirements

- **Contrast**
  - Vegetation
  - Background
  - lights



Inspection and Maintenance

- **Dayboard surface and backing materials will deteriorate due to the effects of weathering by:**
  - wind,
  - rain,
  - freezing temperatures, and
  - sunlight.

Inspection and Maintenance

- Types of *delamination* are:
  - Cracking,
  - Peeling. and
  - Fading.

Backing Material

- ***Delamination*** **should not have progressed over more than 25 percent of the backing material.**
- **Material should not be sufficiently *warped* to visibly detract from the signal.**
- ***Mounting points*** **should not be *softened* or deteriorated to the degree that the board may come loose during a storm.**

Films, Numbers, Letters, and Borders.

- ***Delamination*** **of the film should not progress over *10%* of the surface area.**
- **Material should *not* be *cracked*, *checked* or *abraded* so as to provide a dull or roughened top surface.**
- **Attached material should *not* have *peeled* more than *10%* of the surface area.**

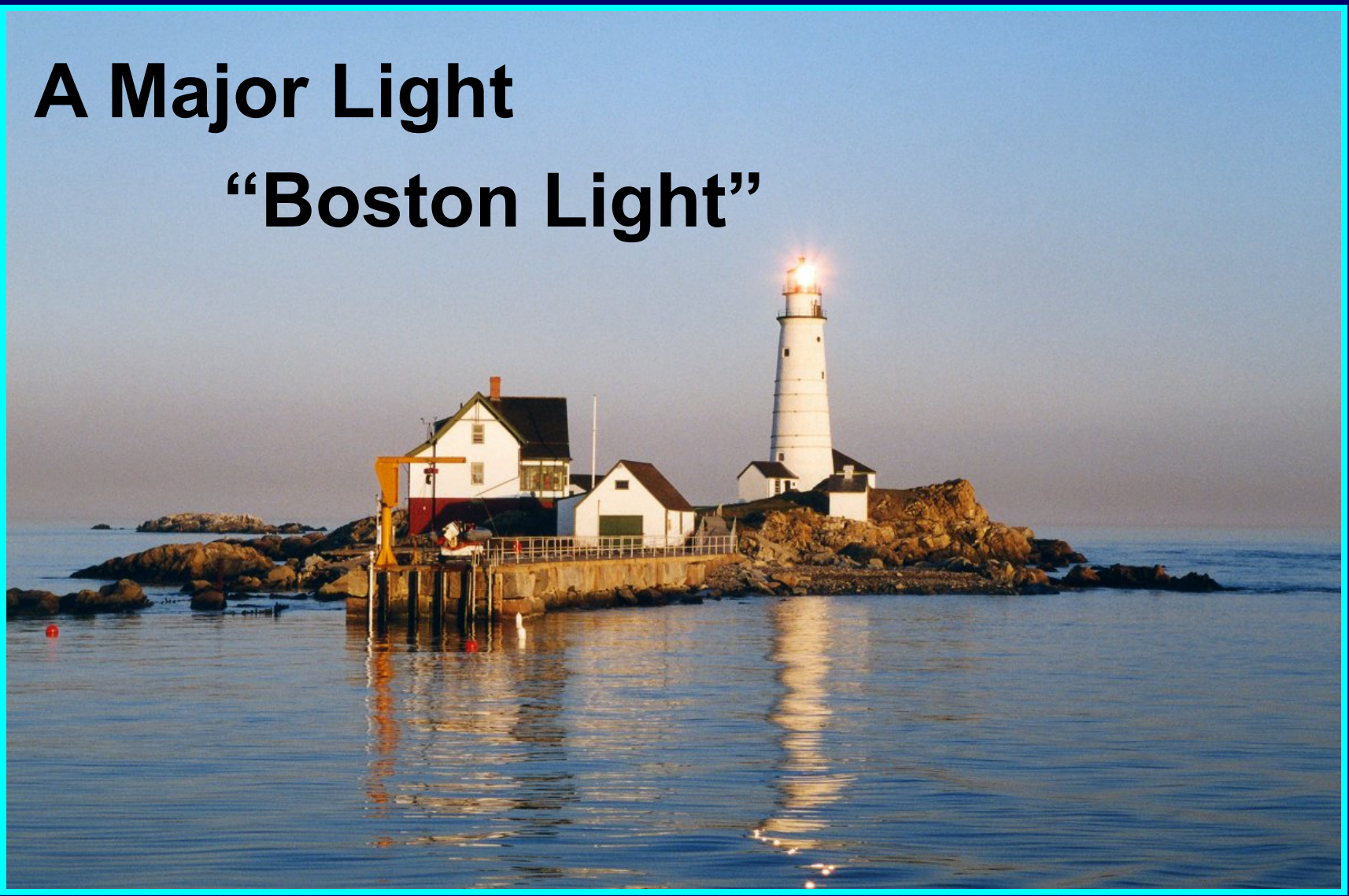
Fading. . .

- There is no practical way to measure fading.
- Replacement is based on the judgment of servicing personnel.
- Aid must be able to display the intended signal until its next scheduled service date.

. . . more FADING

A Major Light

“Boston Light”



All light houses are now unmanned, except for Boston Light—the oldest, continuous operating lighthouse in America.

- Check each lighthouse for proper operation.
- Refer to your chart or Light List for the proper characteristics.

DO YOU HAVE ANY MORE QUESTIONS ABOUT ATON DISCREPANCIES?

HOW to make ***ROUTINE*** discrepancy reports to the Coast Guard ANT.

"ANSC 7054 Aid to Navigation Form"

available on the

"National Forms Web Site"

ANSC 7054 Aid to Navigation Form

Has nine sections:

Section 1 – Observer's Identification Data.

Section 2 - Coast Guard Notification.

Section 3 – Aid Owner and Identification.

Section 4 – Horizontal and Vertical Locations.

Section 5 – *Aid to Navigation Characteristics.*

Section 6 – *Discrepancies Observed.*

Section 7 – *Non-Permitted Aids to Navigation Data.*

Section 9 – *Comments.*

Section 10 – *Report Distribution.*

DEPARTMENT OF HOMELAND SECURITY
U.S. COAST GUARD
ANSC 7054 (6-08)

U.S.COAST GUARD AUXILIARY

AID TO NAVIGATION REPORT

SECTION 1 - MEMBER INFORMATION

MEMBER NUMBER		LAST NAME, FIRST NAME AND INITIAL	
DATE OBSERVED	OPCON	TELEPHONE NUMBER	E-MAIL ADDRESS

SECTION 2 - COAST GUARD NOTIFICATION

USE ONLY WHEN YOU REPORT DIRECTLY BY PHONE, RADIO OR E-

COAST GUARD UNIT NOTIFIED	TIME REPORTED	DATE REPORTED	COMMUNICATION METHOD USED FOR
	1200	23-Feb-08	

SECTION 3 - AID IDENTIFICATION

AID OWNERSHIP - check one: ☐ COAST GUARD ☐ STATE ☐ PRIVATE ☐ USACE

LLNR	OFFICIAL NAME OF AID BEING REPORTED (Reference the Light List fo	PATON NUMBER	MILE MARKER

SECTION 4 - HORIZONTAL AND VERTICAL LOCATIONS

FOLLOW THE GUIDELINES IN THE FEDERAL SHORT RANGE AID TO N

LATITUDE [DD-MM-SS.SS N]	LONGITUDE [DDD-MM-SS.SS W]	GPS DATUM	METHOD USED TO TAKE FIX	QC CHECK

OFFICIAL NAME OF LOCATION	GPS MANUFACTURER AND MODEL NUMBER	GPS OPERATIO

METHOD USED FOR DEPTH	MANUFACTURER AND MODEL NUMBER	OBSERVED DEPTH	CORR. FOR TRANSDUCER	HEIGHT OF T
		0.0 FT	0.0 FT	0

SECTION 5 - AID TO NAVIGATION CHARACTERISTICS

CHECK OFF EACH CHARACTERISTIC THAT DESCRIBES THE AID.

TYPE OF AID	☐ Floating Buoy	☐ Fixed Structure	☐ Lighted	☐ Sound capability	☐ Electronic de
TYPE OF BUOY	☐ Wood	☐ Metal	☐ Foam	☐ Plastic	☐ Other, expla
STRUCTURE MAKEUP	☐ Wood	☐ Metal	☐ Single Pile	☐ Dolphin	☐ Tower
COLOR OF LIGHT	☐ Red	☐ Green	☐ White	☐ Yellow	☐ Other, expla
SOUNDING DEVICE	☐ Bell	☐ Gong	☐ Horn	☐ Whistle	☐ Other, see C
ELECTRONIC DEVICE	☐ RACON	☐ Fog Detector	☐ Wind Generator	☐ Electrical Transformer Sta.	☐ Meteorologic

SECTION 6 - DISCREPANCIES OBSERVED ON AID TO NAVIGATION

CHECK OFF EACH DISCREPANCY THAT YO

CRITICAL DISCREPANCIES Communicate to CG ANT by fastest means.	URGENT DISCREPANCIES Communicate to CG ANT by phone or E-mail.	ROUTINE DISC Report by E-mail o
1 ☐ Shrouded or covered with ice.	1 ☐ Light burning dim or showing reduced intensity.	1 ☐ Aid is obsc
2 ☐ Improper light characteristics	2 ☐ Light is partially obscured by dayboards.	2 ☐ Dayboard i
3 ☐ Light obscured.	3 ☐ Dayboard(s) is missing. (Photo)	3 ☐ Extensive b
4 ☐ Light is extinguished.	4 ☐ Dayboard(s) is damaged. (Photo)	4 ☐ Aid is dama

D1NR 7054 Aid to Navigation Form

AUXILIARY ID NUMBER

LAST NAME, FIRST NAME and Initials.

D1NR 7054 - Aid to Navigation Form

Section 2 - Coast Guard Notification

Only use for **Critical** or **Urgent** discrepancy reporting when you have already communicated with a C.G ANT or other C.G. agency.

ANSC 7054 - Aid to Navigation Form

Section 3 – Aid Ownership and Identification.

Select the type of owner:

- **COAST GUARD**
- **STATE**
- **PRIVATE - PATON**
- **USACE – US Army Corps of Engineers**
- **NOAA**

NS-AN04 - Aid to Navigation Form

Section 4 – Horizontal and Vertical Locations.

LATITUDE [DD-MM-SS.SS N]	LONGITUDE [DDD-MM-SS.SS W]	GPS DATUM	METHOD USED TO TAKE FIX
23-34-56.80 N	071-03-45.80 W	WGS84	GPS WITH WAAS

LATITUDE – (Formatted as DD-MM-SS.SS N)
LONGITUDE – (Formatted as DDD-MM-SS.SS W)
GPS DATUM – (Entry loaded in your GPS Set)
METHOD USED TO TAKE FIX – Select:
GPS, DGPS, GPS with WAAS, or OTHER, see Comments.

QC CHECK	QC READING	U/M	TIME WHEN TAKEN
EPE	12.3	FT	1245

QC CHECK, select:
HDOP (Horizontal Dilution of Position)
EPE (Estimated Position Error)
QC READING - (from your GPS)
TIME WHEN TAKEN – (Formatted as HHMM)

ANSC 7054 - Aid to Navigation Form

Section 4 – Horizontal and Vertical Locations.

OFFICIAL NAME OF LOCATION	GPS MANUFACTURER AND MODEL NUMBER	GPS OPERATIO
DORCHESTER BAY	GPS 76 GARMIN	3D DIFF.

OFFICIAL NAME OF LOCATION – where the aid is located.
GPS MANUFACTURER AND MODEL NUMBER.
GPS OPERATION (reflection of how many satellites that your GPS is reading when you take the fix. Need a minimum of 3D for appropriate accuracy.)

METHOD USED FOR DEPTH	MANUFACTURER AND MODEL NUMBER	OBSERVED DEPTH	CORR. FOR TRANSDUCER
ECHO SOUNDER	WIDE 100 HUMMINGBIRD	25.0 FT	0.8 FT

METHOD USED FOR DEPTH, select:
ECHO SOUNDER, LEAD LINE, SOUNDING POLE, DEPTH NOT TAKEN or OTHER, see Comments.
MANUFACTURER AND MODEL NUMBER (OF ECHO SOUNDER)
OBSERVED DEPTH (Reading from your echo sounder.)
CORRECTION FOR TRANSDUCER (Distance from your transponder to the waterline.)

ANSC 7054 - Aid to Navigation Form

Section 4 – Horizontal and Vertical Locations.

HEIGHT OF TIDE	CORR. DEPTH	TIME OF OBSERVATIO
1.5 FT	24.3 FT	1250

HEIGHT OF TIDE – take from the Almanac Screen on your GPS.

CORRECTED DEPTH – system calculated.

TIME OF OBSERVATION – when depth was taken, formatted as

CHT. DEPTH	U/M	DEPTH DIFFERENCE
23	FT	1.3 FT

CHARTED DEPTH – take from the NOS Chart.

DEPTH DIFFERENCE – system calculated.

Positive number indicates the water is deeper that charted.

Negative number indicates the water is less than charted.

ANSC 7054 - Aid to Navigation Form

Section 5 – Aid Characteristics.

TYPE OF AID

TYPE OF BUOY

STRUCTURE MAKEUP

COLOR OF LIGHT

SOUNDING DEVICE

ELECTRONIC DEVICE

TYPE OF AID	X	Floating Buoy		Fixed Structure	X	Lighted

	Sound capability		Electronic devices		Radar reflector

FLOATING BUOY
FIXED STRUCTURE.
LIGHTED
SOUND CAPABILITY
ELECTRONIC DEVICES
RADAR REFLECTOR

YPE OF BUOY		Wood	X	Metal		Foam

	Plastic		Other, expla

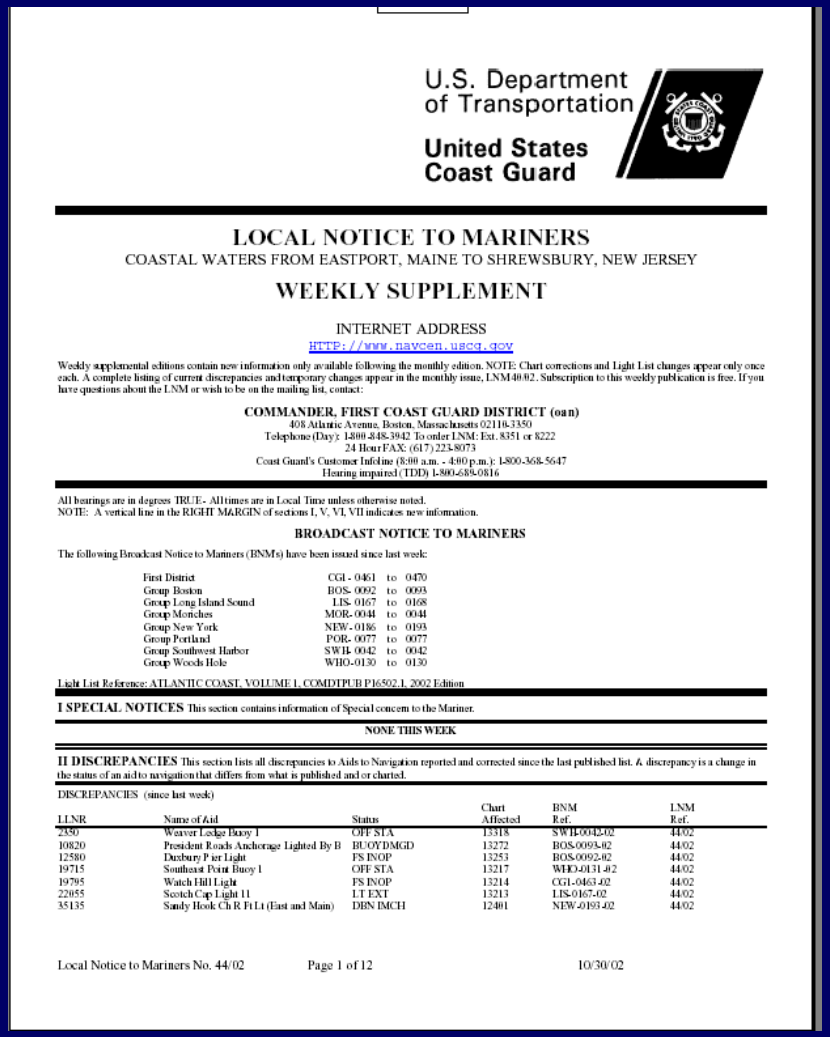
WOOD
METAL
FOAM
PLASTIC
OTHER, explain in Comments.

ANSC 7054 - Aid to Navigation Form Section 6 – Aid Discrepancies.

Reference the ***AN10 – Aid Observation Worksheet*** for menu details:

- **CRITICAL DISCREPANCIES**
- **URGENT DISCREPANCIES**
- **ROUTINE DISCREPANCIES**
- **DOCUMENT AND SPECIFICATION CHECKS.**

Discrepancy reports may be reflected in the LNM - Local Notice to Mariners



U.S. Department of Transportation

United States Coast Guard

LOCAL NOTICE TO MARINERS

COASTAL WATERS FROM EASTPORT, MAINE TO SHREWSBURY, NEW JERSEY

WEEKLY SUPPLEMENT

INTERNET ADDRESS

HTTP://www.navcen.uscg.gov

Weekly supplemental editions contain new information only available following the monthly edition. NOTE Chart corrections and Light List changes appear only once each. A complete listing of current discrepancies and temporary changes appear in the monthly issue, LNM 40/02. Subscription to this weekly publication is free. If you have questions about the LNM or wish to be on the mailing list, contact:

COMMANDER, FIRST COAST GUARD DISTRICT (oan)
408 Atlantic Avenue, Boston, Massachusetts 02110-3350
Telephone (Day): 1-800-348-3942 To order LNM: Ext. 8351 or 8222
24 Hour FAX: (617) 223-8073
Coast Guard's Customer Infoline (8:00 a.m. - 4:00 p.m.): 1-800-368-5647
Hearing impaired (TDD) 1-800-689-0816

All bearings are in degrees TRUE. All times are in Local Time unless otherwise noted.
NOTE: A vertical line in the RIGHT MARGIN of sections I, V, VI, VII indicates new information.

BROADCAST NOTICE TO MARINERS

The following Broadcast Notice to Mariners (BNMs) have been issued since last week:

First District	CGI - 0461	to	0470
Group Boston	BOS- 0092	to	0093
Group Long Island Sound	LIS- 0167	to	0168
Group Moriches	MOR- 0044	to	0044
Group New York	NEW- 0186	to	0193
Group Portland	POR- 0077	to	0077
Group Southwest Harbor	SWH- 0042	to	0042
Group Woods Hole	WHO-0130	to	0130

Light List Reference: ATLANTIC COAST, VOLUME 1, COMDTPUB P16502.1, 2002 Edition

I SPECIAL NOTICES This section contains information of Special concern to the Mariner.

NONE THIS WEEK

II DISCREPANCIES This section lists all discrepancies to Aids to Navigation reported and corrected since the last published list. A discrepancy is a change in the status of an aid to navigation that differs from what is published and or charted.

DISCREPANCIES (since last week)

LLNR	Name of Aid	Status	Chart Affected	BNM Ref.	LNM Ref.
2350	Weaver Ledge Buoy 1	OFF STA	13318	SWH-0042-02	44/02
10820	President Roads Anchorage Lighted By B	BUOYDMGD	13272	BOS-0093-02	44/02
12580	Duxbury P ier Light	FS INOP	13253	BOS-0092-02	44/02
19715	Southeast Point Buoy 1	OFF STA	13217	WHO-0131-02	44/02
19795	Watch Hill Light	FS INOP	13214	CGI-0463-02	44/02
22055	Scotch Cap Light 11	LT EXT	13213	LIS-0167-02	44/02
35135	Sandy Hook Ch R Fl L1 (East and Main)	DBN IMCH	12401	NEW-0193-02	44/02

Local Notice to Mariners No. 44/02 Page 1 of 12 10/30/02

The Local Notice to Mariner is generated using the ATONIS Database

- Chart Corrections
- Discrepancies
- Light List Changes

What is meant by the term "**checking**" of a Federal aid?

- ✓ You completed a full pre-underway check of your measuring devices per the guidelines and determined that they are working accurately and that all of the necessary tools are available.
- ✓ On-scene, you took a fix alongside the aid in the channel per the guidelines and recorded the data on a worksheet, including the GPS Quality evidence.
- ✓ On-scene, you checked the depth of water per the guidelines and recorded the data on a worksheet, including the Echo Sounder Quality evidence.
- ✓ You completed an ANSC7054 Aid to Navigation Report to notify the Coast Guard of any discrepancy.

DO NOT REPORT Federal aids observed as "Watching Properly" to the Coast Guard, unless specifically requested to do so.

ALWAYS *REPORT* all Federal Aids to Navigation activity as a *Mission 30* to AUXDATA on an *ANSC 7030 Activity Report – Mission Individual* form.

Any more questions about reporting discrepancies to Aids to Navigation?