

13th TSMAD MEETING
18 to 22 September 2006 – Wellington, New Zealand

Proposed new ENC Encoding Bulletin
Encoding guidance for IALA-B Daymarks

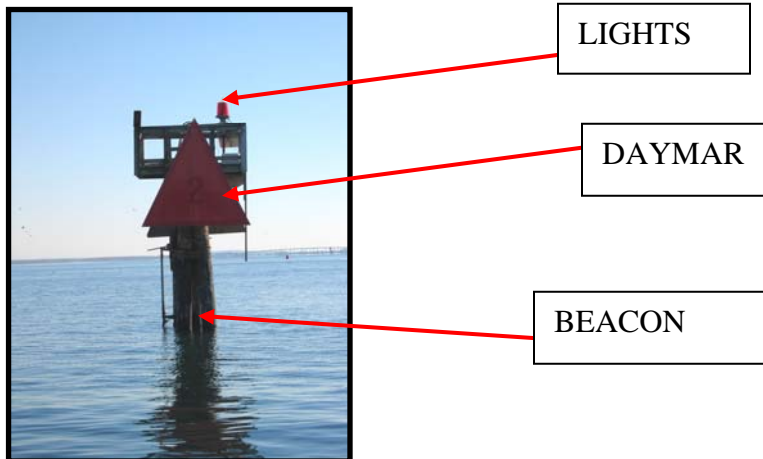
Reference: S-57 APPENDIX B.1 Annex A – Use of the Object Catalogue for ENC, clause 12.2 Buoyage systems and direction of buoyage

USCG Light List and explanation of navigational marks
United States Code of Federal Regulations 33 CFR Part 62

Explanatory statement:

Currently, in the Use of the Object Catalogue, there is no clear guidance on the use of a square DAYMAR in the IALA-B system. The United States would like to clarify that a square is allowed in the IALA-B system and therefore request that an encoding bulletin be issued to resolve this matter.

In further discussion with both AHO and internally to NOAA, much of this may come from the national definition of how a IALA-B conformant daybeacon is constructed. The following is an example of a IALA-B lateral daybeacon with a light.



NOAA encodes this as an IALA-B system as defined by our United States Coast Guard Federal Regulations. It is encoded in the following manner:

BCNLAT (master)
- CATLAM = Starboard lateral mark

- BCNSHP = pile beacon
- COLOUR = not populated or unknown

DAYMAR (slave)

- TOPSHP = triangle
- COLOUR = red

LIGHTS (slave)

There is some confusion whether the Triangle is a DAYMAR or a TOPMAR. In the United States it is defined as a DAYMAR.

NOAA defines a TOPMAR in the following manner:

TOPMARK. One or more relatively small objects of characteristic shape or color, or both, placed on top of a beacon or buoy to aid in its identification. The following characteristic shapes of topmarks are internationally recognized for the lateral system: cone, can, sphere, diamond, St. George's Cross, "T," and broom. A broom topmark has the appearance of a circular broomshead and has two forms: (1) broom, point upwards and (2) broom, point downwards. The following characteristic shapes of topmarks are internationally recognized for the cardinal system: two cones, point upwards; two cones, point downwards; two cones, point to point; two cones, base to base. Also called daymark, particularly in United States usage. [1]

M-4, B-463 for TOPMARKS states:

A wide variety of topmarks is used on buoys (and on beacons) but in the IALA System the variations are reduced to a few important shapes. 'Daymark' may be used for 'topmark' in the US.

NOAA, therefore would like to propose the following encoding bulletin to resolve the issue of IALA-B conformant DAYMAR on a BCNLAT.

Proposed S-57 Encoding Bulletin

UOC clause 12.2 Buoyage and direction of buoyage

Table 12.1 of Edition 2.1 (April 2002) of the Use of the Object Catalogue (S-57 Appendix B1, Annex A) does not specify square or triangle DAYMAR for buoyage systems.

Encoders should note, therefore, If it is required to encode a green square DAYMAR for MAYSYS=2, then TOPSHP = 19 (square), COLOUR = 4 (green)

Encoders should note, therefore, If it is required to encode a red triangle DAYMAR for MAYSYS=2, then TOPSHP = 24 (triangle), COLOUR = 3 (red)

Encoders should note that in some IALA-B systems the DAYMAR may have a reflective stripe around the outside of the DAYMAR, therefore, COLOUR = 4,4 (green, green) and COLPAT = 6 (border stripe)

United States Code of Federal Regulations:

TITLE 33--NAVIGATION AND NAVIGABLE WATERS

CHAPTER I--COAST GUARD, DEPARTMENT OF HOMELAND SECURITY

PART 62_UNITED STATES AIDS TO NAVIGATION SYSTEM

Subpart B_The U.S. Aids to Navigation System

Sec. 62.21 General.

(a) The navigable waters of the United States and non-navigable State waters after December 31, 2003, are marked to assist navigation using the U.S. Aids to Navigation System, a system consistent with the International Association of Lighthouse Authorities (IALA) Maritime Buoyage System.

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All navigable waters of the United States follow IALA Region B, except U.S. possessions west of the International Date Line and south of 10 degrees north latitude, which follow IALA Region A.

Sec. 62.25 Lateral marks.

(a) Lateral marks define the port and starboard sides of a route to be followed. They may be either beacons or buoys.

(b) Sidemarks are lateral marks which advise the mariner to stay to one side of the mark. Their most frequent use is to mark the sides of channels; however, they may be used individually to mark obstructions outside of clearly defined channels. Sidemarks are not always placed directly on a channel edge and may be positioned outside the channel as indicated on charts and nautical publications.

(1) Port hand marks indicate the left side of channels when proceeding in the Conventional Direction of Buoyage. Beacons have **green square daymarks**, while buoys are green can or pillar buoys.

(2) Starboard hand marks indicate the right side of channels when proceeding in the Conventional Direction of Buoyage. Beacons have **red triangular daymarks**, while buoys are red nun or pillar buoys.

(d) The above color schemes apply to IALA Region B. Marks located in the IALA Region A exhibit reversed color significance: port hand marks will be red when following the Conventional Direction of Buoyage, and starboard hand marks will be green. The meaning of daymark and buoy shapes is identical in both regions.

U.S. AIDS TO NAVIGATION SYSTEM

The waters of the United States and its territories are marked to assist navigation by the U.S. Aids to Navigation System. This system encompasses buoys and beacons, conforming to the International Association of Lighthouse Authorities (IALA) buoyage guidelines, and other short range aids to navigation.

The U.S. Aids to Navigation System is intended for use with nautical charts. The exact meaning of a particular aid to navigation may not be clear to the mariner unless the appropriate nautical chart is consulted. Information supplementing that shown on charts is contained in the Light List, Coast Pilots, and Sailing Directions.

TYPES OF MARKS

Lateral marks are buoys or beacons indicating the port and starboard sides of a route to be followed, and are used in conjunction with a *conventional direction of buoyage*.

Generally, lateral aids to navigation indicate which side of an aid to navigation a vessel should pass when channels are entered from seaward and a vessel proceeds in the conventional direction of buoyage. Since all channels do not lead from seaward, certain assumptions must be made so the system can be consistently applied. In the absence of a route leading from seaward, the conventional direction of buoyage generally follows a clockwise direction around land masses.

Virtually all U.S. lateral marks are located in IALA Region B and follow the traditional 3R rule of **red, right, returning**. In U.S. waters, returning from seaward and proceeding toward the head of navigation is generally considered as moving southerly along the Atlantic coast, westerly along the Gulf coast and northerly along the Pacific coast. In the Great Lakes, the conventional direction of buoyage is generally considered westerly and northerly, except on Lake Michigan, where southerly movement is considered as returning from sea. A summary of the port and starboard hand lateral mark characteristics is contained in the following table.

Characteristic	Port Hand	Starboard Hand
Color	Green	Red
Shape (buoys)	Cylindrical (can) or pillar	Conical (nun) or pillar
Dayboard	Green square	Red triangle
Topmark (if fitted)	Cylinder	Cone, point upward
Light Color (if lighted)	Green	Red
Reflector Color	Green	Red
Number	Odd	Even



U.S. AIDS TO NAVIGATION SYSTEM

on navigable waters except Western Rivers

LATERAL SYSTEM AS SEEN ENTERING FROM SEAWARD

PORT SIDE ODD NUMBERED AIDS	PREFERRED CHANNEL NO NUMBERS MAY BE LETTERED	PREFERRED CHANNEL NO NUMBERS MAY BE LETTERED	STARBOARD SIDE EVEN NUMBERED AIDS
<p>GREEN LIGHT ONLY</p> <p>FLASHING (2) </p> <p>FLASHING </p> <p>OCULTING </p> <p>QUICK FLASHING </p> <p>ISO </p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> LIGHT *1* P/G 6x </div> <div style="text-align: center;"> LIGHTED BUOY G 15" P/G 4x </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> CAN G 15" </div> <div style="text-align: center;"> DAYBEACON G 15" </div> </div>	<p style="text-align: center;">PREFERRED CHANNEL TO STARBOARD TOPMOST BAND GREEN</p> <p>GREEN LIGHT ONLY</p> <p>COMPOSITE GROUP FLASHING (2+1) </p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> LIGHT GR 15" R (2+1) G 6x </div> <div style="text-align: center;"> LIGHTED BUOY GR 15" R (2+1) G 6x </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> CAN GR 15" </div> <div style="text-align: center;"> DAYBEACON GR C 15" </div> </div>	<p style="text-align: center;">PREFERRED CHANNEL TO PORT TOPMOST BAND RED</p> <p>RED LIGHT ONLY</p> <p>COMPOSITE GROUP FLASHING (2+1) </p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> LIGHT R G 15" P (2+1) R 6x </div> <div style="text-align: center;"> LIGHTED BUOY R G 15" P (2+1) R 6x </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> CAN R G N 15" N C 15" </div> <div style="text-align: center;"> DAYBEACON R G 15" </div> </div>	<p>RED LIGHT ONLY</p> <p>FLASHING (2) </p> <p>FLASHING </p> <p>OCULTING </p> <p>QUICK FLASHING </p> <p>ISO </p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> LIGHT *2* P/R 6x </div> <div style="text-align: center;"> LIGHTED BUOY R 15" P/R 4x </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> CAN R N 15" </div> <div style="text-align: center;"> DAYBEACON R 15" </div> </div>