SOLO II Float Deployment Instructions

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Storage:
- **Vertical:** It is best to store the floats vertically cushioned with foam. The float is much more robust against impact when oriented vertically. This is especially important on smaller boats.
- **Dry:** The floats also have water soluble tape keeping the box closed, this is protected by a bag, but it is best to prevent the package from getting wet if possible.
- **Shaded:** The package should be kept out of direct sunlight, as sunlight on the bag could cause condensation on the inside of the bag which could compromise the water soluble tape.
- **Class D Fire Extinguisher:** SOLOs contain lithium batteries that require a class D fire extinguisher in the unlikely event that they catch fire. Become familiar with the location and operation of the fire extinguisher. The deployment log book contains the Emergency Response Instructions/ Material Safety Data Sheet.

Deployment:
All the SOLOs have already been activated and passed their self-tests so they only need to be put in the water at the assigned locations. It is only necessary to perform the self-test again if an instrument has received a shocking impact, such as a fall to the deck, or if there is any reason to suspect that it may have sustained damage. If in doubt, perform the self-test as described in the appendix at the end of these instructions at least 1.5 hours before deployment, preferably earlier so the test could be repeated.

The SOLOs are deployed over the side with a lowering line inside a bio-degradable cardboard box held together with two bands of soluble PVA tape. The box protects the delicate parts of the float from impact during deployment. Once in the water, the tape dissolves, the box unfurls and the float is released.

Locate the float with the correct serial number. Each float is clearly marked with its serial number on a tag on the bag and/or it is written on the outside of the cardboard box. Each serial number is assigned a specific location for deployment. Make sure to deploy the right serial number at the specified location. List of location/serial numbers are provided. Never stand the box on its light end, or the antenna could be damaged.

If the boxed float is inside a bag, remove the plastic bag first, taking care not to cut the two PVA tape bands around the box. If the PVA tape has inadvertently released, remove the dangling strands and re-tape it with spare PVA tape from the toolbox.

Remove plastic packing tape from the ends of the box. The packing tape is the only thing holding the ends of the box closed during shipping. It must be removed from the box before deploying or the float will not release properly from the box. After removing the packing tape, be careful not to let the float slip out of the box's unsecured ends.

Rig the deployment line. Deploy the instrument over the side at the aft port or starboard quarter of the ship, preferably the leeward side. Use a length of line at least 4 times the distance from the top of the rail to the waterline. Secure both ends of the line to the rail ~2-3 ft apart. If possible, open the railing gate or safety lines so the box can be lowered from deck level.

Start the box over the rail. With one person holding each end of the line about 5ft inside of each secured end, the line should form two "slings", hold the float horizontally, maneuver it over the rail so that it is supported by the "slings".
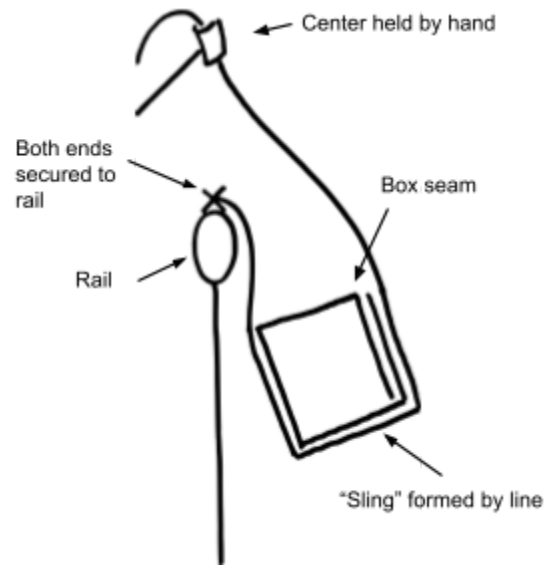
Lower the box over the side into the water. With the ship underway at ~1 knot, do not deploy when stationary or drifting to avoid a collision with the instrument. Slowly and evenly pay out the line so that the float is lowered down the side. It should roll as the line is paid out. Once the box is in the water, release the center of the line water, tossing it so it clears the box to avoid tangles.
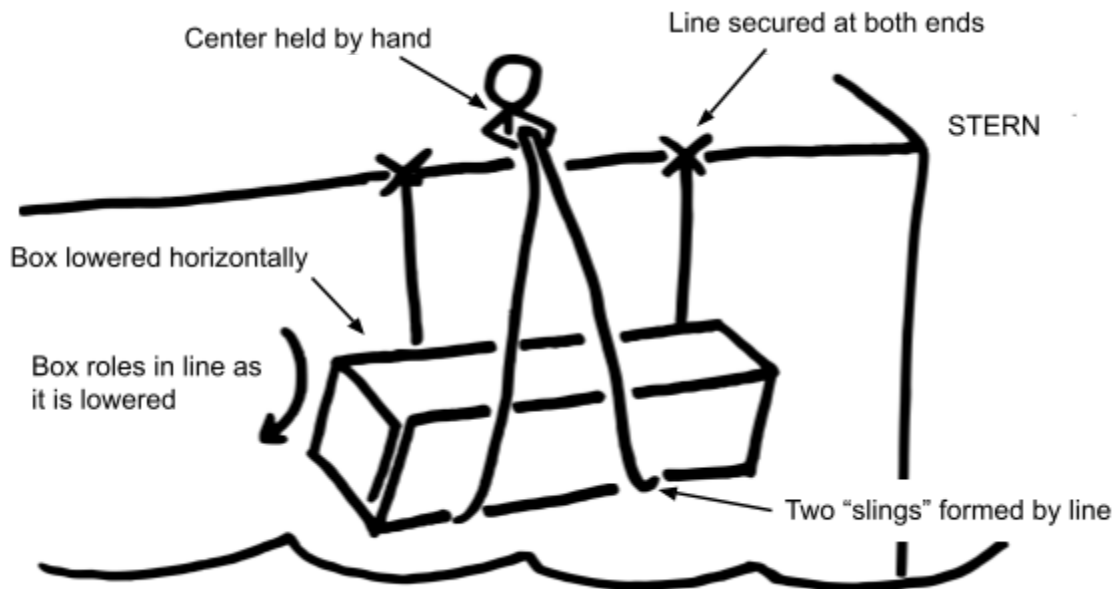

Notify shore of deployment. Email the deployment latitude, longitude, UTC date, time and serial number to jgilson@ucsd.edu.

Appendix: Performing the Self-Test

The self-test can be done at any time up to 3 months before deployment. There is no point in waiting until the last minute. For this reason, personnel should test the whole batch of SOLOs upon loading the ship and then store them securely for deployment. One self-test MUST be performed prior to deployment and a re-test ONLY be performed if there is any reason to suspect that the SOLO has been damaged in any way since the previous successful self-test.

Each SOLO has one log sheet to follow along the self-test instructions and record the results. Each sheet has space to record up to 4 attempts at the self-test on the instrument. The sheet also contains space for later recording of the deployment information. All the sheets should be returned to Scripps at the end of the cruise.
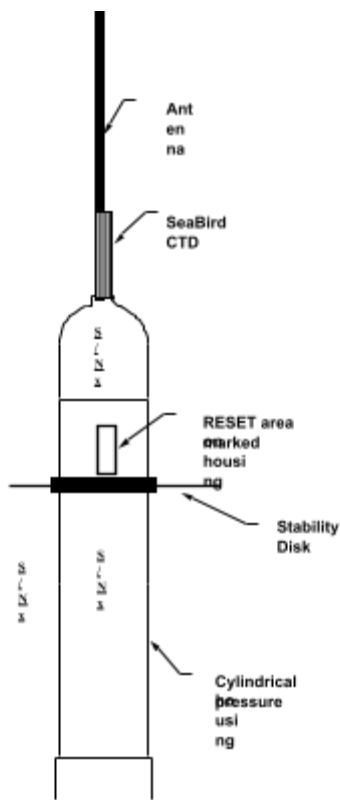
When activated with the magnet, the SOLO performs a self-test to check its readiness for deployment. The self test procedure takes about 40 minutes to complete. In most cases, SOLO will check out OK on the first attempt, but it may take more than one attempt before the self-test is successfully performed. Attempt up to 4 self-tests before deeming the SOLO unacceptable for deployment. The maximum time required to fail 3 test attempts and pass on the fourth attempt is 6 hours. If a self-test is started at least 6 hours before deployment, there will be sufficient time to deploy on schedule.

The self-test is performed inside the box with the box propped up vertically against a support with access to the cutout hole. Ideally the float should be placed outside with a clear view of the sky. As part of the test the SOLO will try to get a GPS fix and send the results of the self test via satellite.

Carefully press in the flap to reveal the pressure case. **Don't cut into the box or the instrument may be damaged.** Refer to the diagram. The access hole is over the RESET switch. The RESET area is marked on the pressure housing and should be visible through the opening at the upper end of the box. If the RESET is not visible, slowly and carefully rotate the instrument inside the box. In addition to the hole cut in the side of the box, there is a hole at the bottom on the float which allows access to the external bladder.

Make sure the serial number of SOLO is written on the log sheet in the space provided. Each log sheet is dedicated to a single SOLO. Do not record the results for more than one SOLO on a log sheet. It is a good idea to check the external bladder before the test to get a sense of what an empty bladder feels like. You will need to reach up about 8 inches from the outside of the box to reach the bottom of the empty bladder.

Slide a magnet along the long axis of the pressure case over the "RESET" area while listening carefully. At the start the pump runs for 1 second, but this may be barely audible. Listen carefully as this is your indication that the SOLO has been started. After twenty seconds there should be another short pump run.

If no sound was heard, the test probably did not initiate. Try again, varying the magnet's position with respect to the RESET mark. If the self-test fails to start after many attempts, store it for return to SIO.

Listen for the pump to run. After a delay of 60 seconds, the hydraulic pump will start and run for 6-7.5 minutes.

Check the external bladder after the pump has stopped to see that it is full. The external bladder is checked by reaching into the hole in the bottom of the box. If the bladder is full, you will feel the soft rubber bladder about 4 inches up from the outside of the box. **Then return at any time between 10 and 20 minutes after starting the self-test.** The bladder should still be full. This indicates that all tests have passed successfully.

Check the bladder more than 35 minutes after starting the self-test. The bladder should be empty. Record the result and time. Now the SOLO is ready for deployment.

If the self-test fails any step, try retesting the SOLO as directed on the log sheet. Record all self test results on the log sheet.