

ICS Attachment 2 - Guidelines for taking and reporting a Fix to a Federal Agency

Fixes taken for *lateral* aids need to be highly accurate. These guidelines support this objective. Use an **NS-AN10 – Aid Observation Worksheet** as a reference guide for recording on-scene observations and equipment checks so you don't miss any required data while on-scene.

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

- Verify that the *DGPS* or *WAAS* feature is enabled in the GPS set.
- Confirm that the *horizontal datum*, that is set up in your GPS set, matches the horizontal datum printed on the NOAA chart that you plan to use. Your NOAA chart must have a WGS84 or NAD83 horizontal datum in order to be used for Navigation System Program activity.
- Check that the *distance unit of measurement* on the GPS is set to **NM** - nautical miles. Most new GPS sets come preset to MPH-Statute Miles per Hour.
- Be sure that the *unit of measure for bearing or a heading* in the GPS set matches the unit of measure read out capability for the compass that you plan to use. If the compass reads magnetic, you may need a copy of the vessel's *Deviation Table* to convert bearings to true on your reports.
- Set the *Latitude / Longitude* expression in the GPS to *degrees, minutes, and seconds*. This is the standard LAT/LON expression in the Coast Guard and reflects the LAT/LON used in the Light List.
- Pre-check the LAT/LON on your GPS against a known position, another GPS or a charted object to insure it is operating accurately before getting underway.

2. Take each Fix when close aboard an aids while remaining in the navigable channel.

- Take the fix after the vessel stops alongside the aid. Recording fixes while a vessel is in motion causes errors and produces inaccurate verification reports.
- Fixes taken for floating aids should be taken upstream and upwind of the aid in order to minimize the effect the aid's watch circle. The deeper the water, the greater the potential for a larger watch circle especially at lower tide levels. Since Auxiliarists are never allowed to pull an aid's harness up to short stay, this practice minimizes the fix error. Note that the position of an aid is actually the location of the aid's anchor in the seabed. The floating buoy moves around on its harness over this anchor when affected by tidal current and wind. This movement is called an aid's "*watch circle*."
- It is recommended that you plot each fix on a NOAA chart as a further sanity check. It may generate a chart update report due to a charted error. Also check the LAT/LON against the Light List and the PATONs permit data.

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

- A GPS set using *WAAS*, or a *dGPS* set are the recommended tools for taking a fix. Hand held GPS sets with *WAAS* can produce LAT/LON (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 a chart.

4. Record supporting quality control data for each fix that is taken.

- This practice significantly improves the quality level of your report and your credibility with the Coast Guard.
- Include a “**Credibility Statement**” on each report.
- Always show the **EPE**—Estimated Position Error or **HDOP**—Horizontal Dilution of Position for every fix taken.
- Include the date and time when each fix is taken.
- Also, indicate whether the GPS is operating in **3D** or **3D Differential** when each fix is taken.
- Reference the make and model of the GPS equipment that you used to determine the fix.

5. Credibility Statements.

- A statement similar to the example provided below enhances the professionalism and credibility of your report. You will be recognized as a professional by the Coast Guard. It is quick and easy to prepare this statement.
- Prepare a “***copy and paste***” entry on your desktop similar to the following:

“The fix was taken by a **GPS 76 by Garmin with WAAS enabled** and was pre-calibrated **to a known location at the dock.** GPS was operating in **3D Differential.** EPE was **8.5 ft.** The echo sounder was a **Wide 100 by Hummingbird** that was checked for accuracy at the dock by **calculation against a known depth.** Depths are adjusted to charted DATUM using a **0.8 ft.** transducer correction and a **7.5 ft.** Height of Tide at Substation **NEPONSET RIVER.**”

- The **bold underlined** data generally has to be set only once or whenever you use a different OPFAC on a patrol. i.e. **GPS 76 by Garmin,** etc.
- The **bold** data is collected and updated for each reported Fix.

**If you are not following these guidelines,
you may not be doing a complete and
accurate job of verifying a Private Aid for
the Coast Guard.**