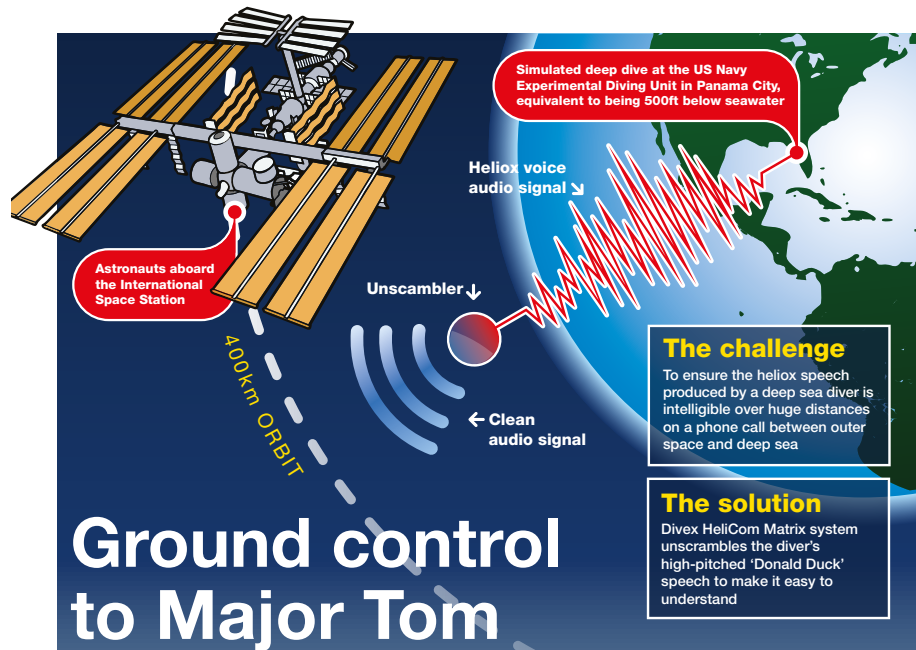


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Ground control to Major Tom

JFD's communication system has made history thanks to a VERY long distance phone conversation between outer space and the deep blue sea

In February a historic phone conversation took place between an astronaut on the International Space Station 400km above Earth and US Navy deep-sea divers on a simulated deep dive, equivalent to being 150m below the surface of the ocean. The feat was only possible thanks to JFD's communication system, HeliCom Matrix.

The communication system was able to unscramble the divers' conversation using advanced digital technology which converts the distorted speech caused by the heliox gas (a mixture of helium and oxygen) they breathe at depth.

The call was set up by a joint NASA/US Navy initiative to test JFD's new communications system and a recent overhaul of the US Navy's experimental diving unit (NEDU). It comes as part of a close working relationship between the US Navy and NASA which uses underwater environments as a training ground for astronauts.

Some of the key conditions of working in space (such as zero gravity and the importance of locks and pressure seals) can be re-created underwater. 'The physiology and science is similar between saturation

diving and going into outer space,' explains lieutenant David Meadows of NEDU.

Both divers and astronauts have to live and work in a hostile environment, using equipment designed to keep them alive, while coping with the physiological effects of gasses on their bodies. However, the main difference between the two is that underwater there is lots of pressure, whereas in space there is none. Due to this pressured environment, divers have to breath heliox which renders their speech high pitched and difficult to understand. But JFD's helium speech communication system, the Divex HeliCom Matrix System, utilises the latest digital signal processing techniques to unscramble the divers' 'Donald Duck' speech so they can be heard and understood clearly.

The HeliCom system uses a 'vocal tract modeller digital helium unscrambler' which converts raw helium speech back to intelligible communications making clear communication possible over extreme distances.

Steven Coull, JFD's product engineering manager says: 'JFD is delighted to have worked on this experiment with two world

leaders, NEDU and NASA. We are all immensely proud that the HeliCom Matrix played a vital role in ensuring successful communications from seabed to outer space. Clear and intelligible communications are essential for diver safety and the excellent client feedback we received is testament to JFD's commitment to producing world class products.'

This ground breaking experiment was the first of its kind. The ten-minute call - which went ahead on February 7th - was streamed live on Facebook. In that time, French astronaut, Thomas Pesquet chatted with divers, including master diver Eric Wilson, as they discussed daily life underwater and in space as well as the different projects they were working on.

Although teamwork is a vital part of working as an astronaut and a commercial diver, so is being able to cope with isolation. When you're working 'alone' in the hostile environment of space - or up to 450m below the surface of the ocean - you still need to constantly communicate with the support team; whether that's mission control on Earth or dive control on the surface.

