

The PATON - Aid to Navigation Operations Manual

Background - The U.S. Coast Guard is responsible for the establishment and control of all Aids to Navigation on the waterways of the United States. This is an all inclusive responsibility, and it includes the coastal waters and inland waters of the U.S. This responsibility is maintained in conjunction with other Federal Government agencies, State and Local Government elements and private entities. The U.S. Coast Guard Auxiliary, in its overall supplemental supporting role, provides specifically authorized assistance to the Coast Guard in its Aids to Navigation missions. This Auxiliary's support effort is provided through the Aids to Navigation Programs.

The use of the Auxiliary in support of the Coast Guard Aid to Navigation Mission is essential. This section describes the general scope and purpose of the Auxiliary in carrying out their roles and responsibilities within the Coast Guard and other affiliated organizations.

Auxiliary PATON Aid to Navigation Mission

The mission of the Auxiliary PATON (Private Aid to Navigation Program) is to provide operational, logistical, and training support for designated Coast Guard AN units and other affiliated agency programs. 14 U.S.C. §826 and §831 authorize the Coast Guard to use suitably trained Auxiliarists and Auxiliary facilities to carry out this mission. Note that the PATON program in only one aspect of the overall AN Program. The ATON (Federal Short Range Aid to Navigation Program), the CU (Chart Updating Program), the SCF (Small Craft Facility Program) and the BAC (Bridge Administration Program) are not covered in this section.

Operational Use

The operational use of Auxiliarists and their resources is encouraged and must be exercised within the scope of this section. Coast Guard unit commanders may assign Auxiliary resources to authorized missions, such as, but not limited to, using Auxiliarists for verifying PATONs - Private to Navigation – for discrepancies.

The crew of every Auxiliary Operational Facility while underway on authorized patrols should check every ATON (Federal Aid), PATON (Private Aid), and Bridge that they pass for possible discrepancies. Also, they should be continually scanning the shorelines for possible Chart Updating opportunities. They should also make annual visits to SCF-Small Craft Facilities and report any new facilities, or updates to existing facilities or the discontinuance of a facility.

Annual verification reports, and random discrepancy reports are made to the local Coast Guard unit in charge of Private Aids to Navigation in an expeditious manner using the verification reporting form from I-ATONIS, the web-based Private Aid Management System, or the ANSC 7054 Aid to Navigation Discrepancy report form. The reporting path for PATON reporting is normally unique with each District or computer controlled.

Eligibility

All Auxiliarists may take part in PATON activity, subject to meeting security, qualification, certification, and currency requirements.

- Auxiliarists, who participate in PATON activities underway on Auxiliary facilities, must first have passed or successfully completed the requirements for participating in operational activity. [See Auxiliary Operations Policy Manual, Chapter 1, A.4.].
- Auxiliarists who participate in the PATON (Private Aid to Navigation) Program fall into two categories – Aid Verifier Qualified, and other members.
 - Every Auxiliary member is encouraged report discrepancies observed on PATONs - Private Aids to Navigation when the aid is obstructing the waterway to the Coast Guard in a manner similar to Federal ATONs. Also, they may report their AN activity to AUXDATA as Mission code 30 on an ANSC 7030 Activity Report – Mission form, including both the number of aids observed watching properly and those observed with discrepancies. Auxiliarists should receive credit for all of their AN activity especially for activity related to checking aids that are observed as watching properly.
 - Aid Verifier (AV) members in addition to the above are allowed to verify Private Aids and submit PATON verification reports to the Coast Guard. AV must complete Aid Verifier Training and be certified as AV in AUXDATA in order to participate. A suggested AV Training/Qualification Program and Check Off list is *Under development for D11* as part of the

AN / CU Program Training Manual that is available on the National Aid to Navigation Web Page. National PowerPoint presentations are also available on this web site that explain all aspects and discrepancies associated with ATONs that are needed to know what to look for and prepare credible discrepancy reports

Organization

Auxiliary members are encouraged to work directly with Coast Guard Units responsible for the Aids to Navigation in their area. The idea is to work in a participatory mode that supports the Coast Guard in those areas where the Coast Guard does not often travel. Besides making on-scene verifications of PATONs, many Coast Guard Units use qualified Auxiliarists for updating I-ATONIS records, PATON files, following up with PATON owners regarding discrepancies, assisting at District AN offices, and updating and managing PATON systems. This assistance is provided at the discretion and direction of the OINC of the AN agency.

PATON Verification Schedule

PATON verification schedules are based on their assigned Class Code for the PATON.

Class 1 PATONs are aids to navigation on marine structures, including bridges or other works for which private owners have been legally authorized to establish, maintain and operate under rules and regulations prescribed by the Coast Guard. Annual inspections are made by the Coast Guard.

Class II PATONs are aids to navigation, exclusive of Class I above, located in waters used by general navigation. These are normally lateral aids. Verifications are performed by AV (Aid Verifier) qualified Auxiliarists every three years. In areas, where PATONs are removed and reset each season by their owner due to ice, verifications are often scheduled annually.

Class III PATONs are aids to navigation, exclusive of Class I and Class II above, located in waters not ordinarily used by general navigation. These are normally non-lateral, regulatory and information type marks. Verifications are performed by AV (Aid Verifier) qualified Auxiliarists every five years. Verifications of Class III PATONs may be performed by phone.

Equipment needed:

GPS – A GPS set equipped with WAAS-Wide Area Augmentation System or DGPS is required for locating Private Aids. The GPS user must verify and record the EPE-Estimated Position Error or HDOP-Horizontal Dilution of Position for each LAT/LON location taken.

Fathometer or Lead Line – Fathometer readings must be corrected for the position of the transducer under the waterline.

Nautical Chart – A standard NOS Nautical Chart is necessary for determining the accuracy of Private Aids

Quality Control for reporting PATON Data

Since PATON reports become part of a formal Coast Guard Aid file, potential updates to the Light List and the LNM-Local Notice to Mariners, and also could become part of a formal legal proceeding, it is important that they be prepared in a professional manner with a high degree of accuracy. In an effort to establish credibility with the local Coast Guard Units, the following quality control practices are encouraged.

- **Pre-calibrate all the electronic measuring equipment** you will need as part of the pre-underway check of the OPFAC.
 - Confirm that the vessel's GPS is operating accurately by comparing the LAT/LON read out from a known position or from another GPS set. Note the results on the pre-underway check list.
 - Confirm that the vessel's fathometer is reading the correct depth. A lead line or a sounding pole can be used for this purpose. Record the results on the pre-underway checklist. Also validate the fathometer's unit of measure to the vertical datum from the NOAA nautical chart being used.
 - Note the distance from the waterline to the position of the fathometer's transducer so that depth readouts can be corrected during the patrol.

- Check that the vessel's compass is reading correctly. Record whether the vessel's compass is reading true or magnetic. If magnetic, make note of the charted variation if you plan to use it for taking bearings. Also check out any hand-bearing compasses that you plan to use. Request a copy of the vessel's deviation table in order to be able to correct bearing data to True for your reports. Record the results on the pre-underway checklist.
- Check the set up of the vessel's GPS. Validate that all units of measures are correctly set, such as, nautical miles, depths, etc. Check that the horizontal datum from the NOAA Nautical Chart matches the datum that is set in the GPS.

When you are locating a PATON on scene, record the EPE-Estimated Position Error or HDOP-Horizontal Dilution of Position for each LAT/LON that you take. This practice keeps you aware that your GPS is operating accurately and the data enhances the credibility of your report.

Reporting Latitude and Longitude

From a terminology viewpoint, only the Coast Guard *positions* aids to navigation, while the Auxiliary *locates* aids to navigation. When taking locations (LAT/LON) of PATONs, follow these suggestions:

1. Safety should be your prime concern when verifying lateral PATONs. While accuracy is important, never put your boat in danger in order to verify the location of suspect Private Aid. If you suspect a depth or obstruction problem, stand off the aid in the navigable channel. Record the Lat/Lon reading from your GPS. Record the EPE or HDOP as a quality check. Estimate your distance to the PATON. Take and record the bearing from your location to the PATON. Make a recommendation that the owner move the PATON if you feel it could direct other mariners into a dangerous situation. In tidal areas, photos, taken at low water when shoals or obstructions are showing, are a great adjunct to your verification report.
2. Safety should be a major concern when verifying non-lateral regulatory and information PATONs. The position of non-lateral aids is of less importance. More important is whether they are located in a navigable channel. Use the aid locating procedure described in (1) above when you have any doubt. Data on non-lateral aids may be obtained by a phone call to the owner.
3. On floating lateral private aids, where there is no concern about depth or obstruction problems, maneuver your vessel close aboard the PATON in the channel and record the LAT/LON using a GPS with WAAS or DGPS. Record the EPE or HDOP as a quality check.
4. For fixed private aids, always be concerned about possible shoaling or riprap near the PATON. Use the locating procedure described in (1) above when you have any doubt.

On or Off Station Class III Private Aids buoys only

Plotting the Final position & compare it with the position provided on the PATON form. Most class III private aid buoys are regulator or information and positions are approximate we have come up with this guide.

If the Buoy is **DOING AS INTENDED** and it meets all other conditions aid is **ON STATION** therefore do not mark "Off Station. However if the buoy is >100 Yards off the given Lat. or Long - provide a note in the comment section to that affect. (1 Second = 33 Yards, therefore ether Lat. or Long can be up to 3 Seconds off and still be ON STATION.)
If the Buoy is **NOT DOING AS INTENDED** and is more than 100 Yards from assigned position mark the buoy **OFF STATION**. (1 Second = 33 Yards, therefore ether Lat. or Long more than 3 Seconds off the buoy mark the it OFF STATION.)

Safe Boat Operation

Never put an OPFAC-Operational Facility in harms way for the sake of obtaining a LAT/LON or the depth of a PATON. When on scene at floating aids, locations and depths should be taken when close aboard the aid while keeping the facility in the navigable channel. When on scene at a fixed aid, take extra care to avoid any riprap or shoaling that may have developed near the fixed aid even while keeping the facility in the navigable channel. If you have any doubts, stand off the aid and use your binoculars to view possible discrepancies. Record the LAT/LON for the aid using a GPS set while remaining safely in the channel and, then, take a bearing and estimate the distance to the aid. Convert the bearing to True for reporting or when plotting it on a nautical chart.

Viewing Lighted ATONs

Lighted ATONs must be observed during nighttime periods in order to check whether they are operating, their light color, and the light's published period. Use a stop watch to validate the light period. Count the number of light periods that occur during an interval of one minute. Divide the number of periods observed into 60 seconds to calculate the period of the light in seconds. If you discover a discrepancy, report it. Indicate the procedure that you used to make the determination on your report. This enhances your credibility.

Determining Depth Discrepancies

The depth shown on the PATON record should reflect the water depth at the aid for the charted datum. If you don't correct the observed depth reading to the chart's vertical datum, you will always have a difference between the observed depth and the charted depth. Unless an obvious situation exists, such as shoaling at low water, in order to make a judgement whether a problem exists in tidal affected waters, you must correct the observed depth for the height of tide and compare the result to the charted depth.

GPS sets usually have an almanac screen that provides a height of tide reading. Before you report a depth discrepancy, follow these steps:

- Take a depth reading using a calibrated fathometer (i.e., 25 feet).
- Add the distance from the waterline to the position of the fathometer's transducer.(i.e., 2.0 feet).
- Subtract the height of tide.(i.e., 3.5 feet).
- Corrected depth (25 plus 2.0 minus 3.5 equals 23.5 feet). Compare this figure to the charted depth. Note that if the height of tide is a negative figure, you would add it. (i.e., -1.5 ft). The corrected depth would be (25 plus 2.0 plus 1.5 equals 28.5 feet)

Before your make a report, consider the effect of the weather, especially the fetch and duration of wind. Wind blowing from a fixed location for a long distance at a steady rate could have a large effect on the depth. Do not report depth error when these conditions exist.

Reporting ATON Activity to AUXDATA

All activity performed on behalf of the Aid to Navigation Program is reportable to AUXDATA.

AN Patrols – The time expended while on an AN Patrol is reported via POMS. Note that your AN activity is not covered by this report.

AN Activity – Remember that each member must submit a separate ANSC 7030 Activity Report – Mission for credit and to be eligible for Annual AN Program Awards. An Activity performed and reported as part of an authorized patrol should be no more than 60 minutes to avoid double dipping.

- While only ATONs (Federal Aids) with discrepancies are reported to the Coast Guard, all Federal Aids that were checked while on a patrol are reportable to AUXDATA as AN

activity, whether they were an observed verification or a discrepancy, using Mission Code 30 on the ANSC 7030 form. Be sure to take credit for all your PATON activity. The ratio to aids checked to discrepancies observed will be high.

Annual AN Program Awards

The Annual AN Program awards are calculated from the data residing in AUXDATA as of December 31 each year. The statistics used are taken from the activity reported for Missions

- 30 – Federal Aids (ATONs),
- 31 – Private Aids (PATONs),
- 32 – Bridges.

Both verifications and discrepancies reported are included in the annual totals.

Need to determine the annual awards programs for the ATON Program.