

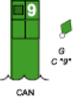
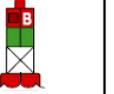
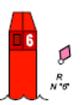
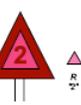
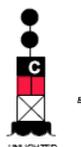
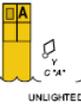
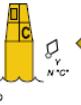
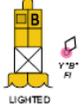
United States Coast Guard Auxiliary

Aid Verifier (AV) Study Guide



U.S. AIDS TO NAVIGATION SYSTEM on navigable waters except Western Rivers

LATERAL SYSTEM AS SEEN ENTERING FROM SEAWARD

<p>PORT SIDE ODD NUMBERED AIDS</p> <p>GREEN LIGHT ONLY FLASHING (2)  FLASHING  OCULTING  QUICK FLASHING  ISO </p> <p>1 LIGHT  9 LIGHTED BUOY </p> <p>9 CAN  5 DAYBEACON </p>	<p>PREFERRED CHANNEL NO NUMBERS - MAY BE LETTERED</p> <p>PREFERRED CHANNEL TO STARBOARD TOPMOST BAND GREEN</p> <p>GREEN LIGHT ONLY</p> <p>COMPOSITE GROUP FLASHING (2+1) </p> <p>A LIGHTED BUOY  S CAN </p>	<p>PREFERRED CHANNEL - MAY BE LETTERED</p> <p>PREFERRED CHANNEL TO PORT TOPMOST BAND RED</p> <p>RED LIGHT ONLY</p> <p>COMPOSITE GROUP FLASHING (2+1) </p> <p>B LIGHTED BUOY  C NUN </p>	<p>STARBOARD SIDE EVEN NUMBERED AIDS</p> <p>RED LIGHT ONLY FLASHING (2)  FLASHING  OCULTING  QUICK FLASHING  ISO </p> <p>2 LIGHT  8 LIGHTED BUOY </p> <p>6 NUN  2 DAYBEACON </p>
<h4>AIDS TO NAVIGATION HAVING NO LATERAL SIGNIFICANCE</h4>			
<p>ISOLATED DANGER NO NUMBERS - MAY BE LETTERED</p> <p>WHITE LIGHT ONLY</p> <p>A LIGHTED  C UNLIGHTED </p>	<p>SAFE WATER NO NUMBERS - MAY BE LETTERED</p> <p>WHITE LIGHT ONLY MORSE CODE</p> <p>A MR  B SP B </p>		
<p>DAYBOARDS - MAY BE LETTERED</p> <p>WHITE LIGHT ONLY</p> <p>NR  NG  NB </p>			
<p>RANGE DAYBOARDS - MAY BE LETTERED</p> <p>KGW  KWG  KWB  KWV  KWR  KRB  KBR  KGB  KBG  KGR  KRG </p>			
<p>SPECIAL MARKS - MAY BE LETTERED</p> <p>YELLOW LIGHT ONLY FIXED FLASHING </p> <p>A UNLIGHTED  C  A  B LIGHTED </p>			
<p>Aids to Navigation marking the Intracoastal Waterway (ICW) display unique yellow symbols to distinguish them from aids marking other waters. Yellow triangles ▲ indicate aids should be passed by keeping them on the starboard (right) hand of the vessel. Yellow squares ■ indicate aids should be passed by keeping them on the port (left) hand of the vessel. A yellow horizontal band ■ provides no lateral information, but simply identifies aids as marking the ICW.</p>	<p>TYPICAL INFORMATION AND REGULATORY MARKS</p> <p>INFORMATION AND REGULATORY MARKERS</p> <p>WHEN LIGHTED, INFORMATION AND REGULATORY MARKS MAY DISPLAY ANY WHITE LIGHT RHYTHM EXCEPT QUICK FLASHING, M₀(A), AND FLASHING (2)</p> <p>SWIM AREA  ROCK  SLOW </p> <p>MULLET LAKE  BLACK RIVER  MOORINGS BUOY  DANGER </p>		

District 17

September 2009

Title 33, Code of Federal Regulations, Part 66 (33 CFR Part 66)

PRIVATE AIDS TO NAVIGATION

66.01-1 Basic Provisions for PATONs

Unless otherwise noted, no person, public body or instrumentality not under the control of the Commandant, exclusive of the Armed Forces, shall establish and maintain, discontinue, change or transfer ownership of any aid to maritime navigation, without first obtaining permission to do so from the Commandant of the Coast Guard.

For purposes of clarification, the term “private aids to navigation” includes all marine aids to navigation operated in the navigable waters of the United States other than those operated by the Federal Government or those operated in State waters as private aids to navigation.

Coast Guard authorization of a private aid to navigation does not authorize any invasion of private rights, nor grant exclusive privileges, nor does it obviate the necessity of complying with any other Federal, State or local laws or regulations.

With the exception of radar beacons (RACONS) and shore based radar stations, operation of electronic aids of navigation as private aids will not be authorized.

66.01-3 PATON authority is delegated to the District Commander.

The Commandant of the Coast Guard delegates to the District Commanders within the confines of their respective districts the authority to grant permission to establish and maintain, discontinue, change or transfer ownership of private aids to maritime navigation and to administer the requirements of this program.

The decisions of the District Commander may be appealed within 30 days from the date of the decision. The decision of the Commandant in any case is final.

66.01-5 PATON Application Procedure

Application to establish and maintain, discontinue, change or transfer ownership to a private aid to navigation shall be made to the Commander of the Coast Guard District in which

the private aid is or will be located. Application form (CG-2554) will be provided upon request. The applicant shall complete all parts of the form applicable to the aid to navigation concerned, and shall forward the application in triplicate to the District Commander.

The following information is required:

- (a) The proposed position of the aid to navigation by two or more horizontal angle, or bearings and distance from charted landmarks. A section of chart or sketch showing the proposed location of the aid to navigation shall be included.
- (b) The name and address of the person at whose expense the aid will be maintained.
- (c) The name and address of the person who will maintain the aid to navigation.
- (d) The time and dates which it is proposed to operate the aid.
- (e) The necessity for the aid.
- (f) For lights: The color, characteristic, height above water, and description of illuminating apparatus.
- (g) For fog signals: Type (whistle, horn, bell, etc.) and characteristic.
- (h) For buoys or daybeacons: Shape, color, number, or letter, depth of water in which located or height above water.
- (i) For RACONS: Manufacturer and model number of RACON, height above water of desired installation, and requested coding characteristic. Equipment must have FCC authorization.

66.01-10 Light Characteristics of Private Aids

The light characteristics of a private aid to navigation shall conform to the United States Aid to Navigation System.

66.01-15 Processing of Applications by the Coast Guard

The District Commander receiving the PATON application shall review it for completeness and

will assign the aid one of the following classifications:

Class 1 – Aid to navigation on marine structures or other works which the owner(s) are legally obligated to establish, maintain and operate by the Coast Guard.

Class II – Aids to navigation, exclusive of Class I, located in waters used by general navigation.

Class III – Aids to Navigation exclusive of Class I, located in waters not ordinarily used by general navigation.

Upon approval by the District Commander, a signed copy of the application will be returned to the applicant. Approval for the operation of radar beacons (RACONS) will be affective for an initial two year period, then subject to annual review without submission required of the owner,

66.01-20 Inspection of Private Aids

All classes of private aids to navigation shall be maintained in proper operating condition. They are subject to inspection by the Coast Guard at any time and without prior notice.

66.01-25 Discontinuance and removal of Private Aids.

No person, public body or instrumentality shall change, move or discontinue any authorized private aid to navigation required by statute or regulation without first obtaining permission to do so from the District Commander.

Any authorized private aid to navigation not required by statute or regulation (Classes II and III) may be discontinued and removed by the owner after 30 days' notice to the District Commander to whom the original request for authorization for establishment of the aid was submitted.

Private aids to navigation which have been authorized by the District Commander shall be discontinued and removed without expense to the United States by the person, public body or instrumentality establishing or maintaining such aids when so directed by the District Commander.

66.01-30 Corps of Engineers approval required for fixed aids.

Before any private aid to navigation consisting of a fixed structure is placed in the navigable

waters of the United States, authorization to erect such structure shall first be obtained from the District Engineer, U.S. Army Corps of Engineers in whose district the aid will be located.

The application to establish any private aid to navigation consisting of a fixed structure shall show evidence that the required permit has been issued by the Corps of Engineers.

66.01-40 Exemptions.

Nothing in the preceding sections shall be construed to interfere with, or nullify the requirements of existing laws and regulations pertaining to the marking of structures, vessels and other obstructions sunken in waters subject to the jurisdiction of the United States, the marking of artificial islands and structures which are erected on or over the seabed and subsoil of the Outer Continental Shelf, or the lighting of bridges over navigable waters of the United States.

66.01-45 Penalties for establishment without a CG Permit.

Any person, public body or instrumentality, excluding the armed forces, who shall establish, erect or maintain any aid to maritime navigation without first obtaining authority to do so from the Coast Guard, or who shall violate the regulations relative thereto issued in this part, is subject to the provisions of 14 U.S.C. 83.

66.01-50 Protection afforded to owners of private aids to navigation.

Private aids to navigation lawfully maintained under these regulations are entitled to the same protection against interference or obstruction as is afforded by law to Coast Guard aids to navigation. If interference or obstruction occurs, a prompt report containing all the evidence available should be made to the Commander of the Coast Guard District in which the aids are located.

66.01-55 Transfer of PATON ownership.

When any private aid to navigation authorized by the District Commander, or the essential real estate or facility with which the aid is associated, is sold or transferred, both parties to the transaction shall submit application to the Commander of the Coast Guard District in which

the aid is located requesting authority to transfer responsibility for maintenance of the aid.

The party relinquishing responsibility for maintenance of the private aid to navigation shall indicate on the application form (CG-2554) both the discontinuance and the change of ownership of the aid sold or transferred.

The party accepting responsibility for maintenance of the private aid to navigation shall indicate on the application form (CG-2554) both the establishment and the change of ownership of the aid sold or transferred.

In the event the new owner of the essential real estate or facility with which the aid is associated refuses to accept responsibility for maintenance of the aid, the former owner shall be required to remove the aid without expense to the United States. This requirement shall not apply in the case of any authorized private aid to navigation required by statute or regulation (Class I) which shall be maintained by the new owner until the conditions which made the aid necessary have been eliminated.

State Aids to Navigation

66.05-1 Purpose.

The purpose of the regulations in this subpart is to prescribe the conditions under which state governments may regulate aids to navigation owned by state or local governments, or private parties. Aids to navigation must be in accordance with the United States Aids to Navigation System.

66.05-5 Definitions.

The term State waters for private aids to navigation means those navigable waters of the United States which the Commandant, upon request of a State Administrator, has designated as waters within which a State government may regulate the establishment, operation, and maintenance of marine aids to navigation, including regulatory markers. The Commandant will entertain requests to make such designations with respect to navigable waters of the United States not marked by the Federal government. These designations when approved will be set forth in separate sections by States in this subpart and will briefly describe or identify waters so designated.

The term **Uniform State Waterway Marking System** (USWMS) means the system of private aids to navigation which may be operated in State waters.

The term **State Administrator** means the official of a State having power under the law of the State to regulate, establish, operate or maintain maritime aids to navigation on waters over which the State has jurisdiction.

The term **State aids to navigation** means all private marine aids to navigation operated in State waters for private aids to navigation, whether owned by a State, political subdivisions thereof or by individuals, corporations, or organizations.

The term **regulate State maritime aids to navigation** means to control the establishment, disestablishment, operation and maintenance of State aids to navigation.

66.05-10 State waters for private aids to navigation; designations; revisions, and revocations.

A State Administrator who desires to regulate State maritime aids to navigation in the navigable waters of the United States not marked by the Federal Government, shall request the Commandant to designate the specific bodies of water involved as State waters for private aids to navigation.

The request shall be forwarded to the District Commander in whose district the bodies of water are located. The request shall give the name and description of the waterway; the extent of use being made of the waterway for marine navigation, in general terms; an appropriate chart or sketch of the area; and a general outline of the nature and extent of the State aids to navigation which the Administrator plans to establish in the waterway.

The District Commander shall review the request and consult with the State Administrator concerning the terms of an initial agreement to be entered into under specific provisions. When they have arrived at terms of an agreement satisfactory to both, the District Commander shall forward the request to the Commandant with his recommendations and the terms of agreement mutually settled upon. If they cannot reach such agreement, the District Commander

shall forward the request with his recommendations and a statement of the points agreed upon and the points remaining at issue.

Upon receipt of the request, the Commandant will determine whether or not approval of the request is in the public interest and will inform the State Administrator and the District Commander of the Coast Guard's decision. If the request is approved, the designation by the Commandant of the waters in question as State waters for private aids to navigation will be also defined and described in this subpart.

The Commandant may, upon his own initiative or upon request, revoke or revise any designations of State waters for private aids to navigation previously made by him. Written notice shall be given the State Administrator of the action contemplated by the Commandant. The State Administrator will be afforded a period of not less than 30 days from the date of the notice in which to inform the Commandant of the State's views in the matter before final action is completed to revoke or revise such designation.

66.05-20 - Coast Guard-State agreements.

The District Commander in whose District a waterway is located may enter into agreements with State Administrators permitting a State to regulate aids to navigation, including regulatory markers, in State waters for private aids to navigation, as, in the opinion of the District Commander, the State is able to do in a manner to improve the safety of navigation. When a waterway is located within the area of jurisdiction of more than one Coast Guard District, the District Commander in whose District the State capital is located shall execute the agreement in behalf of the Coast Guard. All such agreements shall reserve to the District Commander the right to inspect the State aids to navigation without prior notice to the State. They shall stipulate that State aids to navigation will conform to the Uniform State Waterway marking System or to the U.S. Aids to Navigation System and that the State Administrator will modify or remove State aids to navigation without expense to the United States when so directed by the District Commander, subject to the right of appeal on the part of the State Administrator to the Commandant.

A Coast Guard-State agreement shall become effective when both parties have signed the agreements. In lieu of the procedure prescribed in Sec. 66.01-5, the agreement shall constitute blanket approval by the Commandant, of the State aids to navigation, including regulatory markers, established or to be established in State waters for private aids to navigation designated or to be designated by the Commandant.

In addition to the matters set forth in the first paragraph of this section, Coast Guard-State agreements shall cover the following points, together with such other matters as the parties find it desirable to include:

(1) A description, in sufficient detail for publication in Notices to Mariners, of all aids to navigations under State jurisdiction in navigable waters of the United States in existence prior to the effective date of the agreement which have not been previously approved under procedures of Sec. 66.01-5.

(2) Procedures for use by the State administrator to notify the District Commander of changes made in State aids to navigation, as required by Sec. 66.05-25.

(3) If prior to December 21, 2003, specification of the marking system to be used, whether the U.S. Aids to Navigation System or the Uniform State Waterway Marking System.

(4) Specification of standards as to minimum size and shape of markers, the use of identifying letters, the use of reflectors or retroreflective materials, and any other similar standards so as to enable Coast Guard inspectors to determine compliance with Statewide standards.

66.05-25 Change and modification of State aids to navigation.

Wherever a State Administrator shall determine the need for change in State aids to navigation, he shall inform the District Commander of the nature and extent of the changes as soon as possible, preferably not less than 30 days in advance of making the changes.

66.05-30 Notice to Mariners.

The District Commander may publish information concerning State aids to navigation, including regulatory markers, in the Coast Guard Local Notices to Mariners as he deems necessary in the interest of public safety.

Notices to Mariners which concern the establishment, disestablishment, or change of State aids to navigation, including regulatory markers, may be published whenever the aids to navigation concerned are covered by navigational charts or maps issued by the National Ocean Service or the U.S. Army Corps of Engineers.

66.05-35 Private aids to navigation other than State owned.

No person, public body or other instrumentality not under control of the Commandant or the State Administrator, exclusive of the Armed Forces of the United States, shall establish, erect or maintain in State waters for private aids to navigation any aid to navigation without first obtaining permission to do so from the State Administrator. Discontinuance of any State aids to navigation may be effected by order of the State Administrator.

66.05-40 Corps of Engineers' approval.

In each instance where a regulatory marker is to be established in navigable waters of the United States which have been designated by the Commandant as State waters for private aids to navigation, the State Administrator is responsible for obtaining prior permission from the District Engineer, U.S. Army Corps of Engineers concerned, authorizing the State to regulate the water area involved, or a statement that there is no objection to the proposed regulation of the water area. A copy of the Corps of Engineers permit or letter of authority shall be provided by the Administrator to the District Commander upon request.

Similarly, where an aid to navigation is to be placed on a fixed structure or a mooring buoy is to be established in State waters for private aids to navigation, the State Administrator shall assure that prior permission or a statement of no objection to the structures or mooring buoys proposed is obtained from the District Engineer concerned. A copy of the permit or letter is not required by the District Commander.

66.05-100 Designation of navigable waters as State waters for private aids to navigation.

In accordance with the procedures contained in Sec. 66.05-10(d), the following navigable waters listed by the State in which they are located, are designated as State waters for private aids to navigation:

(a) Arizona. The portion of Lake Havasu within the State, except that portion within Havasu Lake National Wildlife Refuge.

(b) Louisiana. The portion of Toledo Bend Reservoir within the State.

(c) Missouri. Teach water within the State except the:

(1) Mississippi River; and

(2) Missouri River.

(d) Montana. The portion of Missouri River between the U.S. Highway 287 bridge near Townsend and Great Falls including the following impoundments:

(1) Black Eagle Dam Reservoir.

(2) Canyon Ferry Reservoir.

(3) Hauser Lake.

(4) Holter Lake.

(5) Rainbow Dam Reservoir.

(e) North Carolina. Each navigable water within the State not marked with Coast Guard aids to navigation on June 1, 1973.

(f) Pennsylvania. The portion of Youghiogeny River Reservoir within the State.

(f-1) South Carolina.

(1) The portion of Lake Wylie within the State;

(2) Lake Marion;

(3) Lake Moultrie; and (4) Lake Murray.

(g) Texas. The portion of Toledo Bend Reservoir within the State.

(h) Virginia.

(1) Claytor Lake, on the New River in Pulaski County.

(2) Leesville Lake, on the Roanoke River below Smith Mountain Dam.

(3) The portions of the following reservoirs within the State:

(i) Gaston.

(ii) Holston.

(iii) John H. Kerr.

(iv) Philpott.

(i) Wisconsin. Navigable waters within the State not marked with Coast Guard aids to navigation as of May 1, 1996.

Uniform State Waterway Marking System Sec. 66.10-1 General.

Until December 31, 2003, the Uniform State Waterway Marking System's (USWMS) aids to navigation provisions for marking channels and obstructions may be used in those navigable waters of the U.S. that have been designated as state waters for private aids to navigation and in those internal waters that are non-navigable waters of the U.S. All other provisions for the use of regulatory markers and other aids to navigation shall be in accordance with United States Aid to Navigation System.

The USATONS may be used in all U.S. waters under state jurisdiction, including non-navigable state waters.

66.10-15 Aids to navigation.

USWMS aids to navigation may have lateral or cardinal meaning.

On a well defined channel including a river or other relatively narrow natural or improved waterway, an aid to navigation shall normally be a solid colored buoy. A buoy which marks the left side of the channel viewed looking upstream or toward the head of navigation shall be colored all black. A buoy which marks the right side of the channel viewed looking upstream or toward the head of navigation shall be colored all red. On a well defined channel, solid colored buoys shall be established in pairs, one on each side of the navigable channel which they mark, and opposite each other to inform the user that the channel lies between the buoys and that he should pass between the buoys.

On an irregularly defined channel, solid colored buoys may be used singly in staggered fashion on alternate sides of the channel provided they are spaced at sufficiently close intervals to inform the user that the channel lies between the buoys and that he should pass between the buoys.

Where there is no well-defined channel or when a body of water is obstructed by objects whose nature or location is such that the obstruction can be approached by a vessel from more than one direction, supplemental aids to navigation having cardinal meaning (i.e., pertaining to the cardinal points of the compass, north, east, south, and west) may be used. The use of an aid to

navigation having cardinal meaning is discretionary provided that the use of such a marker is limited to wholly State owned waters and the State waters for private aids to navigation as defined and described in this part

Aids to navigation conforming to the cardinal system shall consist of three distinctly colored buoys.

(1) A white buoy with a red top may be used to indicate to a vessel operator that he must pass to the south or west of the buoy.

(2) A white buoy with a black top may be used to indicate to a vessel operator that he must pass to the north or east of the buoy.

(3) In addition, a buoy showing alternate vertical red and white stripes may be used to indicate to a vessel operator that an obstruction to navigation extends from the nearest shore to the buoy and that he must not pass between the buoy and shore. The number of white and red stripes is discretionary, provided that the white stripes are twice the width of the red stripes.

66.10-35 Navigation lights.

A red light shall only be used on a solid colored red buoy. A green light shall only be used on a solid colored black or a solid colored green buoy. White lights shall be used for all other buoys. When a light is used on a cardinal system buoy or a vertically striped white and red buoy, it shall always be quick flashing.

Introduction

One of the primary responsibilities of the Auxiliary Private Aids to Navigation Program is the reporting of discrepancies observed on Private Aids to Navigation (PATON). The Auxiliary works with the U.S. Coast Guard to accomplish this important mission in a partnership that is focused on assisting the Coast Guard in backwater and remote areas where most of the private aids are normally deployed.

This “**Private Aids to Navigation (PATON) Study Guide**” explains the guidelines for checking private aids and for reporting observations of any discrepancies to the local CG Units.

Checking vs Verifying an Aid

Checking is the process of reviewing an aid to navigation for potential discrepancies. Every Auxiliarist, while underway on an OPFAC, is encouraged to check every aid to navigation (both Federal and Private) that they pass and report only observed discrepancies to the Coast Guard.

Verifying of a private aid is reserved for a qualified AV (Aid Verifier) who performs a verification at the request of the Coast Guard. A verification report is submitted to the Coast Guard, even when the aid is found “watching properly.”

AUXDATA Credit for Aids to Navigation (AN) Activity

Auxiliarists are able to take credit in AUXDATA for all of their Private Aid to Navigation activities, whether an aid is observed with a discrepancy or is found watching properly. The guiding principal here is that it takes a lot of an Auxiliarist’s time and effort to search out a discrepant private aid and, therefore, they should receive credit for this mission activity.

ANNUAL ATON Awards

Annual Aid to Navigation awards are based on the AN Mission Activity data (**30-ATON**, **31-PATON**) in AUXDATA.

Tools needed for checking Private Aids (PATON):

The following tools are needed for checking PATON properly. Usually, this equipment is found aboard an operational facility (OPFAC). However, many Auxiliarists, who participate in the AN Program, often carry a personal **Navigation Kit** that contains their personal navigation equipment. For a successful PATON checking experience, ensure that you have the right navigational tools, that they are operating accurately, and that they are available when needed. By including this equipment as part of your pre-underway equipment check, you are helping to guarantee a successful patrol. Pre-calibrate each electronic navigation instrument to ensure that it is operating accurately before you get underway. Make it a standard practice to record the test results on a pre-underway checklist. Links to Aids to Navigation publications and catalogs can be found on the US Coast Guards Navigation Center's Web Site at www.navcen.uscg.mil



Binoculars - Size 7 x 50 are preferred. Binoculars are used to view aids or objects that may be located in an area where it is unsafe to operate an operational facility (OPFAC) in order to get a close up view of potential discrepancies. Many small, inexpensive, and powerful binoculars or monoculars are commercially available and will make a perfect addition to your personal Navigation Kit.

Time Piece - A stopwatch is a useful tool for timing the period of an aid's light. Any good wristwatch also satisfies this operational need. Your GPS set can provide very accurate date and time information. Report the time when taking fixes and depths alongside aids. Set up a GPS screen to show time, Lat/Long, and EPE (Estimated Position Error). The screen set up in Figure 1 below is a very handy reference tool for collecting data when locating objects on-scene.



Figure 1 – Three-line GPS Screen

Latitude	Longitude
42-36-23.50 N	070-23-30.01 W
12.4 ft EPE	
Time:	14:45

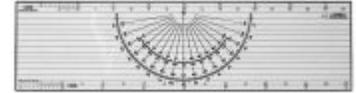
GPS - A GPS set with **DGPS** (Differential GPS) or **WAAS** (Wide Area Augmentation System) can provide location (LAT/LON) data accurate to within 8 to 10 feet. WAAS usually comes as a standard feature on new GPS sets. Ten feet is inside the limits of the width of the ordinary OPFAC. If you use one of the fine hand-held GPS models that are currently available, be sure to buy a power cable that plugs into your vessel's 12v power. Also, add spare batteries for your GPS to your navigation kit. Consider purchasing a hand-held GPS mounting bracket and attaching your hand-held GPS to a plotting board or large clipboard. The clipboard can hold your GPS set while underway and keep your reference documents from blowing away. Good organizational practices speed up the on-scene observations and recording time.





Pencil - An automatic pencil using 0.5 HB lead with an eraser is ideal. It is always sharp. Include extra pencils, lead and erasers in your personal navigation kit. If you decide to use regular wooden pencils, add a small pencil sharpener to your kit.

Plotter – A paraloid plotter is a practical plotting instrument to use on a small boat. Be sure your plotter has wheels to roll it easily on a chart without losing the course angle. Prudent mariners always plot their intended courses on their nautical chart before they get underway. Modern mariners take the extra step to establish waypoints and routes in their GPS, and schedule their aid verifications and checks along the route. This practice not only speeds up the ATON patrol but also saves much time and fuel. It also provides a great opportunity to teach navigation to the crew between planned PATON activity events. This practice also provides a safety factor for your return trip in the event of deteriorating weather. There are many different plotters available.



Digital Camera – A digital camera is a great tool for communicating discrepancies to the Coast Guard and other agencies. Purchase a computer cable with your camera to be able to download your pictures to your PC so that they can be e-mailed to the appropriate CG Unit or Agency. One picture of a discrepancy is often worth a thousand words. This phrase may sound trite but it is true. Clear photos of a discrepancy greatly increase the credibility of your discrepancy reports with the Coast Guard.

Record the number that is assigned to the picture by the camera on your “**D17 7054 Private Aid to Navigation Discrepancy Report**” form as you take the photos. This practice eliminates any confusion later about what has been photographed when you are finalizing your report for the Coast Guard.

Special Developments

Some Auxiliarists have fabricated many unique tools and instruments. Some examples are sounding poles for shallow depths, chain and wire drags, tools for measuring the angle of leaning aids, and plotting boards fitted with mounting devices for hand held GPS sets. Also, there are EXCEL systems developed that calculate the distance an aid is off station using location (Lat/Long) and almanac data available on your GPS. Check out the “**CU07 - Vertical and Horizontal Error Calculator Master**” on the Chart Updating web page on the First Northern Aid to Navigation Web Site <http://www.uscgaan.com/>. The use of GPS units with chart plotters and computerized charts facilitate verifying the aid’s position.



Calculators

There are many calculations needed when checking and preparing Federal Aid discrepancy reports. Add a good calculator to your Navigation Kit. The ideal unit would have a solar panel and a battery system for nighttime use. You may have to get two units. Do not forget to add spare batteries to your navigation kit.

References:

USCG Aids to Navigation Manual – Administration COMDTINST M16500.7A

Light List – COMDTPUB P16502.6 / Summary of Corrections

<http://www.navcen.uscg.gov/pubs/LightLists/LightLists.htm>

US Coast Pilot 8 Alaska: Dixon Entrance to Cape Spencer

US Coast Pilot 9 Alaska: Cape Spencer to Beaufort Sea

<http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>

Chart No. 1

US Coast Guard Navigation Center

<http://www.navcen.uscg.gov/>

LNM - Local Notice to Mariners

www.navcen.uscg.gov/lnm/default.htm

Tide Tables

<http://tidesonline.nos.noaa.gov/>

NOAA Nautical Charts

Online chart Viewer- <http://www.NauticalCharts.gov/viewer>

Summary of Chart Corrections- <http://chartmaker.ncd.noaa.gov>

D1NR Web Site – An Auxiliary web site with very good information

<http://www.uscgaan.com/>

D17 Points of Contact:

DPW

Phone:(907) 463-2262

Fax: (907)463-2273

D17-PF-D17-LNM@USCG.MIL

D17 PATON Manager- (907)463-2272

D17 Command Center

Phone: (907) 463-2001

Fax: (907) 463- 2023

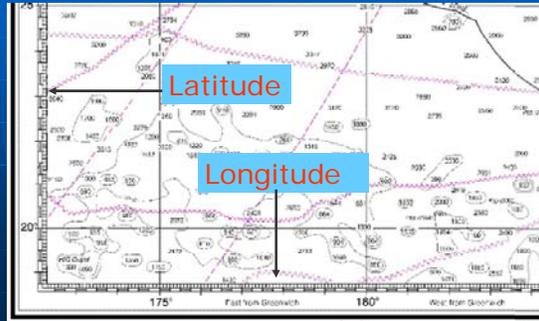
JRCCJuneau@USCG.MIL

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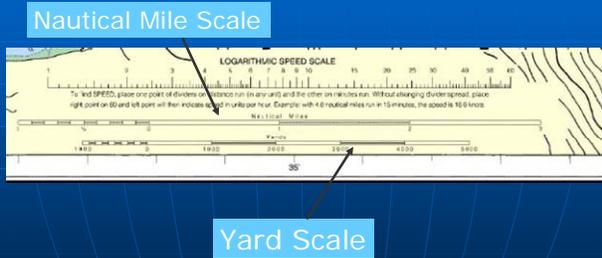
NOAA Charts



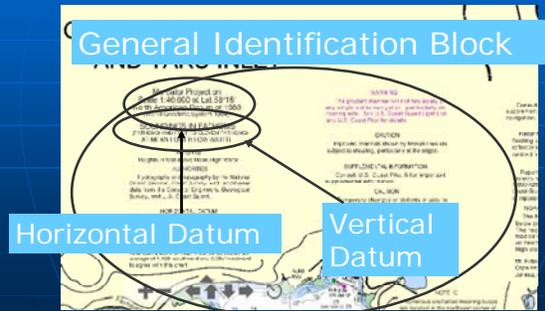
NOAA Charts



NOAA Charts

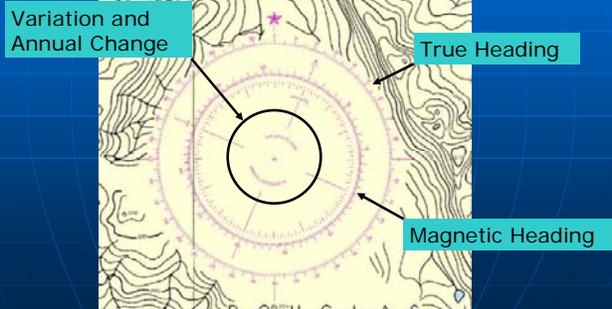


NOAA Charts

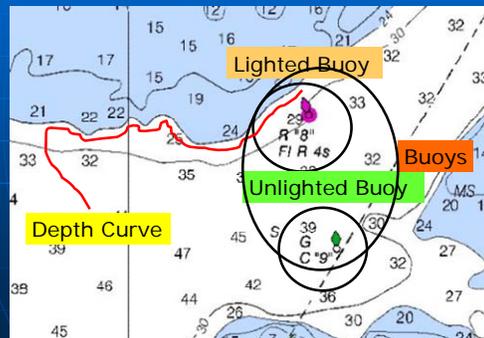


NOAA Charts

Compass Rose



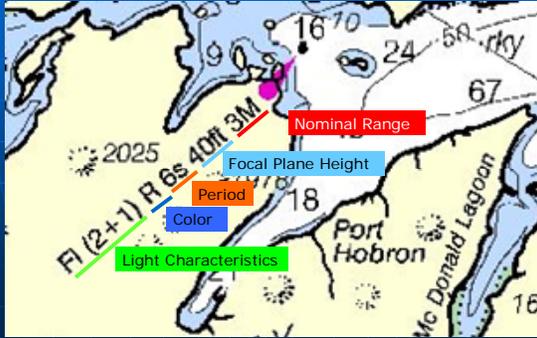
NOAA Charts



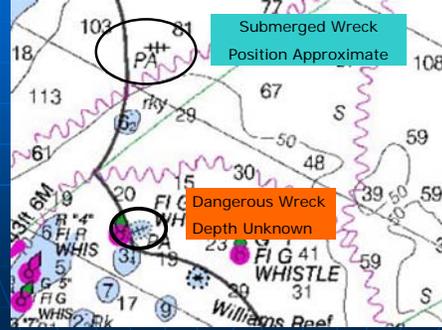
Notes

Four empty horizontal lines for taking notes.

NOAA Charts



NOAA Charts



NOAA Charts



NOAA Nautical Chart - Every OPFAC should always use the latest and largest scale NOAA nautical chart updated to the latest Local Notice to Mariners (LNM).

Internet links to NOAA Nautical Charts and Local Notice to Mariners (LNM) corrections for every NOAA nautical chart are available on the National Navigation Systems Division Web Site. Keep copies of the largest scale NOAA Nautical Charts in your personal navigation kit.

While coxswains and vessel owners are responsible for maintaining up-to-date nautical charts on their OPFACs, FSO Staff officers should offer their chart correcting skills and services to the OPFAC owners in the flotilla and division as a regular part of their responsibilities.

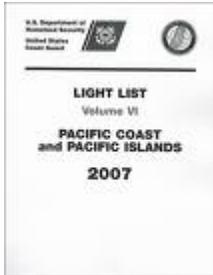
Notes

Charts and Nautical Publications

Light List



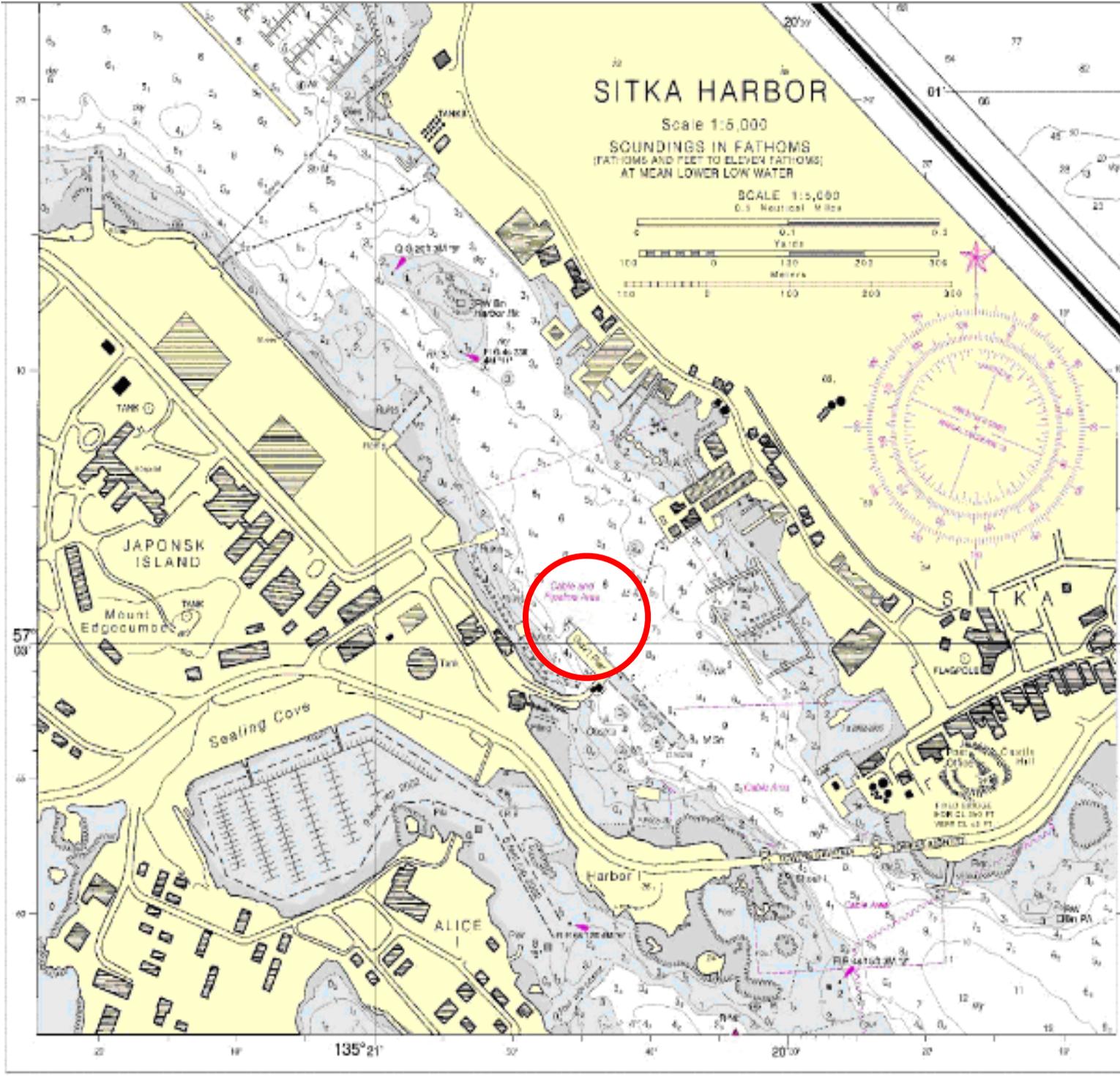
(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
ALASKA - Seventeenth District							
24115	- EAST SHOAL LIGHT 8	58 06 12 N 134 46 22 W	FIR 2.5s	20	4	TR on spindle.	
24117	- ENTRANCE LIGHT	58 06 32 N 134 46 29 W	FI W 4s	13	5	NR on skeleton tower.	Obscured from 006° to 264°.
Icy Strait							
24120	HANUS REEF LIGHT	58 07 50 N 135 00 00 W	FI W 2.5s	25	6	NR on skeleton tower on concrete pier.	
24125	ROCKY ISLAND LIGHT 13	58 10 39 N 135 03 07 W	FI G 4s	43	4	SG on square frame.	
24130	SWANSON HARBOR ENTRANCE LIGHT 2	58 11 35 N 135 04 43 W	FIR 6s	21	4	TR on skeleton tower.	Obscured from 144° to 299°.
24132	Swanson Harbor Channel Stakes (about 10)	58 13 06 N 135 07 00 W		8		Pilings.	Tide gauges show least depth. Private aids.

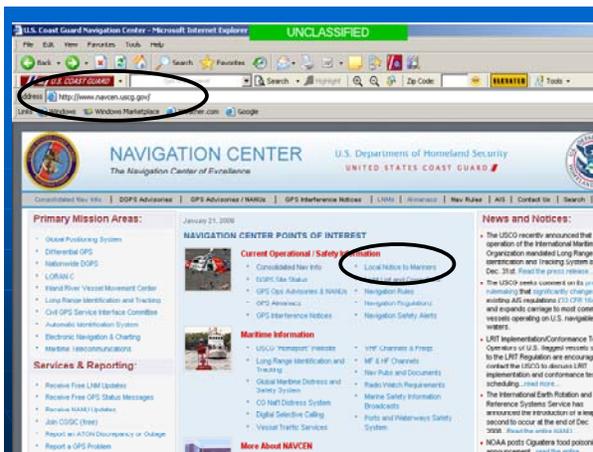


The **Light List** contains a listing of most of the aids to navigation in your AOR. Note that some private aids may not be listed in the Light List. In D17 we use Light List Volume VI – Pacific Coast and Pacific Islands. Links to the Light List are available on the Coast Guard’s Navigation Center Web Site at www.navcen.uscg.mil Print out only those pages that relate to the area where you operate your boat.

Check all on-scene observations for each aid to navigation against its entry in the Light List. Also, validate your observation of the aid and the entry in the Light List to the symbols and abbreviations used to identify the aid on the NOAA chart. Any mismatch is a reportable discrepancy. Note that the assigned position of a charted aid is changed by NOAA from reports made to the Coast Guard and published in the Light List.

Notes





Charts and Nautical Publications

Local Notice to Mariners



SECTION VIII - LIGHT LIST CORRECTIONS
An Asterisk * indicates the column in which a correction has been made to new information.

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
25043	SITKA HARBOR GOVERNMENT PIER NORTH LIGHT	57-03-00.590 N 135-20-45.220 W	FR 2.5s	15	3	On pier.	01/09

Using the chart in your workbook on page 18
Apply the chart correction below

SECTION IV - CHART CORRECTIONS

This section contains corrections to federally and privately maintained Aids to Navigation, as well as NCGS corrections. This section contains corrective actions affecting charts. Corrections appear numerically by chart number, and pertain to that chart only. It is up to the mariner to decide which chart(s) are to be corrected. The following example explains individual elements of a typical chart correction.

Chart Number	Edition	Date	Last Local Notice to Mariners	Horizontal Datum Reference	Source of Correction	Current Local Notice to Mariners
12327	91st Ed.	19-APR-97	Last LNM: 26/97	NAD 83		27/97
Chart Title: NY-NJ-NEW YORK HARBOR - RARITAN RIVER						
Main Panel 2245 NEW YORK HARBOR						
(Temp) ADD	NATIONAL DOCK CHANNEL BUOY 3				CGD01 at 40-41-09.001N 074-02-48.001W	
	Green can				Position	
Corrective Action	Object of Corrective Action					
(Temp)	Indicates that the chart correction action is temporary in nature. Courses and bearings are given in degrees clockwise from 000 true. Bearings of light sectors are toward the light from seaward. The normal range of lights is expressed in nautical miles (NM) unless otherwise noted.					
17327	23rd Ed.	01-JUL-08	Last LNM: 33/08	NAD 83		01/09
Chart Title: Sitka Harbor and approaches; Sitka Harbor						
CHART SITKA HARBOR AND APPROACHES. Page/Side: N/A						
ADD	Sitka Harbor Government Pier North Light				CGD17 at 57-03-00.590 N 135-20-45.220 W	
	FR 2.5s					
	15 FR, 3 Naut MI					

LNM – Local Notice to Mariners - Keep your flotilla charts and other nautical publications updated to the latest Local Notice to Mariners. The LNM is available on a weekly basis and is published on the Coast Guard’s Navigation Center web site. Prudent mariners update their nautical chart(s), Light List and Coast Pilot before every ATON patrol. Links to your LNM are available on the National Navigation Centers Web Site at www.navcen.uscg.gov/lnm/default.htm

Notes

Module 2

US Aids to Navigation System

US Aids to Navigation System Definitions

- Aid to Navigation:
 - Any device **external** to a vessel or aircraft intended to assist a navigator to determine position, safe course, or to warn of dangers or obstructions to navigation.
- Buoy:
 - An unmanned, floating aid to navigation moored to the **seabed**. They may be lighted or unlighted.

US Aids to Navigation System Definitions

- Beacon:
 - Any **fixed** aid to navigation located on shore or marine sites. Lighted beacons are called **lights**, unlighted beacons are called **day beacons**.
- Daymark:
 - The daytime **identifier** of an aid to navigation presenting one of several colors, shapes, numerals or letters.
 1. Square, triangle, rectangle, diamond or octagon
 2. Top marks on buoys, and the buoy's shape

US Aids to Navigation System Definitions

- IALA:
 - The **International Association of Marine Aids to Navigation and Lighthouse Authorities**
 - Divides world into 2 regions
 - Region "A": **Most of the World**
 - Region "B": **North & South America, Japan, Korea, and the Philippines**

US Aids to Navigation System IALA B

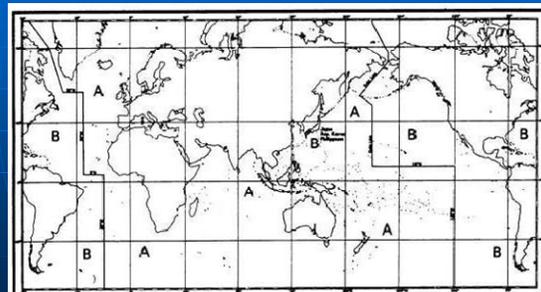


Figure 22.—IALA Maritime Buoyage System: buoyage regions A and B.

US Aids to Navigation System IALA B

- Region "A"
 - **Green Even Triangles**
 - **Red Odd Squares**
- Region "B"
 - **Red Even Triangles**
 - **Green Odd Squares**



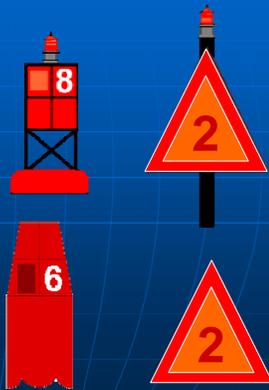
The IALA-B System of Aids to Navigation

The U.S. Aids to Navigation System is predominantly a lateral system which is consistent with Region B requirements of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA-B) Maritime Buoyage System. Exceptions exist for the U.S. possessions west of the International Date Line and those south of 10 degrees north latitude, which follow the IALA-A Aid to Navigation System. **Private aids that do not conform to these specifications should be reported as discrepant.**

US Aids to Navigation System Lateral Aids

Starboard Lateral Marks

- Color: **Red**
- Shape: **Triangles and Nuns**
- Character: **Even Numbers and same color as board**
- Light: **Red**



US Aids to Navigation System Lateral Aids

Port Lateral Marks

- Color: **Green**
- Shape: **Squares and Cans**
- Character: **Odd Numbers and same color as board**
- Light: **Green**



THE LATERAL SYSTEM AS SEEN WHEN ENTERING FROM SEAWARD

Lateral marks define the port and starboard sides of a route. Their most frequent use is to mark the sides of channels. However, they may be used individually to mark obstructions located outside of clearly defined channels. Lateral marks normally have three criteria that assist the mariner in their quick identification – **shape**, **color**, and **numbering**. Lighted lateral aids use the same light color as the aid color. Lighted aids are often made up from a buoy body and the structure on which the light is mounted. While this voids the shape criterion, the light color becomes the third criteria during the nighttime and periods of reduced visibility. Lateral aids are numbered from seaward toward the land, from the mouth of rivers upstream, and clockwise around islands.

Lateral marks include side marks and preferred channel marks. Side marks are not always placed directly on a channel edge and may be positioned outside the channel as indicated on charts and nautical publications.

Notes

Port side marks indicate the left side of channels when proceeding in the conventional directions of buoyage. They are normally square or can in shape, green in color, and have odd numbering. Beacons have green square daymarks while buoys are green cans or pillar buoys. **Green** lights of various rhythms are used on port side marks. **Private aids used to mark fairways and channels should comply with these specifications.**

■ **Green Light Only**

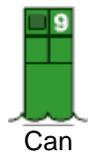
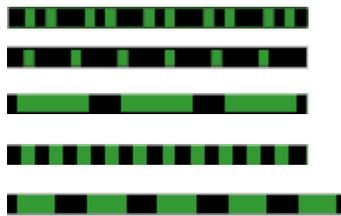
Flashing (2)

Flashing

Occulting

Quick Flashing

ISO



Note that the numbers on daymarks are the color of the aid while the numbers on buoys are white.

Notes

Starboard Side Marks indicate the right side of channels when proceeding in the conventional direction of buoyage. They are normally conical or nun shaped, red in color, and have even numbering. Beacons have triangular red daymarks while buoys are red nuns or pillar buoys. Red lights of various rhythms are used on starboard side marks. **Private aids used to mark fairways and channels should comply with these specifications.**

■ **Red Light Only**

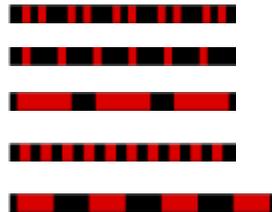
Flashing (2)

Flashing

Occulting

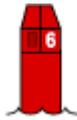
Quick Flashing

ISO



Light

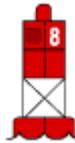
Note that daymarks have colored numbers.



Nun



FIR 6s



Lighted Buoy

Note that buoys have white numbers.



*R "8"
FIR 4s*



*R
N"6"*



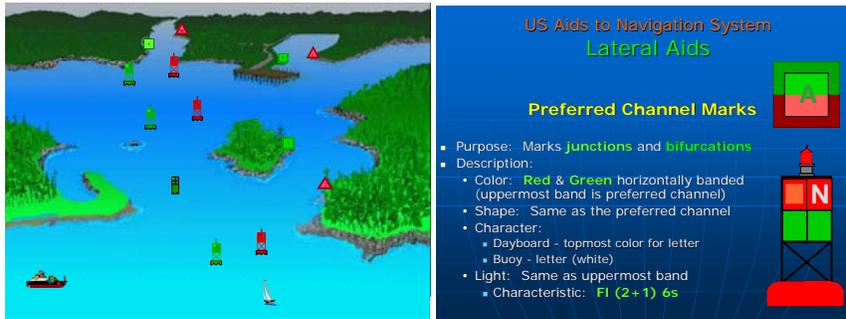
Daybeacon



*R
"2"*

Note that the numbers on daymarks are the color of the aid while the numbers on buoys are white.

Notes



Preferred Channel Aids

Private aids used to mark junctions and bifurcations should comply with these specifications.

Preferred Channel to Starboard - have no numbers but may be lettered.

Used as Port Side aids in the Primary Channel; used as Starboard Side aids in the Secondary Channel.

The topmost bands are colored **green**.

Green Light Only

Composite Group Flashing (2+1)



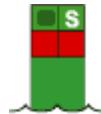
GR "A"
Fl (2+1) G 6s



Daybeacon



GR
"U"



Can



GR
C "S"

Preferred Channel to Port - have no numbers but may be lettered.

Used as a Starboard Side aids in the primary channel, used as a Port Side aids in the Secondary Channel.

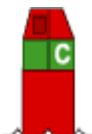
The topmost bands are colored **red**.

Red Light Only

Composite Group Flashing (2+1)



RG "B"
Fl (2+1) R 6s



Nun



RG
N "C"



Daybeacon



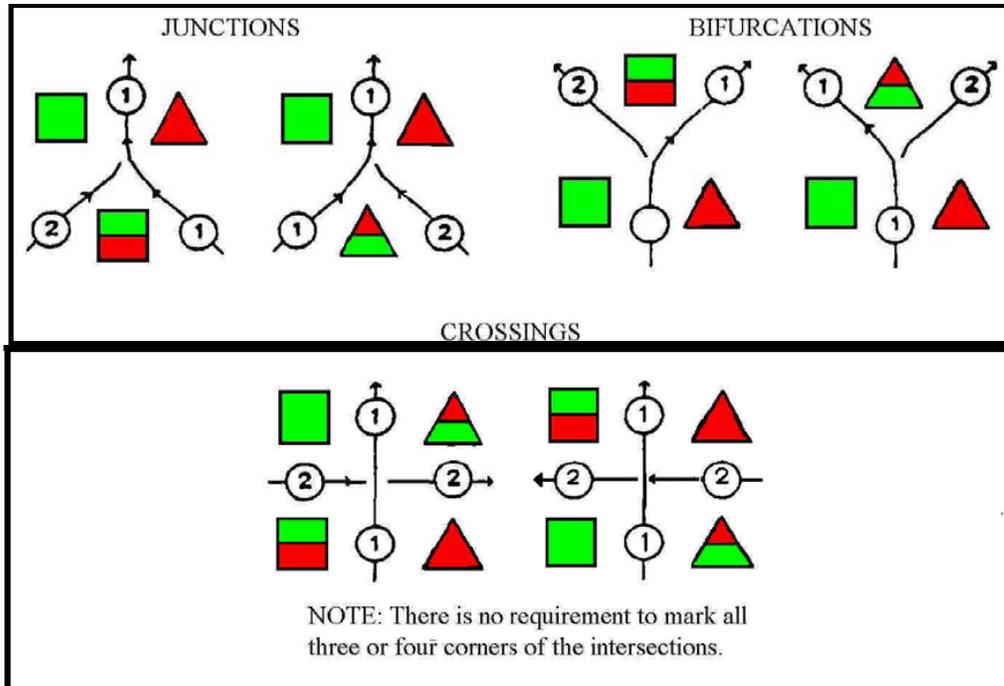
RG
"G"

Junction – The point where a channel divides when proceeding to seaward. The point where a tributary departs or splits from the main channel.

Bifurcation – The point where a channel divides when proceeding from seaward--the place where two tributaries meet.

Crossing – The point where a main and secondary channel cross each other.

Note the placement of the preferred channel buoys in the three examples below. The main channels are labeled as 1. The secondary channels are labeled as 2.



Notes

US Aids to Navigation System Non Lateral Aids

Safe Water Marks

- Purpose: Indicates **navigable** water all around the mark (i.e. mid-channel, fairway, sea buoy)
- Description:
 - Color: **Red and White vertically striped**
 - Shape: **Sphere or Buoy with 1 red ball top mark**
 - Character: **Letters** (white) (ex. "GB" Galveston Bay)
 - Light: **White**
 - Characteristic: **Mo(A)**



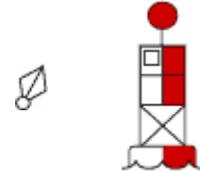
Safe Water Marks indicate that there is navigable water all around the mark. They usually mark fairways, midchannels, and offshore approach points. Safe water marks have red and white vertical stripes, are spherical in shape and are never numbered. When a Safe Water mark is lighted or fitted with a sound signal, it displays a red spherical topmark. Lighted Safe Water marks show a white light with a Morse Code "A" rhythm.



Have no numbers but may be lettered.

- White light only, shows a Morse code rhythm.**

Mo(A)



Notes

27

US Aids to Navigation System Non Lateral Aids

Isolated Danger Marks

- Purpose: Marks isolated danger which may be passed on all sides (no lateral significance)
- Description:
 - Color: **Black and red horizontally banded**
 - Shape: **Buoy with top mark**
 - Character: **White letters**
 - Light: **White**
 - Characteristic: **Fl (2) 5s**
 - Top mark: **2 black balls**



None in Alaska

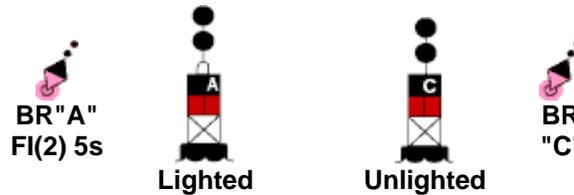
Isolated Danger marks are erected on, moored over, or placed immediately adjacent to an isolated danger that may be passed on all sides by mariners. They are black with one or more broad horizontal red bands and are fitted with a top mark of two black spheres, one above the other. When lighted, the aid displays a white light, group flashing (two) with a period of five seconds. **These aids should not be approached closely without special caution.**

Figure 8 - Isolated Danger Marks

Have no numbers but may be lettered.

White Light Only

Fl(2) 5s 

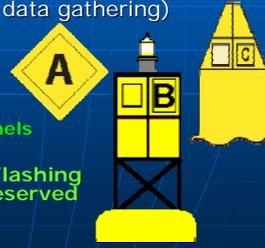


Notes

US Aids to Navigation System Non Lateral Aids

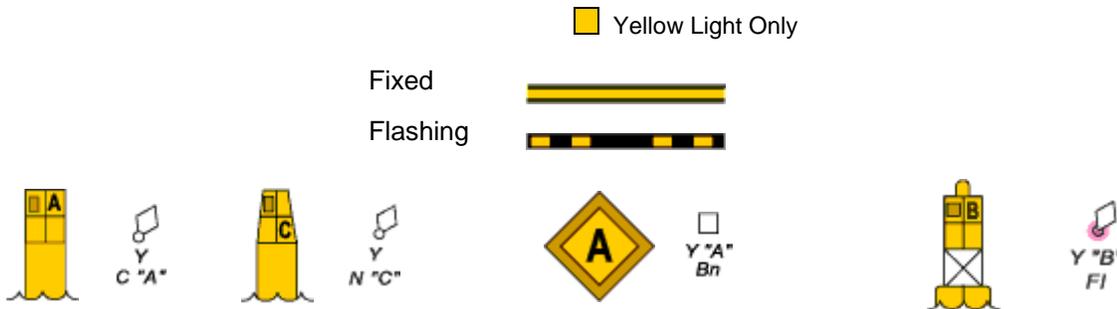
Special Purpose Aids

- Purpose: Not intended to assist safe navigation but to indicate special areas marked on charts (anchorage, traffic separation, data gathering)
- Description:
 - Color: **Yellow**
 - Shape: **Various**
 - Character: **Black letters**
 - Buoys – on yellow retro panels
 - Light: **Yellow**
 - Characteristic: **Any Slow Flashing Rhythm, not otherwise reserved**



Special Marks are not primarily intended to assist safe navigation, but more to indicate a special area or a feature referenced on charts or in another nautical publication. They may be used, for example, to mark anchorages, cable or pipeline areas, traffic separation schemes, military exercise zones, ocean data acquisition systems, etc. Special marks are colored a solid yellow and, when lighted, show yellow lights with a slow-flashing rhythm preferred. Special marks may not show a quick-flashing rhythm. **Many special marks are often private aids.**

Figure 9 - **Special Marks** — May Be Lettered.



Notes

US Aids to Navigation System
Non Lateral Aids

Information and Regulatory Marks

- Purpose: Alert the mariner to such things as submerged pipes, no wake zones, etc.
- Description:
 - Color: **White; orange band or border (retro)**
 - Shape: **Square or Diamond**
 - Character: **Letters (black, usually words)**
 - Light: **White**
 - Characteristic: **Any Rhythm, not reserved**

US Aids to Navigation System
Non Lateral Aids

Information and Regulatory Marks



EXCLUSION
AREA



RESTRICTED
AREA



DANGER



Information and Regulatory Marks are used to alert the mariner about various conditions or regulatory matters. These marks have orange geometric shapes against a white background. When lighted, these marks show a white light with any rhythm not reserved for other types of aids. The meanings of the orange shapes are:

A vertical **open-faced diamond shape** signifies **danger**. These buoys are often termed “Danger Buoys.” The nature of the danger is often indicated inside the diamond shape, such as, Dam, Rock, Shoal, etc.

A vertical **diamond shape, with a cross centered within the diamond** indicates that vessels are **excluded** from the marked area. These buoys are often called “Exclusion Buoys.” The explanation for the exclusion may be placed outside the crossed diamond shape, such as, Exclusion Area, Dam, Rapids, Falls, etc.

A **circular shape** indicates that certain **operating restrictions** or **controls** are in effect within the marked area. These buoys have various names, such as, No Wake Buoy, Speed Buoy, Regulatory Buoy, Swim Buoy, etc. The type of control is shown within the circle. Other restrictions may be placed outside the circle.

A **rectangular shape** is used for displaying information such as **directions, locations, distances**, etc.

Many Class 3 private aids are regulatory marks. Figure 10 below depicts examples of Information and Regulatory Marks.

Figure 10 - Information and Regulatory Marks

When lighted, may display any light rhythm except quick flashing and flashing (2)

NW White Light Only



Information and Regulatory Marks are used to alert vessel operators to various warnings or regulatory matters. Examples:

Boat Exclusion Area



Explanation may be placed outside the crossed diamond shape.

Danger



The nature of danger may be indicated inside the diamond shape, such as rock, wreck, shoal, dam, etc.

Controlled Area



Type of control is indicated in the circle, such as slow, no wake, anchoring, etc.

Information



Used to display directions, distances, locations, etc.



This buoy may be used to display regulatory markers.



May show white light and may be lettered.

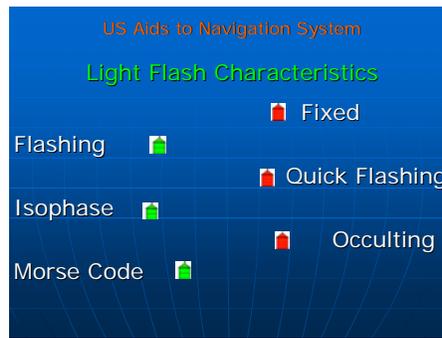
Mooring Buoys are white with a blue horizontal band. This distinctive color scheme facilitates identification and helps the mariner distinguish these buoys from regular aids to navigation. When lighted, mooring buoys display a white light with any rhythm not reserved for aids to navigation. Federal mooring buoys and those privately-owned mooring buoys that are permitted as Private Aids to Navigation, and are charted or included in the Light List, shall be listed in I-ATONIS. Ball-shaped mooring buoys are more common.

Mooring Buoys

May show white light or white reflector.



Notes



Light Characteristics

An aid's light characteristic consists of its color and rhythm. Authorized colors are red, green, white, and yellow. A light's characteristic is determined by the aid's function. The quick rhythm is the most conspicuous and is used on important lateral aids, such as aids in turns, marking shoals, and marking wrecks. Authorized rhythms are:

Fixed (F) – shows a continuous, unblinking light. Not authorized for lateral aids.

Flashing (FI) – the duration of light is clearly shorter than the duration of darkness. Frequency not greater than 30 flashes per minute.

Quick Flashing (Q) – the light duration is shorter than the duration of darkness. Frequency is at least 60 or more per minute.

Very Quick Flashing (VQ) – the light duration is shorter than the duration of darkness. Frequency is at least 100 per minute.

Interrupted Quick Flashing (IQ) – is similar to quick flashing but has a brief, extended darkness period.

Group Flashing (Gp FI (x+x)) – Combination of two patterns in one period, i.e. 2 flashes followed by three flashes would appear as **Gp FI (2 + 3)**. The darkness in between the groups is clearly longer than the darkness between flashes.

Long Flashing (LFL) – One long flash in a lighted period of at least 2 seconds.

Slow Flashing – less than 30 flashes per minute. The adjective ‘slow’ is usually omitted.

Isophase (Iso) – Light has equal duration between light and darkness. Period consists of both light and dark interval. Also called **Equal Interval (E Int)**.

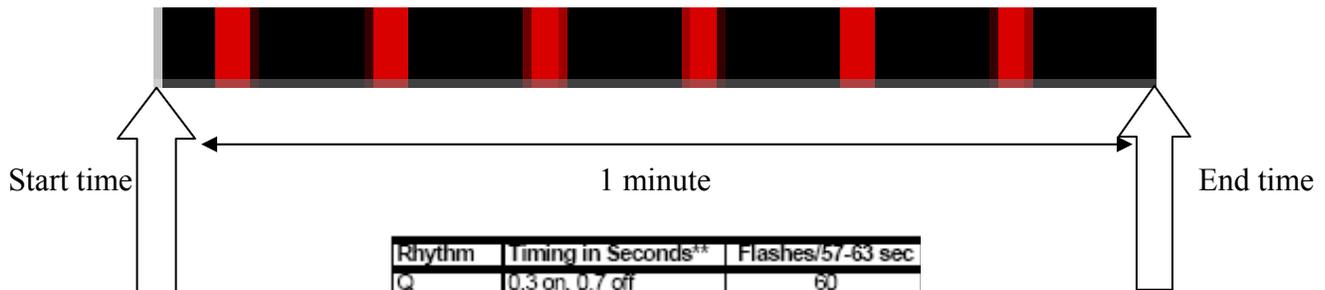
Occulting (Occ) – is the opposite of flashing – the light is on more than it is off.

Alternating (AL) – an alternating light changes color. It is used as a special purpose light for situations requiring significant caution.

Morse (Mo) – groups flashes (long and short) to form Morse code characters. Example: Morse code “U” shows two short flashes followed by one prolonged flash then a period of darkness.

Timing a Light

The light flash tolerance is $\pm 5\%$. This means that you should have \underline{x} number of flashes between 57 and 63 seconds.



Rhythm	Timing in Seconds**	Flashes/57-63 sec
Q	0.3 on, 0.7 off	60
Mb(A)	0.4 on, 0.6 off	30
	2.0 on, 5.0 off	(114-126 sec)
FL2.5(.3)	0.3 on, 2.2 off	24
FL2.5(1)*	1.0 on, 1.5 off	24
FL4(.4)	0.4 on, 3.6 off	15
FL4(1)*	1.0 on, 3.0 off	15
FL6(.6)	0.6 on, 5.4 off	10
FL(2)5	0.4 on, 0.6 off	24
	0.4 on, 3.6 off	
FL(2)6	1.0 on, 1.0 off	20
	1.0 on, 3.0 off	
FL(2+1)6	0.3 on, 0.4 off	30
	0.3 on, 1.2 off	
	0.3 on, 3.5 off	
Iso6*	3.0 on, 3.0 off	10
Iso2*	1.0 on, 1.0 off	30
Oc4*	3.0 on, 1.0 off	15
Fixed*	Steady on	Continuous



Major Lights are lights that have a range of 10nm or greater and reliability that is exhibited from a fixed structure. They do not fall under the IALA agreement. While their signal characteristics are largely discretionary, they will be marked to provide maximum information while avoiding conflicts with nearby aids displaying IALA markings. The coloration of a light is often unique in order to avoid confusion with any nearby lights. The color of the structure should allow the light tower to clearly stand out from its background.

A major light may or may not have colored sectors with higher intensities. Major lights have an availability standard of 90% and fall into two broad categories: Seacoast lights and Inland major lights.

Many lighthouses that have been converted to private ownership have been designated as Class I Private Aids to Navigation.

Coastal or seacoast lights assist vessels during coastal navigation or when making a landfall. Their operational range should, based on local visibility conditions, supply needed navigation data 90% of the time for the transition of the mariner into waters marked by the short range system.

Inland major lights are found in bays, sounds, and coastal approaches. They can serve a variety of functions including use as a leading light, a range light, an obstruction mark, a sector light, or simply a reference mark from which to obtain a needed visual bearing or radar range. They should have sufficient intensity so they are visible over their usable range 90% of the nights of the year when local visibility conditions are considered.

Directional or **Sector Lights** are devices that generate two or more defined regions by displaying different light color characteristics. In practice, directional lights have three sectors, usually red and green separated by a white sector. They are used to give an indication of a vessel's position with respect to the center of a waterway. Because there is only one light source, the mariner has no indication of how fast a vessel is moving across a given sector nor how far into a sector a vessel has moved. Directional lights should be avoided when an aid is needed to initiate a turn and the turn must be started an appropriate distance before the intersection of the channel centerlines.

Sector lights are commonly used to provide mariners with a warning that they are in an area where navigation may be impaired by a shoal, rock, etc. The mariner will have to use other aids or navigational tools to determine position relative to the danger. In practice, sector lights commonly have two sectors (usually red and white). When you can view the red lights, you are operating in danger.

Sector Lights



Solar LED Lanterns are self-contained units that eliminate the mechanical problems of previous lanterns such as the lamp changer. Each unit comes equipped with a battery, solar panels, and an LED light. They provide a high level of reliability while expanding the servicing cycle of the aid. Different sizes are available depending on the size of the solar panel required to maintain the light on the aid. While the light color is unalterable, the units provide options for different light characteristics and rhythms. The lights are available with different color lights, and solar panel power production. Solar LED lanterns are currently being deployed throughout the country.

Smaller size LED lanterns are available for use on private aids.

Notes

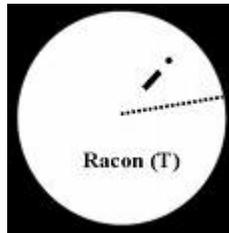
Fog Detector



Fog Detectors are very convenient devices for controlling sound signal operation. They are particularly useful where a live watch could be reduced or a radio link to a remote station could be eliminated. Fog signals are usually calibrated to energize the sound signal when the visibility drops below 3 miles.

Note on Fog Signals: Some fog signals are being updated to become “radio activated.” During times of reduced visibility, mariners are requested to tune their VHF-FM radio to a predetermined channel. The mariner can then activate the fog signal for a specified time period (minutes) by keying their VHF radio’s microphone, consecutively, a prescribed number of times, while on a specified VHF radio channel. Do not report such signals as “inoperative.” Do not activate these fog signals as a test during periods of clear visibility.

A **RACON** is a radar transponder, which produces a coded response, or radar paint, when triggered by a surface search radar signal. They are normally operated in the frequency ranges of the X-band and S-band marine radars. RACONs provide radar enhancement, help improve aid identification, and help during the transition from ocean to inland navigation. This is accomplished by the placement of a **RACON**:



RACON



- On a prominent point of land that allows the mariner to make a positive identification of the point for a landfall.
- On an aid to distinguish the aid from other aids and vessels where many echoes appear on the radar screen.
- Temporarily, on an aid that marks a new danger.

RACONs are coded with Morse-code letters that begin with a dash and contain no more than four elements. The code usually reflects letters that are consistent with the name of the location. The letter “**D**” is reserved for RACONs marking new, uncharted dangers.

Notes

Module 3

Private Aids to Navigation (PATON)



**Private Aids to Navigation
Failure to Comply**

No person, or public body, or instrumentality, excluding the armed services, shall establish, erect, or maintain any aid to maritime navigation in or adjacent to the waters subject to the jurisdiction of the United States, its territories or possessions, or the Trust Territory of the Pacific Islands, or on the high seas if that person, or public body, or instrumentality is subject to the jurisdiction of the United States, without first obtaining authority to do so from the Coast Guard in accordance with applicable regulations.

Whoever violates the provisions of this section or any of the regulations issued by the Secretary in accordance herewith shall be guilty of a misdemeanor and shall be fined not more than \$100 for each offense.

Each day during which such violation continues shall be considered as a new offense.

**Private Aids to Navigation
Classes of PATON
Class I**

Aids on marine structures or other works which the owners are legally obligated to establish, maintain, and operate.

- > In the Light List
- > Chartered

**Private Aids to Navigation
Classes of PATON
Class II**

Aids exclusive of Class I, that are located in waters used by general navigation.

- > In the Light List
- > Generally Chartered

**Private Aids to Navigation
Classes of PATON
Class III**

Aids exclusive of Class I and II, that are located in waters not ordinarily used by general navigation.

- > Not in the Light List
- > Not Chartered

Notes

Module 4

Aids to Navigation Discrepancies

Aids to Navigation Discrepancies

Aid Discrepancies

An aid discrepancy is defined as the **failure** of an aid to navigation to display its characteristics as described in the **Light List**, or to be on its **assigned position**

Aids to Navigation Discrepancies

Aid Discrepancies

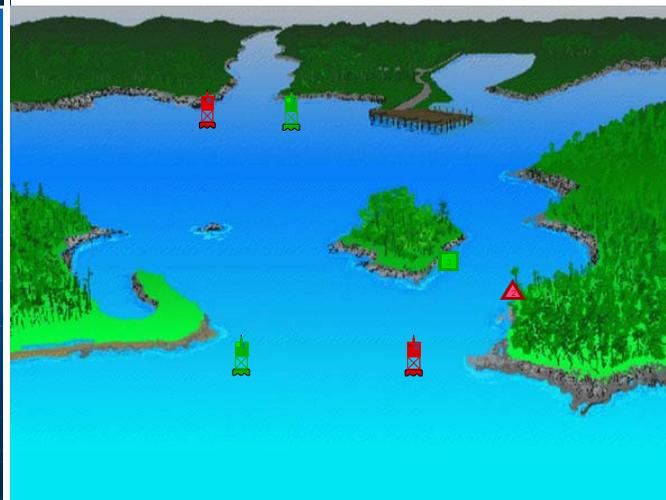


(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
ALASKA - Seventeenth District							
24115	EAST SHOAL LIGHT 8	58 06 12 N 134 46 22 W	Fl R 2.5s	20	4	TR on spindle.	
24117	ENTRANCE LIGHT Icy Strait	58 06 32 N 134 46 29 W	Fl W 4s	13	5	NR on skeleton tower.	Obscured from 090° to 264°.
24120	HANUS REEF LIGHT	58 07 50 N 135 00 00 W	Fl W 2.5s	25	6	NR on skeleton tower on concrete pier.	
24125	HOOKY ISLAND LIGHT 12	58 10 39 N 135 03 07 W	Fl G 4s	43	4	SG on square frame.	
24130	SWANSON HARBOR ENTRANCE LIGHT 2	58 11 35 N 135 04 43 W	Fl R 6s	21	4	TR on skeleton tower.	Obscured from 144° to 290°.
24132	Swanson Harbor Channel Stations (about 10)	58 13 06 N 135 07 00 W		8		Pilings	Tide gauges show least depth. Private aids.

Aids to Navigation Discrepancies

Aid Discrepancies Terms

- Missing
 - Adrift
 - Off station
 - Extinguished
 - Burning dim
 - Improper flash characteristics
 - Improper Color
 - Improper shape
 - Damaged
 - Destroyed (light leaning >45 degrees)
- Remember!!!
The aid must fail to display advertised characteristics to be "discrepant"
- When in doubt, report it.



Discrepancies on lights:

- **The light signal is showing improper characteristics or rhythm.** Must be observed during periods of darkness.
- **The light is leaning >45 degrees.** A leaning light is Watching Properly if it displays "All advertised characteristics" as noted in the Light List. Verify the angle it is leaning.
- **The light signal is obscured.** Explain the circumstances in the comment section on your report.
- **The light signal is extinguished.** Must be observed during periods of darkness.
- **The lantern is damaged.** This is always a good photo opportunity.
- **The light is burning dim or showing reduced intensity.** Verify by close examination that the "burning dim" or "reduced intensity" condition is not caused by smoke, by some other atmospheric conditions, or by the viewing angle.
- **The aid's light is partially obscured by dayboards.**

- **The battery box is missing or damaged.** Note that many lighted aids are being equipped with solar LED lanterns which do not need a battery box. The LED lights are self-contained fixtures—LED light, battery and solar panel.
- **The vent valve on a lighted buoy is missing.** Aids with solar LED light fixtures do not need vent valves. When the aid has an old type hull, even though fitted with an LED lantern fixture, always check the vent valve for integrity.
- **The vent tube(s) on a lighted buoy is broken.** Aids with solar LED light fixtures do not need vent valves. When the aid has an old type hull, even though fitted with an LED lantern fixture, always check the vent tubes for integrity.
- **Bird nests are obscuring the light.**
- **The solar panel is damaged or is not oriented correctly (toward the South).** Usually does not apply to Solar LED fixtures. However, do check for damage or vandalism.

Discrepancies on major lights:

- **Aid is extinguished.** Many private major lights are unmanned and therefore should be checked each time they are passed
- **Aid has been vandalized.** Most major lights are located in remote areas and, since they are unmanned, are susceptible to vandalism.
- **Also, check the discrepancies related to lanterns.**

Discrepancies on a sound signal:

- **The sound signal, either a bell, a gong, a horn, or a whistle, is inoperative.** Sound signals may be electrically operated or wave actuated.
- **The tappers on a gong or a bell are missing.**
- **The sounding device is missing.**
- **The fog horn is inoperative.**

Discrepancy on a fog detector:

- **The fog detector is inoperative.**

Discrepancies on a RACON:

- **The aid's RACON is off the air.**
- **The aid's RACON is emitting improper characteristics per the Light List.**

Discrepancies on ranges:

- **Range is not marking the center of the navigable channel.** See the CU02-Chart Updating Study Guide for instructions for the proper reporting of this discrepancy to the Coast Guard and NOAA.
- **Range Panels have faded.** Since fading is such a subjective opinion, use the criterion, “Can the range panel colors be interpreted as the wrong color, such as, red for orange or yellow, green for yellow, etc. Then, report the panel as faded. Photos are good evidence for this type of discrepancy.
- **Range panels are missing.** Note that many ranges that are lighted 24/7 may not have range panels. Recent efficiency improvements in optics combined with solar power has allowed the Coast Guard to expand the use of daytime lighted ranges even when commercial power is not available.

- **Range panels are obstructed by brush or new construction.** Good photo opportunity.
- **Range supporting structure is deteriorated, rotting, or eroding.** Good photo opportunity.
- **Range lights are extinguished.**

PATON Discrepancies are reported to the local CG unit on an “**D17-7054 Aid to Navigation Discrepancy Report**”

- This report alerts the Coast Guard about the problem on the aid.
- When no discrepancies are observed on the PATON (i.e., aid is watching properly), it is not necessary to make a report to the Coast Guard unless it is the annual required verification report or a Coast Guard unit specifically requests it.
- **Note:** Your 7054 report alerts the Coast Guard but does not interface with the AUXDATA system. If you only prepare this 7054 report, you do not get any credit for underway hours in the Boat Crew program and do not receive any credit for your AN Mission activity in AUXDATA. You must submit a 7054 and a 7030 report.

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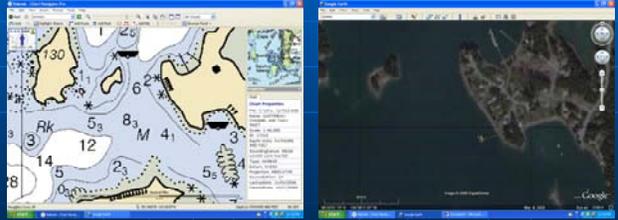
Aids to Navigation Discrepancies

Unauthorized Aids



Aids to Navigation Discrepancies

Uncharted structures, docks, or other navigation hazard



Also notify D17 (dpw) if there are areas that might need additional Federal Aids

Notes

USCG Integrated ATONIS

Integrated Aids to Navigation Information System

Private Aid Verification Form

FPVER

RETURN THIS COMPLETED FORM NO LATER THAN ONE WEEK AFTER VERIFICATION

Aid Num : 100117228570 South Naknek City Dock East Light 58-43-14.220N
Member No.: Aid Type : LT Depth : 156-59-07.860W
LLNR 27783 Snd Type :
Lt Char : F1 R 6s Charts : 16011 16323
Last Insp : 01/01/1930 Mile Marker :
Unit Remarks :

Inspector : _____ Date Inspected On : _____

Aux. Phone : _____ Aux. Num : _____ Aux. Region : _____

Yes No

- Light List Verified? i.e. Name, Position, Characteristics, Structure
 IALA Verified? i.e. Conforms to IALA; Position, Characteristics, Aid Color
 2554 Verified?
 Position Check ?

Method : LORAN GPS Sextant Angles Bearings

Ranges: Other _____ Position : _____

LOP 1 : Bearing : _____ Range : _____ Object : _____

LOP 2 : Bearing : _____ Range : _____ Object : _____

LOP 3 : Bearing : _____ Range : _____ Object : _____

DISCREPANCY

(REPORT ALL DISCREPANCIES TO COGNIZANT GROUP COMMANDER)

- Light Out Improper Characteristic Broken Lens Light Obscured
 Missing Off Station Vandalized Peeling Paint Retro Peeling
 Number Obliterated Sinking Aid Obscured Damaged Bird Fouling

(Explain unlisted discrepancies in the Comments section below)

Method of Reporting Discrepancy : MAIL PHONE RADIO Time Reported _____ L

Coast Guard Unit notified : _____ Other : _____

DID YOU REMEMBER TO CONVERT GPS OR LORAN LAT/LON DECIMALS TO SECONDS? Yes No

Comments : (continue on reverse if necessary)

Aids to Navigation Documentation

PATON Verification

USCG Integrated ATONIS
Private Aid Verification Form

RETURN THIS COMPLETED FORM NO LATER THAN ONE WEEK AFTER VERIFICATION

Aid Num: 100117150522
Aid Type: LT
Depth: 57.46-47.360N
135-13-17.560W

Member No: 11NR 24064
Li Char: Q W
Last Insp: 07/07/2008

Unit Remarks:

Record your observations directly on this form.

USCG Integrated ATONIS
Private Aid Verification Form

RETURN THIS COMPLETED FORM NO LATER THAN ONE WEEK AFTER VERIFICATION

Aid Num: 100117150522
Member No: 11NR 24064
Li Char: Q W
Last Insp: 07/07/2008

Tenakee House Light
Aid Type: LT
Depth: 57.46-47.360N
135-13-17.560W
Snd Type: Charts: 17300

Correct for tide

Unit Remarks:

Aids to Navigation Documentation

PATON Verification

Verifying Information Section

J. Jones
Inspector: 907-332-8852
Date Inspected On: 8/15/08
Aux Num: 1143885
Aux Region: DIV 10

Light List Verified? Yes No
IALA Verified? Yes No
2554 Verified? Yes No
Position Check? Yes No

EPE 10.3 ft.

Method: LORAN GPS Sextant Angles Bearings

LOP 1: Bearing: Range: Object:
LOP 2: Bearing: Range: Object:
LOP 3: Bearing: Range: Object:

Aids to Navigation Documentation

PATON Verification

Discrepancy Information Section

DISCREPANCY
(REPORT ALL DISCREPANCIES TO COGNIZANT GROUP COMMANDER)

Light Out Improper Characteristic Broken Lens Light Obscured
 Missing Off Station Vandalized Peeling Paint Retro Peeling
 Number Obliterated Sinking Aid Obscured Damaged Bird Fouling

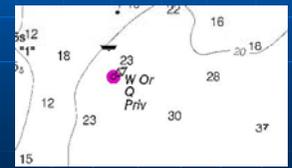
Method of Reporting Discrepancy: MAIL PHONE RADIO
Time Reported: 1630
Coast Guard Unit notified: D17 Command Center
Other: OS1 Smith

DID YOU REMEMBER TO CONVERT GPS OR LORAN LAT/LON DECIMALS TO SECONDS? Yes No

Aids to Navigation Documentation

PATON Verification

•Night time (Flashing 60 fpm)
•GPS position:
60°06'46.000N
149°25'47.000W
EPE 5.1 ft



26004	Straw Hat Deck Lighted Buoy	60 06 46 N 149 25 47 W	O W	White with orange bands.	Private aid.
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Aids to Navigation Documentation

PATON Verification

•Night time (Flashing 20 fpm)
•GPS position:
58°43'03.560N
155°59'09.660W
EPE 2.1 ft



BERING SEA (Eastern Part) (Chart 16066)					
Nikolai Bay					
Naknek River					
27783	SOUTH NARNEK CITY DOCK	58-43-14.220N	FR 6s	34	On dock. Private aid.
	EAST LIGHT	58-43-27.850W			
27784	SOUTH NARNEK CITY DOCK	58-43-13.850N	FR 6s	34	On dock. Private aid.
	WEST LIGHT	58-43-20.650W			
27785	Naknek Entrance Daybeacon	58-43-19.765N			DG on small house.
		157-02-08.543W			

Notes

Guidelines for Checking a Private Aid

It is always a good practice to advise the local CG Unit or agency in charge of the Federal Aids in your area when you will be conducting an ATON Patrol. Follow your District policy for making this contact. There may be some specific items that need to be checked. Here are a series of suggestions for the proper checking of a private aid. Use the “**Private Aid Verification Form**” as a reference guide to potential discrepancies and as a document for recording your on-scene observations and equipment checks. This form is available from the District 17 PATON Manager.

CAUTION - Auxiliarists are advised to always stay in the navigable channel while checking the location and depth alongside a floating private aid, and to exercise extra caution when approaching any fixed aids, being alert for riprap, shoaling or other protection materials often located at the base of these aids.

Step One – Confirm the following conditions about each Private Aid that you check. Report any inconsistency as a PATON discrepancy.

- a. **Check your observations of the aid against the aid’s characteristics in the Light List and the LNM-Local Notice to Mariners updates.** From the Light List, you should be able to discern the aid type, the aid color, the aid’s number or letters, the latitude and longitude, deployment schedule, whether it is a Federal or Private aid, electronic equipment, sounding devices, fog signals, signal characteristics, light, light color, light characteristics, RACON, light height, etc. **Note: Some private aids may not be listed in the Light List. District 17 (dpw) should be contacted if you have any questions.**
- b. **Check your on-scene observations about the aid against the symbols and chart abbreviations on the nautical chart.** Verify that the charted symbol color and the light characteristic abbreviations are correct. Confirm that the charted symbols and abbreviations match those listed in the Light List for the aid. Report any charted abbreviations, symbol, and color discrepancies to D17 (dpw) to be ran as a chart correction. Use Chart No. 1 as a reference guide. **Note: Some private aids may not be charted, such as non-lateral private aids and lateral aids on small remote channels.**
- c. **Check that your observation of the aid’s characteristics—shape, color, light, and numbering or lettering—comply with the IALA-B Aid to Navigation System standards.**

Step Two – Check the location (LAT/LONG) of the private aid. See the guideline for taking and reporting a fix (location) to the Coast Guard below.

Terminology update – The Coast Guard “positions” aids, the Auxiliary “locates” aids using fixes. There are major technological differences between these two procedures, and it is important that they are not confused.

Auxiliary Restriction - All floating aids are connected to the seabed with a harness and an anchor. The Auxiliary is never allowed to pull an aid to short stay in order to determine its exact position, so an aid may be observed anywhere within its watch circle. Since the aid’s harness length is unknown, the aid’s watch circle can only be estimated. The location of the aid within the watch circle is affected by the direction and force of the wind and the set of the current. Therefore, the only valid judgment that an Auxiliarist can make is a comparison between the aid’s assigned position and the fix taken by the member alongside the aid. Auxiliarists must realize that a change of tide or a shift in the wind changes the location of the aid while the assigned position of the aid, as identified by its anchor position, remains the same.

While underway, ensure the GPS is reading in 3D mode. Be prepared to record the EPE or HDOP, and the date and time for every LAT/LONG fix that you take.

Private Aids as “off station” – Be sure of your estimates and calculations before you submit an off-station report. Include the calculation details (as described in the guidelines below) with your report so that the CG Unit or agency can make a proper assessment of your report. Also indicate the type of GPS used to determine the fix, the name and model number of the GPS, and the method used to prove the accuracy of your GPS set at the time that the fix was taken, either the EPE or HDOP. The locations of lateral aids are more important than regulation buoys. **Never put your OPFAC in jeopardy while attempting to obtain the position of a private aid.**

The owner of the private aid is responsible for the location of the aid. The only valid location for a private aid is the latitude and longitude shown on the PATON permit. The District 17 PATON Manager will advise the owner of this discrepancy. In order to change the latitude and longitude of a private aid, the owner must submit a corrected 2554 report to the District 17(dpw) office.

Step Three – Take the depth alongside the aid while in the navigation channel. See the guideline for taking and reporting a depth, explained below.

Step Four – Scan the private aid for discrepancies. Reference the Private Aid Discrepancy section below for the reportable details. Record your observations on a “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**” obtained from the District 17 PATON Manager.

Step Five - Double check your recorded observations for completeness and accuracy before you leave the scene. It is best to prepare your discrepancy report while still on scene at the aid. This practice helps avoid missing required data and saves time by not having to return to the scene in order to collect the missing data. Using the “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**” as a reference guide will minimize this problem and produce a complete report.

Guidelines for Taking and Reporting a Fix (Location):

Fixes taken for floating and fixed lateral aids need to be highly accurate. These guidelines support this objective. Use an “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**” as a reference guide for recording on-scene observations and equipment checks.

1. During the pre-underway check of the GPS on the OPFAC:

- Verify that the **DGPS** or **WAAS** feature is activated in the GPS set.
- Confirm that the horizontal datum loaded in the GPS set matches the horizontal datum printed on the nautical chart that you will use during the patrol.
- Check that the distance unit of measurement on the GPS is set to **NM - nautical miles**.
- Be sure that the unit of measure for bearing or heading in the GPS set matches the unit of measure read out capability of the compass on the OPFAC. When the compass reads magnetic, you will need a copy of the vessel’s Deviation Table.
- Set the Latitude / Longitude in the GPS to degrees, minutes, and seconds. This is the standard LAT/LONG format for the Coast Guard. It also reflects the LAT/LONG used in the Light List.

2. Explain how the fix alongside the aid was determined and calculated.

- A GPS set using **WAAS**, or a **DGPS** set, is the recommended tool for taking a fix. Hand held GPS sets with WAAS can produce LAT/LONG (Fixes) within 8 to 12 feet of the actual position of the aid on the earth’s surface. That is inside the head of a pinhole on the chart.
- Horizontal sextant angles and bearings using a hand-held compass are not considered sufficiently accurate for use in the Auxiliary ATON program for taking a fix.

3. Take the fix when close aboard lateral aids while remaining in the navigable channel.

- Fixes should be taken after the vessel stops alongside the aid. Recording fixes while an OPFAC is in motion introduces excess error to the GPS and can produce inaccurate reports.

- Record your LAT/LONG observations on the “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**”
4. **Record quality control support for the fix, such as EPE and HDOP readings. Also show date and time.** This practice significantly improves the quality of your reports.
- Reference the make and model of the GPS equipment that you used to determine the fix.
 - Record your observations on an “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**”

Guideline for Taking and Reporting a Depth Reading:

Random reporting of depth readings from echo sounders produces useless data. Besides the need to control the quality of the instrument, from a practical use, depths must relate to charted depths or depths recorded in the aid specification record. Otherwise, depths reported in areas affected by the tide are always vacillating. This difference becomes more significant in areas within the higher latitudes where tidal ranges can exceed 20 ft. Record your on scene observations and equipment checks on a “**7054 PATON Discrepancy Report**” or a “**Private Aid Verification Form**” as a reference guide for recording on-scene observations and equipment checks.

Step One - During the pre-underway check of echo sounder on the OPFAC, check that the vertical datum shown in the “General Information Block” on the NOAA chart. reflects the depth datum on your echo sounder.

- a. If your echo sounder is integrated to your GPS set, verify that the depth datum’s unit of measure on the chart, on the echo sounder, and the GPS are matching.
- b. Use a lead line or a sounding pole. Make note of the distance from the waterline to the position of the transducer so you can correct depth readings.
- c. Carry a lead line in your navigation kit as backup so, if the vessel’s depth sounder fails, you can continue to record accurate depths during the patrol.

Step Two - Indicate the equipment used for taking the depth alongside the aid. List the equipment that you use—echo sounder, lead line, chain or dragline, or sounding pole on an “**Private Aid Verification Form**”. When an echo sounder is used, show the manufacturer’s name and model number on your report.

Step Three - When an echo sounder is used, show the distance from the transducer to the water line.

Step Four - Always show the time when a depth is taken.

Step Five - If you operate in a tidal zone area, show the height of tide for the time when the depth is taken.

The “Height of Tide” can be obtained from the almanac screen on a GPS or on-line from <http://tidesonline.nos.noaa.gov>.

Step Six - Calculate the observed depth reading to the charted datum.

The formula for an echo sounder is: ((Observed Depth plus Distance from transducer to the water line) minus the Height of Tide = Estimated Depth at Datum)). The formula for a sounding pole or a lead line is: (Observed Depth minus the Height of Tide)

Step Seven - Compare the “corrected depth at datum” to the charted depth.

Large depth discrepancies can be an indication that an aid may not be on station. In this case, you will need to take multiple readings to prove your case.

Suggested Boat Crew Assignments for an ATON Patrol:

An ATON Patrol provides a good opportunity to delegate various aid checking assignments among your boat crew and to expose the crew to different navigational experiences. Make your patrol a team effort. You will be able to teach members new navigation techniques, keep your crew members involved with the patrol, cause time to pass quickly, and have a lot more fun while underway.

- ✓ **Recorder** – writes down the data as it is called out by other crewmembers and prepares the final “**Private Aid Verification Form**” or “**7054 PATON Discrepancy Report**” to record discrepancies.
- ✓ **Document Checker** – references copies of the Light List and Coast Pilot to verify that the observations of the aid match printed data for the aid.
- ✓ **Instrument Reader(s)** – Reads the echo sounder and/or the GPS when the OPFAC is close aboard the private aid. Use the GPS’ almanac screen to determine the Height of Tide. Compare the observed depth at the charted datum to the charted depth for the aid. Also, provide the fix data (LAT/LONG) and the quality readings of either an EPE or HDOP.
- ✓ **Navigator** – Reviews the data on the nautical chart against the observations taken on scene at the aid. Verifies that the charted abbreviations for the aid match the data published in the Light List.
- ✓ **Observer** – Checks whether the private aid conforms to the IALA-B Aid to Navigation System standards. This crewmember can also be assigned the duty of photographing discrepancies on the aid. Always advise the Recorder of the photo number assigned by the camera in order to avoid confusion later when the CG report is being prepared. It is better to provide a digital photo of a discrepancy or an odd configuration of a private aid rather than just trying to explain your observation. Photos are direct evidence for the Coast Guard and often initiates quicker corrective action by the owner.

Important Points to Remember

- When you discover a discrepancy on an aid to navigation and it is not listed in the LNM, assume you are the first to discover it and report the discrepancy to the Coast Guard.
- Every Auxiliary member should be checking for and reporting discrepancies to the Coast Guard observed on every Aid to Navigation that they pass whenever they are underway on an Auxiliary facility. Keep extra copies of the “**7054 PATON Discrepancy Report**” on board your OPFAC for this purpose.
- While private aids found watching properly are normally not reported to the Coast Guard, credit for this activity should always be reported to AUXDATA on an “ANSC 7030 Activity Report – Mission – Individual” report. Include both private aids found “watching properly” as well as private aids observed with discrepancies.
- Checking a private aid for a discrepancy cannot be properly accomplished with a so-called drive-by cursory look. At a minimum, in order to examine an aid properly, the time on scene is estimated to take 5 minutes. Besides observing that the aid complies with IALA-B characteristics, a proper Private Aid check involves determining the aid’s assigned position against the observed LAT/LONG (Fix); measuring the depth, correcting it to vertical datum with height of tide data and comparing it to charted depth; reviewing the Light List and checking the abbreviations and symbols on the nautical against the observations of the aid; checking that the light is displaying the correct characteristics; verifying the light’s color; checking for lantern and solar panel damage; observing the condition of the paint condition on the aid; checking structures for rot, viewing the battery, vent tubes and valves for damage, etc.

In effect, all the information presented in this study guide comes into play during the checking and the verification process. This means that the number of aids to navigation that a member could check each hour is limited to about eight aids allowing for time of travel between the aids. This time estimate includes the time to prepare the reports. Reporting and observing productivity increases when the team checking approach is used and as the boat crew is trained.

U. S. COAST GUARD AUXILIARY D17 ATON DISCREPANCY REPORT

DATE OBSERVED [DDMMYY] _____

OBSERVER'S IDENTIFICATION DATA

OPCON	UNIT (DIV / FLOT)	LAST NAME AND INITIALS	TELEPHONE NUMBER	E-MAIL ADDRESS	MEMBER ID NUMBER
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COAST GUARD NOTIFICATION

USE ONLY WHEN YOU MAKE A REPORT DIRECTLY BY PHONE, RADIO OR E-MAIL.

Coast Guard Unit / Agency Notified	Time Reported	Date Reported	Communication method used for reporting to CG Unit / Agency		
			RADIO	TELEPHONE	E-MAIL

AID OWNERSHIP AND IDENTIFICATION

AID OWNERSHIP - check one: <input type="checkbox"/> COAST GUARD <input type="checkbox"/> STATE <input type="checkbox"/> PRIVATE <input type="checkbox"/> USACE <input type="checkbox"/> NOAA					
LIGHT LIST NUMBER	OFFICIAL NAME OF AID BEING REPORTED (Reference the Light List for data.)	CHART NO.	ED	CHART DATE	DATUM

HORIZONTAL AND VERTICAL DATUM

LATITUDE [DD-MM.SS.SS]	LONGITUDE [DDD-MM.SS.SS]	GPS DATUM	METHOD USED TO TAKE FIX	EPE CHECK	EPE READING FT	TIME WHEN TAKEN
OFFICIAL NAME OF LOCATION		GPS MANUFACTURER AND MODEL NUMBER	GPS OPERATION	CHT. DEPTH FT	DEPTH DIFFERENCE FT	
METHOD USED FOR DEPTH	MANUFACTURER AND MODEL NUMBER	OBSERVED DEPTH FT	CORR. FOR TRANSDUCER FT	HEIGHT OF TIDE FT	CORR. DEPTH FT	TIME OF OBSERVATION

AID TO NAVIGATION CHARACTERISTICS

CHECK OFF EACH CHARACTERISTIC THAT DESCRIBES THE AID.

TYPE OF AID	<input type="checkbox"/> Floating	<input type="checkbox"/> Fixed	<input type="checkbox"/> Lighted	<input type="checkbox"/> Sound capability	<input type="checkbox"/> Electronic devices	<input type="checkbox"/> Radar reflector
TYPE OF BUOY	<input type="checkbox"/> Wood	<input type="checkbox"/> Metal	<input type="checkbox"/> Foam	<input type="checkbox"/> Plastic	<input type="checkbox"/> Other, see Comments.	
AID STRUCTURE	<input type="checkbox"/> Wood	<input type="checkbox"/> Metal	<input type="checkbox"/> Single Pile	<input type="checkbox"/> Dolphin	<input type="checkbox"/> Tower	<input type="checkbox"/> Other, see Comments.
LIGHT COLOR	<input type="checkbox"/> Red	<input type="checkbox"/> Green	<input type="checkbox"/> White	<input type="checkbox"/> Yellow	<input type="checkbox"/> Other, see Comments.	
SOUND	<input type="checkbox"/> Bell	<input type="checkbox"/> Gong	<input type="checkbox"/> Horn	<input type="checkbox"/> Whistle	<input type="checkbox"/> Other, see Comments.	
ELECTRONIC	<input type="checkbox"/> RACON	<input type="checkbox"/> Fog Detector	<input type="checkbox"/> Wind Generator	<input type="checkbox"/> Electrical Transformer Station	<input type="checkbox"/> Meteorological Station	<input type="checkbox"/> Wind Measuring Mast

DISCREPANCIES OBSERVED ON AID TO NAVIGATION

CHECK OFF EACH DISCREPANCY THAT YOU OBSERVE ON THE AID.

<p>CRITICAL DISCREPANCIES Communicate to D17 DPW or CC by fastest means.</p> <ol style="list-style-type: none"> 1 <input type="checkbox"/> Shrouded or covered with ice. 2 <input type="checkbox"/> Improper light characteristics 3 <input type="checkbox"/> Light obscured. 4 <input type="checkbox"/> Light is extinguished. 5 <input type="checkbox"/> Lantern is damaged. 6 <input type="checkbox"/> Aid is sinking. 7 <input type="checkbox"/> Aid is submerged. 8 <input type="checkbox"/> Aid has capsized. 9 <input type="checkbox"/> Aid is off station. 10 <input type="checkbox"/> Aid is missing. 11 <input type="checkbox"/> Aid is adrift. 12 <input type="checkbox"/> Aid is stranded. 13 <input type="checkbox"/> RACON is not operating. 14 <input type="checkbox"/> RACON shows improper characteristics 15 <input type="checkbox"/> Radio Beacon is not operating. 16 <input type="checkbox"/> Radio Beacon has timing error. 17 <input type="checkbox"/> Aid was vandalized. 18 <input type="checkbox"/> A bird nest obstructs the light. 19 <input type="checkbox"/> Aid's structure has collapsed. 	<p>URGENT DISCREPANCIES Communicate to D17 DPW by phone or E-mail.</p> <ol style="list-style-type: none"> 1 <input type="checkbox"/> Light burning dim or showing reduced intensity 2 <input type="checkbox"/> Light is partially obscured by dayboards 3 <input type="checkbox"/> Dayboard(s) is missing, see Comments. 4 <input type="checkbox"/> Dayboard(s) is damaged. 5 <input type="checkbox"/> Sound signal failure observed 6 <input type="checkbox"/> Battery box is missing. 7 <input type="checkbox"/> Battery box is damaged. 	<p>ROUTINE DISCREPANCIES Report by E-mail or govt. mail within 24 hrs.</p> <ol style="list-style-type: none"> 1 <input type="checkbox"/> Dayboard(s) is delaminating. 2 <input type="checkbox"/> Improper dayboard(s) per data shown in the Light List 3 <input type="checkbox"/> Numbers are obliterated or difficult to read. 4 <input type="checkbox"/> Extensive deterioration or rotting supports on aid 5 <input type="checkbox"/> Aid's structure is leaning more than 15 degrees. 6 <input type="checkbox"/> Vent valve discrepancy, see Comments. 7 <input type="checkbox"/> Vent pipe discrepancy, see Comments. 8 <input type="checkbox"/> Retro material discrepancy, see Comments. 9 <input type="checkbox"/> Tapper is missing. 10 <input type="checkbox"/> Aid is rusted so that lateral configuration is compromised
<p>DOCUMENTATION AND SPECIFICATION CHECKS</p> <ol style="list-style-type: none"> 1 <input type="checkbox"/> Aid is documented correctly. 2 <input type="checkbox"/> Observations of the aid do not match the entry in the Light List. See Comments for details. 3 <input type="checkbox"/> Observation of the PATON do not match its permit specifications. See Comments for details 4 <input type="checkbox"/> Observations of the aid do not match the symbols and abbreviations for this aid on the NOAA chart. See Comments for details 5 <input type="checkbox"/> Observations of the aid do not comply with the IALA-B Aid to Navigation System. See Comments for details 6 <input type="checkbox"/> Observations of the aid do not comply with the information shown in the Coast Pilot. See Comments for details 		

NON-PERMITTED AIDS TO NAVIGATION DATA

Enter the following information for Non-permitted Aids to Navigation Reports.

OWNER'S NAME	OWNER'S TELEPHONE NUMBER	OWNER'S E-MAIL ADDRESS
OWNER'S ADDRESS	CITY	ST
	ZIP CODE	PERSON OF CONTACT / E-MAIL ADDRESS
LOCAL WATERWAY ADMINISTRATOR / HARBORMASTER	TELEPHONE NUMBER	E-MAIL ADDRESS
LATITUDE	LONGITUDE	WATERWAY NAME

COMMENTS

DATE SUBMITTED	D17 DPW Phone: (907) 463-2272 Fax: (907) 463-2273 E-Mail: D17-PF-D17-LNM@USCG.MIL D17 Command Center: (907)463-2001 Fax: (907) 463-2023
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Clear All entries



Rev002

DEPARTMENT OF HOMELAND SECURITY U.S. COAST GUARD ANSC-7030 (10-08)	U.S. COAST GUARD AUXILIARY ACTIVITY REPORT - MISSION	Division ___ Flotilla ___ MISSION DATE DDMMYY
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SECTION I TYPE OF RESOURCE Air Boat Radio Unit/Individual

SECTION II TIME & MISSION

Always record START TIME, START MISSION, and FINISH TIME. (See MISSION list on page 3.)
Use change boxes if mission changes. See instructions.

	START	Change 1	Change 2	Change 3	Change 4	Change 5	FINISH
TIME							
MISSION	▼	▼	▼	▼	▼	▼	

SECTION III ACTIVITY LOG DETAILS

Location: _____ OPCON Facility Registration Number: _____
 Number of Assists: PATROL STATUS Reimbursable Non-reimbursable WATERS Navigable Sole State Order Number _____

SAR	Lives Saved	Persons Assisted	Property Value-in THOUSANDS	Case Number
SAR 1			,000	
SAR 2			,000	
SAR 3			,000	
SAR 4			,000	

ATON	ATON Discrepancies	PATON Discrepancies	Bridge Discrepancies
	ATONS Watching Properly	PATONS Watching Properly	Bridges Watching Properly

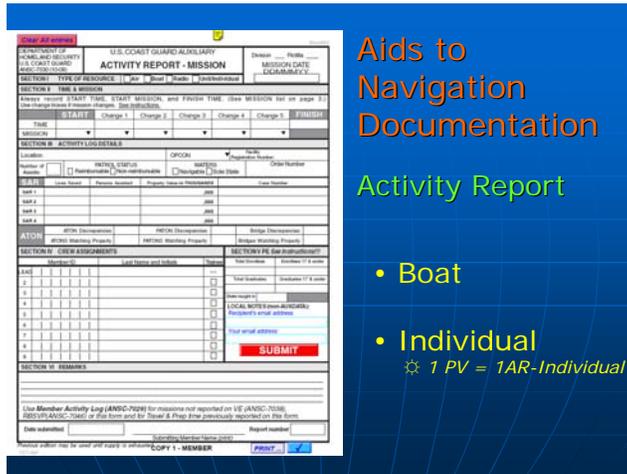
SECTION IV CREW ASSIGNMENTS SECTION V PE See Instructions!!!

Member ID	Last Name and Initials	Trainee	Total Enrollees	Enrollees 17 & under
LEAD		----		
2		<input type="checkbox"/>	Total Graduates	Graduates 17 & under
3		<input type="checkbox"/>	State taught in	
4		<input type="checkbox"/>	LOCAL NOTES (non-AUXDATA):	
5		<input type="checkbox"/>	Recipient's email address:	
6		<input type="checkbox"/>	<input type="text"/>	
7		<input type="checkbox"/>	Your email address:	
8		<input type="checkbox"/>	<input type="text"/>	
9		<input type="checkbox"/>	SUBMIT	

SECTION VI REMARKS

Use Member Activity Log (ANSC-7029) for missions not reported on VE (ANSC-7038), RBSVP(ANSC-7046) or this form and for Travel & Prep time previously reported on this form.

Date submitted Report number
 Submitting Member Name (print) _____



Reporting ATON Patrols and AN Activity to AUXDATA

1. ATON patrol hours are reported to AUXDATA on an “ANSC 7030 Activity Report – Mission – Boat,” manually prepared or submitted via POMS, through the IS Staff Officer.

- An “**ANSC 7030 Activity Report – Mission – Boat**” report is submitted by the coxswain or owner of the OPFAC to IS.
 - Use **Mission Code 03 – ATON Patrol**, on multi-mission patrols, be sure that the time spent performing PATON activities are split out and reported on the ANSC 7030 report as separate missions.
 - This ANSC 7030 report accounts for your hours underway for the Boat Crew and ATON program in AUXDATA.
 - When the AN Patrol is performed by private vehicle or on foot, this report is not required.
- **Note:** The “ANSC 7030 Activity Report – Mission – Boat” form that is submitted through POMS or as a standalone report to the IS Staff Officer initiates credit for your underway hours in the Boat Crew program, but does not provide any credit for your Individual AN Mission activity in AUXDATA. **Also, this report does not interface with the local Coast Guard.** There has to be both a 7030 and a 7054 report submitted.

2. Your individual AN mission activity is reported to AUXDATA on an “ANSC 7030 Activity Report – Mission – Unit/Individual,” through the IS Staff Officer.

- Report all you’re AN activity, including the aids observed as “watching properly” and those observed and reported as “discrepant.”
- **Note:** The “ANSC 7030 Activity Report – Mission – Individual” report that is submitted to AUXDATA through the IS Staff Officer accounts for your individual AN activity in AUXDATA but does not provide you credit for underway hours in the Boat Crew Program, nor does it report discrepancies to the local Coast Guard. There has to be both a 7030 and 7054 report submitted.
- Only one member may submit an “ANSC 7030 Activity Report Mission – Individual” report for each aid verified. Only one member should be listed on the 7030 (Unit/Individual) report. Credit for activity at a single aid cannot be split among many members. The only option available for distributing credit is to allocate credit among the crew members on the patrol. However, the total

Module 6

Aid Verifier Certification and Currency Maintenance

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Aid Verifier Certification and Currency Maintenance Initial Certification

Attend "Aid Verifier" course



Complete Task Accomplishment Record
Have Your FSO-NS sign off tasks upon satisfactory completion





FSO-NS → DSO-NS → DIRAUX for certification



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Aid Verifier Certification and Currency Maintenance Currency Maintenance

Submit a minimum of **three (3)** reports per year or attend AV refresher training within the calendar year (Jan 1-Dec 31)



The required three minimum reports can include:

- Private aid verifications
- ATON or PATON discrepancy reports
- Unauthorized PATON reports



Aid Verifier Certification and Currency Maintenance Currency Maintenance

- Reports should be submitted to D17 (DPW) as soon as possible.
- A copy of all reports will be maintained by the FSO-NS to ensure currency requirements are maintained for all Aid Verifiers.
(There is not currently a way to track this in AUXDATA).

Notes

LIST OF ACRONYMS and TERMS

ADRIFT – Afloat and unattached in any way to the shore or seabed.

ADSO - Assistant District Staff Officer.

AID TO NAVIGATION – any device external to a vessel intended to assist navigators in determining their position or safe course, or to warn them of dangers or obstructions to navigation

AN - Aids to Navigation – used when referencing all of the programs in the program or the department.

ANT – Aid to Navigation Team.

ANSC - Auxiliary National Supply Center.

ASSIGNED POSITION – the latitude and longitude position of record for an aid to navigation.

ATON - Aid to Navigation – reference is directed specifically for a Federal aid to navigation.

AUXDATA – Auxiliary Data System.

AV - Aids Verifier.

AVC - Aids Verifier Candidate.

AVQ - Aids Verifier Qualifier.

BAP – Bridge Administration Program

BC-MNC - National Branch Chief, Aids to Navigation, Cartographic.

BC-MNP - National Branch Chief, Aids to Navigation-Private & Federal.

BC-MNB - National Branch Chief, Aids to Navigation, Bridge Administration.

BIFURCATION – The point where a channel divides when proceeding from seaward. The place where two tributaries meet.

BM - Boatswain Mate. The number suffix indicates the class of Petty Officer. BMs are the Coast Guards operational personnel for vessels.

BROADCAST NOTICE TO MARINERS – A radio broadcast designed to provide important marine information.

C&GS - Charting and Geodetic Services.

CDB – Conventional Direction of Buoyage

CFR - Code of Federal Regulations.

CU - Chart Updating Program.

DGPS - Differential Global Positioning System.

DIRAUX - Director of Auxiliary.

DISCONTINUE – To remove from operation (Permanently or Temporarily) a previously authorized aid to navigation.

DISCREPANCY – Failure of an aid to navigation to maintain its position or function as proscribed in the Light List.

DMAHTC-Defense Mapping Agency Hydrographic/Topographic Center.

DOP - Dilution of Position.

DSO- District Staff Officer.

DVC-MN - National Division Chief, Navigation Systems Division.

EPE - Estimated Position Error – GPS.

ESTABLISH – To place an aid to navigation for the first time.

EXPOSED LOCATION – An offshore area which is not sheltered by adjacent land and therefore, may be exposed to extreme weather and sea condition.

EXTINGUISHED – A lighted aid to navigation which fails to show a light characteristic.

FOG DETECTOR – An electronic device used to automatically determine conditions of visibility which warrant the activation of a sound signal or additional light signals.

FSO - Flotilla Staff Officer.

GPS - Global Positioning System.

IALA - International Association of Lighthouse Authorities.

I-ATONIS - Integrated Aids to Navigation Information System.

INOPERATIVE – Sound signal or electronic aid to navigation that is out of service due to a malfunction.

JUNCTION – The point where a channel divides when proceeding seaward or the place where a tributary departs from a main channel.

KNOTS (KTS) - Nautical Miles Per Hour.

LNM - Local Notice to Mariners - A written document issued by each U.S. Coast Guard district to disseminate important information affecting aids to navigation, dredging, marine construction, special marine activities, and bridge construction on waterways within the district.

LOP - Line of Position.

LUMINOUS RANGE – The distance at which a light is visible based on the visibility of an area.

MARK – An artificial or natural object of easily recognizable shape and color, situated in such a position that it may be identified on a chart. An aid to navigation.

MPH - Statute Miles Per Hour.

NOAA - National Oceanic and Atmospheric Administration

NOMINAL RANGE - .The Nominal Range is the luminous range of a light when the meteorological visibility is 10 nautical miles, and a threshold of luminance of 0.67 sea-mile candela is used.

NOS - National Ocean Service.

OFF STATION – A floating aid to navigation not on its assigned position.

OINC - Officer in charge.

OPCON – Operating Facility Number assigned to a CG Command.

OPERATIONAL RANGE – The distance at which a light is required to be seen to meet the user requirements.

OPFAC – Operational Facility

OTO - Assistant Director of Auxiliary, Operations and Training Officer.

PATON - Private Aid to Navigation.

PROTECTED LOCATION – Inshore areas that are not exposed to extremes of weather and sea condition.

RELIGHTED – An extinguished aid to navigation returned to its advertised light characteristics.

REPLACED – An aid to navigation previously off station, adrift or missing, restored by another aid to navigation different type and/or characteristics.

RESET – A floating aid to navigation previously off station, adrift, or missing, returned to its assigned position (station).

SAR - Search and Rescue.

SCF – Small Craft Facility.

SEMI-EXPOSED LOCATION – Offshore or inshore areas that may be sheltered by adjacent land and are exposed to lesser extremes of weather and sea conditions.

SO- Division Staff Officer.

SOUND SIGNAL – A device which transmits sound intended to provide information to mariners

during periods of restricted visibility and foul weather.

USC - United States Code.

WAAS - Wide Area Augmentation System.

WAMS - Waterway Analysis Management System.

WATCHING PROPERLY – An aid to navigation on its assigned position exhibiting the advertised characteristics in all respects.

WATERWAY – A water area providing a means of transportation from one place to another, principally a water area providing a regular route for water traffic, such as a bay, channel, passage, river, or the regularly traveled parts of the open sea.

WITHDRAWN – The discontinuance of a floating aid to navigation during severe ice conditions or for the winter season.

XPO - Executive Petty Officer.

XTE - Cross Track Error.

LAT/LONG Conversion Table

[Decimal minutes to seconds]

The Coast Guard requires that all Latitude and Longitude expressions include Degrees, Minutes, and Seconds. Use this table to make your conversions. A simpler method is to adjust your GPS to read out in Degrees, Minutes, and Seconds. Check your GPS Operating Manual for the proper procedure.

Decimal Minutes	Seconds	Decimal Minutes	Seconds	Decimal Minutes	Seconds
.017	01	.350	21	.683	41
.033	02	.367	22	.700	42
.050	03	.383	23	.717	43
.067	04	.400	24	.733	44
.083	05	.417	25	.750	45
.100	06	.433	26	.767	46
.117	07	.450	27	.783	47
.133	08	.467	28	.800	48
.150	09	.483	29	.817	49
.167	10	.500	30	.833	50
.183	11	.517	31	.850	51
.200	12	.533	32	.867	52
.217	13	.550	33	.883	53
.233	14	.567	34	.900	54
.250	15	.583	35	.917	55
.267	16	.600	36	.933	56
.283	17	.617	37	.950	57
.300	18	.633	38	.967	58
.317	19	.650	39	.983	59
.333	20	.667	40	1.000	60