

Antarctic Funding Initiative, Project 3/16

Moorings.

To investigate intra-annual variability in krill abundance and water-mass physical characteristics at South Georgia

First deployment:

Monday 14th October 2002. From RRS James Clark Ross

Offshore array

In 1300 m of water at Lat. $53^{\circ} 30.6' S$, Lon. $37^{\circ} 56.2' W$

Inshore array.

In 300 m of water at Lat. $53^{\circ} 47,7' S$, Lon. $37^{\circ} 56.2' W$

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Deployment of moored arrays for AFI 3/16.

The first deployment took place on Monday 14th October 2002.

The sequence of events was:-

- Lifting instrument buoy over transom.
- Paying out mooring line.
- Putting Trimsyn floats over.
- Putting release gears over.
- Lifting ballast weight over.
- Cutting ballast free.

The general arrangement of the moorings are shown in Photo 1, below.



Deep Mooring

Deployment of the deep mooring started 1500 m downwind of the intended site.
The ship steamed upwind toward the site at 1.5-2 knots

The course for this deployment was 060⁰ T

All deployments were made over the stern with the bulwark down.

The buoy was lifted over using the heavy Gilson wire through the main gantry. A heavy sling was shackled to the wire and attached to the top frame of the buoy using a tapered toggle. (See photo 2.)



A HEAVING LINE WAS ALSO BE ATTACHED TO THE SHACKLE TO PREVENT THE HEAVY WIRE CRASHING TO THE DECK AS SOON AS THE WEIGHT OF THE BUOY IS RELEASED. Once the buoy was floating the toggle was pulled out, (not all that easy because of the weight of the Gilson wire maintains a tension.)

The mooring line was then paid away, while this was being done the strop was attached to the ballast weight, in this case the attachment was made by passing the strop through a large shackle, (sacrificial) attached to the chain around the wheels and back up to the shackle on the wire. (See Photo 3). A steadying rope was also passed through this shackle. The sacrificial rope is used as a second steadying rope.



The mooring line was mainly stowed in the plastic crate, having been flaked in bottom end first. The **trimsyn buoys** were on deck outside the crate. When they were reached the **trimsyns** were carried aft and pushed off over the roller.

When the **acoustic releases** were reached we attempted to lower them over the roller slowly but **their weight is such that it was difficult for two people to restrain them.**

The ballast weight was lifted and swung out over the stern, the sacrificial rope was 10 m but this proved to be too long making it difficult to release the strop from the weight. This was shortened to 8 m long, and attached as shown in photo 4. with the ends being different lengths.



Photo 4.
Attachment of sacrificial rope to weights.

The method of attaching the sacrificial rope, as shown, was used to reduce the risk of the rope being cut by the pressure of the narrow chain link. The long end was threaded through the two deck eyes and over the wood as shown in Photo 5.



Photo 5.
Attachment of sacrificial rope to deck eyes in preparation for cutting.

Then ends were joined by means of a reef knot. The ballast was then lowered until the weight was taken up by the sacrificial rope. With the tension off, the shackle on the end of the wire could be undone and one end of the strop was released, the other was left on the shackle and the Gilson wire used to pull the strop back through the shackle on the weights. (The heaving line was still attached to the Gilson wire to prevent it running back through the block).

Care should be used when positioning oneself to release the strop in case the sacrificial rope holding the weights were to break.

When the release point was reached the rope was cut on top of the wood and between the eyebolts using a hacksaw. The hacksaw worked fine as should a long bladed sharp knife or fire axe (preferable). **Safety glasses should be worn for this operation.**

After the weight was released the main buoy was seen to travel some 650 m on the surface towards the ship. For this first deployment the ballast was released 100m beyond the intended site to allow for the pendulum effect taking it back towards the site. Before raising the mooring it would be good to locate it accurately by finding the minimum range on the acoustic releases or locating it on the echo sounder. The difference between the actual position and the release site could be used to determine the amount of pendulum, although this could be less next time if the rope is thoroughly wetted and hangs as a deeper catenary.

The weight was released at 53° 30.6' S 37° 50.7' W

Shallow Mooring.

This was deployed in the same way as the deep mooring but because of the shorter rig deployment only commenced 500 m down wind of the intended release site, in this case the ship steamed at approx 0.6 knots on course 070° T

Release took place at 53° 47.7' S, 37° 56.2' W.

The sacrificial rope was cut using a fire axe, which is better than the hacksaw.