Letter to the Editor

Editor's Note: On a recent trip to New Zealand, I spent many interesting hours with our antipodean colleague, Bill Keith of Auckland. I was intrigued by his account of some novel applications of amplification technology and urged him to communicate them to our readers.

AUDIOLOGY AND THE AMERICA'S CUP: COMMUNICATION CHALLENGES IN AN EXTREME ENVIRONMENT

To the Editor:

America's Cup racing is the pinnacle of competitive yachting. Accurate communication is critical for the split-second synchronization required from the crew in match racing at this level. The usual culprits, noise and distance, however, render communication almost impossible at times. FM communication solutions are precluded by race rules. The purpose of this letter is to share with our colleagues in America how we used hearing aid and inductive loop technology to provide a critical edge for Team New Zealand during their successful defense of the America's Cup in 2000 and are using adapted hearing aid solutions for a hearing-impaired crewman in the current team.

The principal noise sources during racing are wind noise when sailing upwind; winch noise, which resonates throughout the yacht via the taut drum-like carbon fiber deck; and helicopter noise above from up to 12 news helicopters covering races at any one time. The bow to stern distance is 80 feet, and the deck to mast-top distance is 100 feet.

We installed an under-deck loop system, mounted microphones near the skipper and tactician, and fitted key crewmembers with in-the-ear (ITE) hearing aids equipped with inductive receivers (T coils). Because the environment is so wet, particularly in the bow, we used a customized waterproof hearing aid design we had developed for communication with swimmers. The system proved extremely effective in facilitating communication on and below deck. Loop solutions proved impractical at the top of the mast, so a two-way hard-wired link was used for communication from there to the skipper.

A current crewmember has a total unilateral hearing loss sustained from an assault at the sailing venue of the 1996 Olympics. He was missing critical instructions, so we piloted various CROS systems with him. Wind noise was the main problem with a behind-the-ear (BTE) system he tried first. We solved that by modifying the satellite BTE-mounted microphone. We closed the front port of the directional microphone with a closed ear hook, leaving the rear port only, tucked well behind the pinna, as the sole microphone input. Fellow crewmembers noted an immediate improvement in his sailing performance with the aid. However, this solution was cumbersome and not waterproof. We tried a transcranial ITE CROS. This was convenient and helpful, but speech discrimination was inferior to the first system. Finally, we made an ITE CROS system with a deep completely-in-the-canal-mounted microphone (for protection from wind noise) and a very open ITE in the good ear. We used the same customized waterproof technology as in the inductive receivers of other crewmembers. The hearing aid is a multiprogram aid with noise canceling and is controlled by a wristwatch remote control. One program is set up for MT reception so he can also hear the loop signal at selected times. Hearing aid fitting was supplemented by counseling crewmembers on strategies for communicating effectively with a hearing-impaired person. The new system has worked well in limited trials. He will be evaluating the system further on NewsCorp in the Volvo Round the World Yacht Race.

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