

Ingenuity saves reference station and invaluable data

The ingenuity of SARDI skipper, Neil "Chicko" Chigwidden has helped recover a \$180,000 oceanographic mooring station off Kangaroo Island which contained six months of invaluable undersea data.

The chances of finding it again were "one in a million."

The mooring, which had been gathering current, salinity, temperature and pressure information was due to be retrieved on a scheduled research cruise aboard the SARDI Research Vessel, Ngerin, in February 2011. However, the first attempt to release the mooring by remote acoustic signal failed to bring it to the surface.

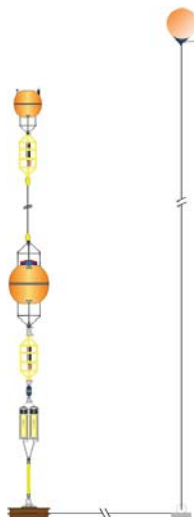


Figure 1: Schematic of reference station (illustration Shaun Byrnes)

Accustomed to temporary equipment failures the crew set about retrieving the mooring manually. The skipper was the first to realise the surface line that was being hauled up through the water by the Ngerin's crane, was tangled around the mooring itself and supporting the entire weight of the mooring's 500kg anchor rather than the 30kg clump weight it is designed to hold (Figure 1).

When the line inevitably snapped, the mooring, under the weight of the 500kg anchor, plummeted to the shelf floor in 110m of water with no apparent means of recovery.

Without any surface markers and with the ground line, normally stretched out to form a 200 metre target, now twisted around the mooring, the last chance of recovery by trawling seemed virtually impossible.

Forced to return home without the mooring, Neil remained optimistic that he would be able to rig something up before they returned in a month for another attempt.

In March, they tested the skipper's ingenious creation, a pair of large grapples separated by a three metre steel bar, designed to run up any rope or line it encountered.

During a brief window of good weather they commenced trawling using the

innovative grappling rig. Incredibly, after only one hour they score a direct hit and the mooring was finally lowered onto the deck of the Ngerin (Figure 2). Fortunately there was no significant damage to the equipment and most importantly, the entire six months of data was recovered from all instruments.

Physical Oceanographer with SARDI, Dr Charles James, says "working with moorings in an unpredictable and harsh environment such as the ocean means that no amount of planning by researchers or technicians can anticipate every potential problem. When things do go wrong, we do everything possible to retrieve equipment and data and thanks to the experience and innovation of the Ngerin crew we have maintained a 100% recovery rate of moorings and data within the Oceanography program."

He said it appears that the mooring became hopelessly tangled in the mooring lines after initially releasing correctly. "We don't know why, but it could have been some curious individuals who tried to lift the clump weights without success, or perhaps rough weather dragged the ground line. Whatever the case, a decision has been made to move to much heavier clump weights (>100kg) with marker floats for future moorings," said Dr James.

This event has highlighted some of the difficulties that can be experienced working at sea and the vital role the Ngerin crew play in successfully collecting field data that underpins much marine research, said Dr James.

"It was the experience, enthusiasm and ingenuity of SARDI's research skipper and crew that retrieved this expensive oceanographic equipment, not to mention the data that now provides an uninterrupted 3-year record of current and oceanographic conditions on the shelf around Kangaroo Island, significantly improving our understanding of the dynamics of the local ocean environment."



Figure 2: Bottom of the reference station after being recovered by the innovative rig.

Key Points

An oceanographic mooring off the coast of Kangaroo Island, plummeted to 110m with no apparent means of recovery after acoustic release failed and the surface line became entangled around the anchor.

An ingenious rig, built by the skipper of SARDI's research vessel, the Ngerin, returned the equipment after trawling for only one hour.

The event highlights the difficulties that can be experienced working at sea and the vital role research crews play in collecting field data that underpins much marine research.

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