ICS Attachment 3 - Guidelines for taking and reporting a Depth reading to a Federal Agency.

Random reporting of depth readings from echo sounders produces incomplete data. Besides the need to control the quality of any electronic instrument used to take the depth, 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 no better than random numbers. This difference becomes more significant in areas in the higher latitudes where tidal ranges vary 10 to 12 feet or more. Record your on-scene observations and equipment checks on a *NS-AN10 – Aid Observation Worksheet.*

1. **During the pre-underway check of the OPFACs echo sounder.**
   a. Check that the vertical datum shown in the "***General Information Block***" on a NOAA chart reflects the depth UOM-unit of measure that is set up on your echo sounder—feet, meters or fathoms.
   b. When your echo sounder is integrated to your GPS set, verify that the depth datum's unit of measure on the NOAA chart, on the echo sounder, and on the GPS are all matching.
   c. You may use a lead line, a sounding pole or a hand-held depth sounder to determine the water depth in the PATON program. Pre-calculate the distance from the waterline to the position of the transducer on the vessel so you can correct depth readings. (***Echo sounder reading minus the depth reading***.)
   d. Check that the echo sounder is reading accurately. Compare the depth of water taken with a lead line or sounding pole to the echo sounder's read out plus the correction for location of the transducer on the vessel. Or, calculate the estimated depth by comparing the echo sounder's read out plus the correction for the transducer on the vessel minus the height of tide. Compare the result to previously estimated depths taken at your mooring area.
   e. 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.
2. **List 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 a *NS-AN11 Pre-underway Checklist for Navigation System Patrols.* When an echo sounder is used, always show the manufacturer's name and model number on your report.
3. **When an echo sounder is used, list the distance from the transducer to the water line** on a ***NS-AN11 Pre-underway Checklist for Navigation System Patrols***. This data is reported on your report to the Coast Guard.
4. **Always record and report the date and time when a depth is taken.**
5. **When you are operating in a tidal zone area, record and report the height of tide for the time when the depth is taken.** Height of tide can be read from the almanac screen on a GPS or on-line from http://tidesonline.nos.noaa.gov.
6. **Maneuver the OPFAC so that it upstream and upwind of a floating aid**. This technique minimizes the "***Watch Circle***" error and provides more exact data alongside the aid.

7. **Compare the observed depth reading at datum 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***). Large depth discrepancies can be an indication that an aid may not be on station or of shoaling in the area. In this case, you will need to take multiple readings to prove your case.

8. **Include your depth backup data in your Credibility Statement on every report.**

9. **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. **Wide 100 by Hummingbird**.
- The **bold** data is collected and updated for each reported Depth.

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.