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This case study is over 5 years old. Whilst the specific hardware mentioned may have been superseded with more advanced models, it proves the longevity and capability of Inmarsat's L-band services. With proven technology and global coverage, you can rely on our services for #communicationsmadecertain

KEEPING THE 'ORANGE ROUGHY' GOING

Inmarsat's satellite communications are a crucial part of Australia's ocean going Antarctic exploration efforts

Interest in exploring the Antarctic for scientific purposes dates back to 1842, when the first call for scientific exploration of the South Pole appeared in a Tasmanian science journal.

By 1886, the Australian Antarctic Exploration Committee had been established to investigate, among other things, the creation of research stations and the use of steam-powered ships to penetrate areas inaccessible to sailing vessels. Today, the Australian Antarctic Division (AAD) is responsible for an on-going programme of experimentation and scientific explorations aimed at better understanding the frozen continent.

AAD is responsible for administering the Australia's Antarctic Program (AAP), which was established in 1947 and counts amongst its membership Australian government agencies involved with Antarctic research, as well as non-governmental organisations, including universities and research institutions, both Australian and foreign.

Today, Australia administers three Antarctic stations, Casey, Davis and Mawson, and maintains a permanent sub-antarctic base on Macquarie Island, situated some 1,500kms south of Tasmania.

AAD conducts an extensive marine science program using its own icebreaker ship; the RSV Aurora Australis. Affectionately known as the "orange roughy" because of the bright colour covering the entire ship, the Aurora Australis is a crucial part of the AAD's work. This vessel has been in service since it was launched in 1989, having been purpose built for the AAD. She is a 3,900 tonne icebreaker capable of penetrating 1.2 metre thick ice at a speed of 2 knots (approximately 3.7 kilometres per hour), carrying 1,600 cubic metres of general cargo plus 40 containers, and accommodating 133 people including the crew. The Aurora Australis can also house three helicopters, which fly from the dedicated helicopter deck at the rear of the vessel.

The ship is well equipped for marine science research with a commercial sized trawl deck, and a commercial hydro-acoustic system for the assessment of marine organisms. It also has a general purpose wet lab for processing net samples, a hydrographic lab, fish freezer, meteorological lab, five multi-purpose laboratories, a photographic dark room and a scientific work room.

While out at sea, the Aurora Australis depends on satellite communication services provided by Inmarsat to stay in touch with AAD.

FLEETBROADBAND 500

Dual FleetBroadband (FB) 500 terminals provide the Aurora Australis crew and expedition members with a Voice Over IP (VOIP) IAX1 link to AAD's head office (HO), a direct dial phone system via an IP GRE data tunnel2, a matching IP GRE data tunnel to AAD HO for data transfer and SIP3 access to the FB terminal for external voice calls.

The Aurora Australis is also equipped with an Inmarsat C Global Maritime Distress Safety System (GMDSS) and Inmarsat Fleet F77 system for ship operations, although all crew email, weather and ice information go through the FB terminals.

The FB data services are used for a great many day-to-day tasks, including the transfer of emails (by 'store and forward' compressed file transfer in both directions), scientific data, pictures from three webcams on the ship, position reports from the vessel, as well as daily active directory domain controller synchronisation (to keep computers up to date), 'syncing' of the call records database, and GPS positions to ship from the helicopter(s) for in-flight tracking.

Scientists on board the ship also routinely expect to carry on their normal work while onboard – staying in touch with colleagues in their home institutes, managing their long-term experiments, and carrying out whatever on-going tasks need to be maintained - in addition to running their shipboard research. This adds to the need for communication and data exchange. Most data transfers occur via email, which is transferred by AAD's compressed email transfer system every 15 minutes. The onboard email server services about 120 scientists and crew. Data transferred via email includes official and personal emails, as well as operational and scientific attachments including spread sheets, documents and information in other formats.

Communication is also crucial to the day-to-day operations of the ship itself. Satellite imagery for ice navigation using the polarview system, supplemented by images from modis and radarsat systems, are also transferred to the ship. The ice data supplied through the polarview system and other satellite imagery is critical to navigating the ship.

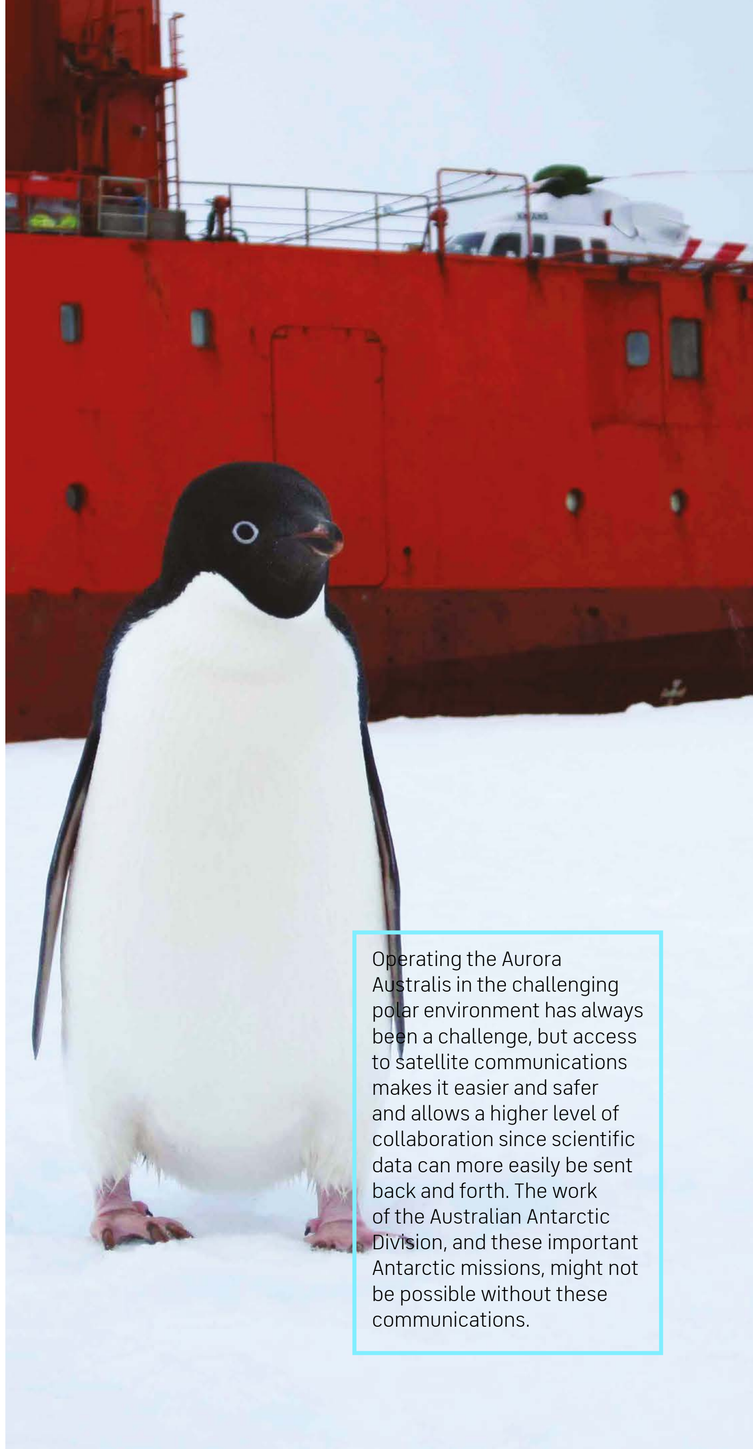
A Bureau of Meteorology forecaster is stationed onboard to provide forecasts for ship and helicopter operations. To support this function, the vessel receives daily updates of Bureau of Meteorology model data. The ship also receives data from the global Argo network of ocean probes.

Aurora Australis transfers basic "underway" scientific data every 15 minutes to the AAD data centre, together with data files from particular instruments for integrity checking. And, of course, video footage and other media information are transmitted back to AAD for dissemination.

With the advent of reliable satellite communications. Now the crew and scientists onboard the Aurora Australis have better access to AAD HO for fault-finding help and support, access to software updates of the precision instruments being used and accurate weather and ice forecasts for better navigation and safety. Senior scientists are able to go on these expeditions because they can stay in touch with their home institutes and their work, relieving them of concerns over whether their on-going experiments and other work will grind to a halt. In addition, email adds a level of personal contact with family and friends that helps to fight off the isolation of being at the South Pole.

The satellite communications systems on board the Aurora Australis provide the vessel with reliable communications, even in one of the most remote, pristine, unexplored wildernesses of the world. The 'Orange Roughy', 20 years on, is still carrying scientists to the South Pole, and helping efforts to better understand our planet through scientific exploration. Crew and passengers have better access to regular email traffic and phone calls. But more importantly, satellite communications have improved navigation for the ship, offered better safety for the expeditions, and made it possible for more constant communication with AAD HO.

Operating the Aurora Australis in the challenging polar environment has always been a challenge, but access to satellite communications makes it easier and safer and allows a higher level of collaboration since scientific data can more easily be sent back and forth. The work of the Australian Antarctic Division, and these important Antarctic missions, might not be possible without these communications.



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